

POLICY RESEARCH SERIES

NUMBER 59

OCTOBER 2006

EX-ANTE EVALUATION
OF THE INVESTMENT
PRIORITIES
FOR THE NATIONAL
DEVELOPMENT PLAN
2007-2013

Edited by

Edgar Morgenroth and John Fitz Gerald

Final Report to the Department of Finance

by

The Economic and Social Research Institute

in association with

DKM Economic Consultants

Aston University, University College Dublin

*Copies of this paper may be obtained from The Economic and Social Research Institute
(Limited Company No. 18269). Registered Office: 4 Burlington Road, Dublin 4.*

www.esri.ie

Price €65.00

(Special rate for students, €32.50)

Edgar Morgenroth is a Senior Research Officer and John Fitz Gerald is a Research Professor with The Economic and Social Research Institute.

The paper has been accepted for publication by the Institute, which does not itself take institutional policy positions. Accordingly, the authors are solely responsible for the content and the views expressed.

POLICY RESEARCH SERIES

NUMBER 59

OCTOBER 2006

EX-ANTE EVALUATION
OF THE INVESTMENT
PRIORITIES
FOR THE NATIONAL
DEVELOPMENT PLAN
2007-2013

Edited by

Edgar Morgenroth and John Fitz Gerald

Final Report to the Department of Finance

by

The Economic and Social Research Institute

in association with

DKM Economic Consultants

Aston University, University College Dublin

© THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE
DUBLIN, 2006

ISBN 0 7070 0250 8

ACKNOWLEDGEMENTS

This report has been prepared by a range of experts from the ESRI and outside it:

Adele Bergin (ESRI), David Duffy (ESRI), Tony Fahey (ESRI), Greg Finlayson (University of Manitoba), John Fitz Gerald (ESRI), Annette Hughes (DKM Economic Consultants), Ide Kearney (ESRI), John Lawlor (DKM Economic Consultants), Colm McCarthy (UCD), Leonard MacWilliam (University of Manitoba), Edgar Morgenroth (ESRI), Helen Russell (ESRI), Philip O'Connell (ESRI), Stephen Roper (Aston University), Sue Scott (ESRI), Emer Smyth (ESRI), Robert Tate (University of Manitoba), Miriam Wiley (ESRI). This report has been edited by Edgar Morgenroth and John Fitz Gerald who are responsible for the conclusions reached in it. The areas of specialisation of the contributors were as follows:

- Chapter 1. Morgenroth and Fitz Gerald
- Chapter 2. Morgenroth
- Chapter 3. Morgenroth
- Chapter 4. Bergin, Kearney and Fitz Gerald
- Chapter 5. Bergin, Kearney and Fitz Gerald
- Chapter 6. Morgenroth
- Chapter 7. Fitz Gerald, Scott and Morgenroth
- Chapter 8. Morgenroth
- Chapter 9. Morgenroth
- Chapter 10. Fitz Gerald
- Chapter 11. Morgenroth, Fitz Gerald, McCarthy
- Chapter 12. McCarthy, Fitz Gerald, Morgenroth
- Chapter 13. Duffy and Hughes
- Chapter 14. Scott and Morgenroth
- Chapter 15. Lawlor
- Chapter 16. Fitz Gerald
- Chapter 17. Morgenroth and Fitz Gerald
- Chapter 18. O'Connell and Smyth
- Chapter 19. Roper
- Chapter 20. Morgenroth and Fitz Gerald
- Chapter 21. Tate, Finlayson, MacWilliam, Wiley and Morgenroth
- Chapter 22. Fahey and Russell
- Chapter 23. Fahey and Scott
- Chapter 24. Morgenroth and Fitz Gerald

In the course of preparing this report the authors received assistance from a wide range of individuals, acting both in a representative and individual capacity. In particular a large number of meetings were held with Government Departments North and South of the border, State Agencies and many organisations representative of employers, unions and other interest groups. The

authors would like to thank all those who contributed their time and effort to our task.

The authors would also like to thank the staff of the Department of Finance, particularly Aidan Dunning, Dermot Nolan, Brendan Coogan and Niamh Burton, whose advice, encouragement and assistance proved invaluable in drawing up this report.

The authors would like to thank their colleagues at the ESRI who have taken considerable time to read and advise on a range of issues covered in this report. The work also benefited from invaluable research and editorial assistance provided by Fionnola Kelly, Patricia Holmes, Martin O'Brian and Laura Weymes. Without Pat Hopkins, Regina Moore and Mary Cleary of the ESRI it would not have been possible to produce this document. Finally, Deirdre Whitaker, as ever, was responsible for the timely production of this extremely cumbersome document.

CONTENTS

	<i>Page</i>
<i>Executive Summary</i>	ix
<i>Chapter</i>	
1. Introduction	1
2. Background Analysis	6
3. Methodology	21
4. Macroeconomic Background	29
5. Macroeconomic Impact	49
6. The National Spatial Strategy: Regional, Urban and Rural Development	75
7. Environment	98
8. Lisbon Strategy	103
9. National Anti-Poverty Strategy and Inclusion Strategy (NAP/Inclusion)	108
10. North-South	120
11. Accompanying Measures	124
12. Transport Infrastructure	132
13. Housing	154
14. Water and Waste Water Infrastructure	179
15. Waste Infrastructure	191
16. Energy	201
17. Telecommunications	210
18. Human Resources	216
19. Research and Development	237
20. Productive Sector	257
21. Health	278
22. Childcare	290
23. Sports and Arts	304
24. Summary and Conclusions	317
<i>Bibliography</i>	334
<i>Appendices</i>	350

EXECUTIVE SUMMARY

Objectives and Approach

This report, which was commissioned by the Department of Finance as an input into the preparation of National Development Plan 2007-2013 (NDP), provides advice on priorities for public investment. The research team, led by the Economic and Social Research Institute (ESRI) considered investment priorities across a wide range of areas including transport; environment services; housing; education; health; childcare; R&D; and investment in human resources.

Research has shown the key role of human capital, knowledge and the stock of infrastructure in facilitating or driving economic growth. This report concentrates on areas where public investment is warranted because, if left to the private sector, the level of investment would be sub-optimal.

The level and focus of public investment was considered at both the macroeconomic level (Chapters 4 and 5) as well as through detailed microeconomic analysis (Chapters 12 to 23). While a range of public objectives¹ is considered in the individual microeconomic chapters, where appropriate their importance is reflected in the detailed analysis in Chapters 6 to 10. In many cases the objectives of public policy can be achieved not only through investment but also by putting in place other supporting measures (Chapter 11). Such accompanying measures would free up resources that can be used elsewhere, while simultaneously tackling the inefficient use of resources.

By considering the contribution of all public investment to the broad objectives of policy within a comprehensive macroeconomic framework this approach ensures that the recommended investments are consistent with the aim of maintaining a sustainable budgetary position. This approach also supports the approach to national investment planning, where a single NDP is drawn up.

MACROECONOMIC IMPLICATIONS

The economic backdrop for this study is different from that of the study undertaken for the current NDP in 1999. Along with fast growth, a change in the sectoral composition of the economy is becoming increasingly evident with services becoming more important. At the same time, with globalisation the level of international competition in product markets has increased

¹For example, competitiveness, regional balance, social inclusion, environmental sustainability, and the promotion of development on the island of Ireland.

significantly, not least because of the strong performance of emerging economies. While Ireland has continued to attract FDI, competition for such investment has also increased internationally. In this respect the loss of competitiveness that has occurred has had an increasing impact. Continued net immigration, while expanding the labour force, has resulted in significantly higher demand for housing and other infrastructure.

The third National Development Plan is currently reaching completion. On the basis of all of the research undertaken to date, it is clear that the first three NDPs have made an essential contribution to the transformation of the Irish economy and society over the last fifteen years. Without the investment under successive NDPs the economy would have choked from lack of infrastructure, unemployment would still have been a serious social issue and the environment would be under much more serious pressure than is currently the case. The current NDP has greatly enhanced the economic and social infrastructure of the State with major benefits to economic development throughout all regions. The experience of the last three successful NDPs holds some important lessons for the future.

While the overall strategy pursued under successive National Development Plans has been appropriate, with the benefit of hindsight some areas where improvements could have been made can be identified. Thus, the level of investment, especially in transport under the second NDP (1994 to 1999), was not sufficiently ambitious. The level of investment in physical infrastructure in the current NDP was ramped up too rapidly with significant inflationary consequences for construction as well as project management difficulties (although the inflationary consequences have moderated over the period of the Plan and there have been significant improvements in project management in recent years). In addition, the recommended supporting measures (e.g. pricing of access to infrastructure), which were aimed at obtaining best use out of the new infrastructure, have generally not been implemented. This has reduced the albeit high rate of return below what might otherwise have been obtained.

For the next NDP the strategy remains rather similar to that identified in the *Mid-Term Evaluation* of the current NDP. There is a need to complete the investment in the major primary roads as soon as possible. To provide for sustainable economic development over the coming decades there is a need to invest effectively in public transport serving major urban areas, especially Dublin. Investment in R&D and human capital also remains an important priority. With the achievement of compliance with the EU urban waste water directive the report recommends that there can be some slowdown in investment in that area in the next NDP. Generally, with the economy operating at close to capacity the authors also believe that direct supports for the business sector ranging from manufacturing to tourism and agriculture should be phased out.

A summary of the recommendations is shown in Table 1. These recommendations are further outlined under the separate micro area headings below.

Table 1: “Recommended” NDP Central Government Capital Expenditure, €Millions

	2007-2013, Annual Average at 2006 Prices	
	2006	Recommended
Transport	2,555	3,374
Housing	1,245	1,133
Public Administration	1,029	1,125
Health	645	721
Education	684	858
Enterprise Sector	601	521
Agriculture	214	174
Environment	590	497
Total	7,563	8,403

The analysis contained in Chapter 5 suggests that in the long run this proposed investment would raise the capacity level of GNP by at least two percentage points and possibly even three percentage points above the level it would be without such investment. The analysis also suggests that the rate of return to the State on the investment would be quite high, fully justifying the very substantial commitment of resources.

While there is a high rate of return to efficient investment the results presented in Chapter 5 also suggest that the economy will have difficulty delivering the much needed investment at a reasonable cost. While the funding may be there to close the infrastructure gap rapidly, the economy does not have the ability to produce all the necessary infrastructure over the period to 2013 without squeezing out other important economic activity. This means that any attempt to close the gap too rapidly will seriously raise the cost of the investment, reducing the potential rate of return.

There are two possible responses to this constraint:

1. Given the likely long-term importance of the proposed infrastructure the best approach would be to use the tax system specifically to reduce private sector demand for the output of the building sector allowing the public sector to buy the necessary infrastructure at reasonable cost.
2. The alternative approach, which is assumed in this report, would see the start up of some major projects being postponed by a year or two. This would delay the benefits that would undoubtedly accrue from any investment projects that are delayed. The counterpart to this delay would, in the view of the authors, be significantly lower costs for the economy in delivering the investment.

As the first of these approaches (tightening fiscal policy) may not prove generally acceptable, the approach adopted in this report is to recommend an NDP for the 2007 to 2013 period that, while still

very ambitious, would be significantly below that envisaged in the multi-annual capital investment framework (MACIF) published as part of *Budget 2006*. This also implies that the government should run a surplus due to a postponement of some investment which will be available post-2010 to finance the higher investment programme even if the public finances had been hit by an economic slowdown.

In terms of prioritisation, the analysis suggests that there will be fewer constraints in delivering on the necessary investment in human capital than there will be in the case for investment requiring building and construction. For the infrastructural investment it will be very important to undertake the necessary cost-benefit studies to allow the prioritisation of different projects. This will be especially important in the case of the transport investment to ensure that very large projects are correctly sequenced to produce the maximum return to the economy and to minimise the direct and the indirect costs of delivery.

Complementary Objectives

NATIONAL SPATIAL STRATEGY

The next NDP will play an important role in the successful implementation of the National Spatial Strategy (NSS). While the *Mid-Term Evaluation* found that the current NDP contributed positively to achieving more balanced regional development, links to the NSS were poor, it was prepared well before the NSS. Going forward it is essential that the next NDP be targeted explicitly at implementing the NSS. The key objective of the NSS, to build critical mass in the gateways and hubs, remains as important now as in 2002.

Achieving the goals of the NSS requires two actions.

1. Strong planning needs to be implemented at the national, regional and local levels. This must work to increase densities, while not restricting the supply of development land, which would also facilitate some of the major public transport projects planned.
2. Project selection throughout the NDP must reflect the NSS priorities. This relates to all programmes and measures and not just to the infrastructural programmes.

Among the specific measures recommended the report suggests a special NSS measure to incentivise the gateways and hubs by allocating funding to innovative projects that link a number of different investment areas or foster collaboration between key authorities.

EQUALITY & SOCIAL INCLUSION

While the next National Anti-Poverty strategy (NAP inclusion), which is being prepared in parallel with the NDP, will be central to the Government's strategy to deal with social exclusion over the medium term, given the wide remit of the next NDP and the longer period over which it will be in operation, it must also reflect the

NAP inclusion goals. Steps need to be taken to improve the targeting and monitoring of these measures.

Given the growth of a sizeable immigrant community it will be important to ensure that this community will be properly integrated into the wider society.

ENVIRONMENT

Given the huge scope of economic activity covered by the NDP it will have a wide-ranging impact on the environment. The channels through which it will impact on different environmental media (water, air etc.) are many.

The cost-benefit analysis that we recommend on an integrated basis for the proposed public transport network for Dublin should include the environmental effects of the investment. The introduction of appropriate congestion pricing in the long term would have important environmental benefits as well as producing much more efficient use of costly transport infrastructure. The next plan will be framed in the context of the Water Framework Directive and it must take account of the likely growth in population over the coming fifteen years. While not a major factor in expenditure under the NDP, the problem of minimising the generation of solid waste and of disposing of it in an environmentally satisfactory manner has featured in the current NDP and should be a feature of the next NDP.

Overall, there is a need on the part of the NDP to facilitate more environmentally sustainable development through the promotion of denser development around the new public infrastructure network.

NORTH-SOUTH

Given the island location and small relative scale of the Irish economy significant economic benefit can be derived from forging stronger links between Ireland and Northern Ireland. Such links also support the positive political developments following the Good Friday Agreement. Already strong links exist in the areas of transport and energy. There is significant scope to further strengthen these links through the development of an all Ireland electricity market, and sufficient interconnection between the existing transport and energy systems, which will have benefits both North and South. In considering the priorities for the next NDP it is important to match up the areas that will benefit from an All-Island approach and to consider how the current Investment Strategy for Northern Ireland (ISNI) reflects these needs.

LISBON

The next NDP will build on what has been achieved so far in order to consolidate and improve competitiveness and thereby contribute to the achievement of the Lisbon Strategy. By enhancing the productive capacity of the economy, and especially by addressing key constraints, the next NDP can increase sustainable economic and employment growth.

ACCOMPANYING MEASURES

If the NDP is to address the infrastructural needs of the economy effectively a series of supporting measures will be required. Some of these measures were identified in previous reports but have not yet been fully implemented. The success of the next NDP will necessitate closer attention being paid to such measures if the best results are to be obtained from the huge planned investment programme. The list of desirable accompanying policy components includes:

- Correct pricing.
- Timely delivery.
- Integration with land-use planning.
- Regulation.
- Resource allocation and management.
- Project Selection Criteria, efficient management.

These issues are covered in detail in Chapter 11.

Microeconomic Priorities

TRANSPORT

Transport remains the highest priority for infrastructural investment. This reflects the strong increase in the demand for transport, which, despite significant progress in expanding the transport capacity, has resulted in increasing congestion. The evidence suggests that the return to transport investment, and particularly roads, remains high. It is, however, important to note that in the absence of proper pricing the market will not result in an efficient level of demand, which would result in calls for a continued high level of investment into the foreseeable future.

Specifically, we recommend that the priority accorded in *Transport 21* to the completion of the National Primary route system to standards adequate for predicted traffic volumes be maintained. We propose a reprioritisation of the proposals contained in *Transport 21* in relation to the National Secondary roads, which would better accord with the NSS and that consideration be given to the transfer to the Department of Transport and the NRA of responsibility for the more strategic busier non-national routes.

Fixed line rail projects, including suburban fixed rail projects, need to be thoroughly evaluated considering the potential of all public transport modes as well as incorporating network effects. Provided projects pass these evaluations a high priority is accorded to them. In this respect it is important to note that the international evidence suggests that on inter-urban routes rail investment tends to have a lower return than roads investment.

In order to achieve integration across the different modes, including integrated ticketing, we recommend the relevant assets of the Dublin transport network should be transferred to a single holding company. This should include both the rail network and the bus network.

Finally, port and airport infrastructure should continue to be funded on a commercial basis.

HOUSING

Social and affordable housing remains an important component of the NDP. Nevertheless, our recommendations suggest that, given the limited capacity of the construction sector, in the absence of measures that reduce the private demand for construction output, expenditure in this area should be reduced.² The unprecedented level of expenditure on housing gives cause for concern over the dependence of the economy on the housing market.

There is also concern about the value for money obtained by the expenditure incurred. In this respect we recommend a rationalisation of schemes, a focus on achieving a better tenure mix through the use of the private rented sector and the use of public private partnerships in urban areas for regenerating local authority housing estates and improving the quality of the existing local authority and social housing stock. Furthermore, the value of housing units sold under the tenant purchase scheme should reflect more closely the market value.

The spend on social rented accommodation by the voluntary housing sector should be maintained, given its focus on providing rented accommodation for key groups with special housing needs (the elderly, the disabled and the homeless) and the Rental Accommodation Scheme (RAS) should be implemented as soon as possible.

Finally, the housing supply provisions under Part V should be reviewed in order to ensure that they are working efficiently and effectively and that they are not holding up the delivery of housing supply.

WATER

With regard to water and waste water services, the implications of global warming for water abstraction capacity needs to be considered and the projected economic and population growth also needs to be accommodated by investment going forward. The assessment of the authors is that compliance with EU directive is at this point very high which means that additional investment needed to fully comply is limited. Furthermore, development levies will make a substantial contribution towards the investment needed to accommodate an increased population. The provision of infrastructure in the absence of efficient markets risks over-investment. In the absence of water charges for households, excess demand for water will continue, thus resulting in the need for capacity expansion.

² As indicated above, if measures were taken to reduce private sector demand, then this cutback would not be necessary and a better balance between private and social housing could be achieved.

Overall, we accord high importance to water supply and the rehabilitation of infrastructure where we recommend an increase in expenditure. Given the high level of compliance, a lower priority is accorded to waste water treatment where we consequently recommend a reduction in public expenditure. Similarly, since substantial progress has been made on rural water, the investment needed going forward can be reduced.

WASTE

As there is now a much-reduced role for central Government funding of waste management services, our recommendations here are limited. There is a momentum building up in the sector in terms of increased diversion of waste from landfill and the delivery of new infrastructure, and this should continue without the need for direct Government intervention. The aim should be to facilitate the emergence of a commercialised, economically efficient and environmentally responsible waste management sector, not necessarily totally privatised, but exposed to competitive pressures. With environmental externalities internalised (via EPA regulations and enforcement, the landfill levy, and possibly an incineration levy), there should in theory be no need for further public subvention of recycling, composting or related activities. As a significant proportion of waste is unaccounted for, increased resources should be made available for enforcement.

ENERGY

All of the investment in energy infrastructure should be delivered on a commercial basis without any requirement for finance by the taxpayer. The general principle should be that consumers of energy should pay the full economic cost (including negative environmental externalities) of energy. Ireland does not have a comparative advantage in energy. To subsidise energy consumption in any way would lead to an inefficient use of resources encouraging business to expand into areas where the cost of production in Ireland is higher than elsewhere, moving the economy away from the sectors where Ireland's long-term competitive advantage lies.

TELECOMMUNICATIONS

While public intervention would not normally be warranted in this sector the State has an important role as regulator of the sector, especially where there are monopoly elements to the provision of infrastructure. The provision of broadband infrastructure by the private sector may be slow in more remote parts of the country, reflecting the more limited market and hence lower potential to make profits. In such cases there is a potential market failure, which once properly identified, provide a rationale for public intervention. The fact that a particular area does not have broadband access is in itself not sufficient to warrant intervention if there is no local demand for that service.

HUMAN RESOURCES

The expansion in educational participation, at both second and third level, has been one of the main factors underlying Ireland's rapid economic growth during the 1990s. Forecasts of future skill needs emphasise the need for continued investment in human capital, and the continuation of high demand for higher education graduates. Most studies indicate that early childhood education brings enduring benefits in terms of better school outcomes and enhanced social skills in later life. However, Ireland is below average and lags well behind the leading countries in the proportion of 3-5 year olds in pre-primary education.

Enhancing productivity in the future will require additional investment in research and development and in the expansion of tertiary education, at undergraduate as well as post-graduate levels.

Investment in programmes to counter social disadvantage and poor educational achievement has a high social return. Currently, just under one-fifth of young people leave school without having completed the upper secondary cycle, as discussed below. This is an unacceptable wastage of human resources and it should become a core objective of the second-level system that every student should complete either a Leaving Certificate or its equivalent.

Investment in higher education is essential to support the development of an economy based on learning and innovation. The two priorities in higher education are (1) to maintain a strong stream of well educated graduates to fill technical and managerial positions in the labour market and; (2) to support the growth of research in higher education institutes, with strong linkages to the private sector. These priorities are reflected in the recommended commitment of greater resources to higher education and in providing ongoing support for research. Furthermore, an additional complementary priority is to widen access to higher education.

Ireland falls well below the leading countries in investment in the ongoing training of employed workers. This, combined with the prospective decline in the new entrants to the labour force, suggests the need for increased investment in continuing education and training. There is a strong argument for targeting public investment in continuing education and training on the lower skilled, because they are less likely to participate on the basis of their own resources, and upgrading the skills of the low skilled has the potential to meet skill shortages.

An increase in investment in capital infrastructure is needed to improve standards and accommodate increased numbers of students.

RESEARCH AND DEVELOPMENT

Research and Development needs to play an increasing role if Ireland is to maintain or even improve its competitive position. Therefore, we recommend a substantial increase in the resources devoted to investment in R&D. Our recommendations reflect the aspirations of the Enterprise Strategy Group (ESG) and

Interdepartmental Committee on R&D, which themselves reflect the wider aspirations of the EU Lisbon Agenda. Building on investment to date, the aim is to achieve a step change in the level of R&D investment in Ireland over the period of the NDP 2007-2013, and the measures we are suggesting are designed to support this aspiration.

While the authors recommend a continuation of most of the current funding mechanisms for R&D and innovation implemented under the current NDP we highlight the need for a greater focus on commercialisation. Furthermore, in order to ensure the best projects get funding we recommend a reduction in funding for R&D ring fenced for particular sectors, while recognising that policy oriented R&D continues to be of high importance.

HEALTH

As in all developed countries, healthcare is an important area of Government intervention and the public sector is the major healthcare provider in Ireland. In order to determine investment needs it is important to identify future demand. In this respect a special study of the impact of demographic change on the need for acute hospital beds was carried out as part of this report. This study showed that assuming an 85 per cent occupancy rate, over the period 2007-2013 between 1,821 and 3,280 additional acute hospital beds are projected to be required.

While assessing the need for other expenditure is very difficult due to the lack of data and an appropriate resource allocation model we recommend increased investment for additional non-acute facilities in order to support stated strategy with respect to care of the elderly, the disabled and individuals suffering from mental illness. Similarly, in the area of information technology a significant gap remains and further investment has the potential to increase efficiency in the sector.

CHILDCARE

State support for the provision of childcare is relatively new in Ireland, having begun to emerge only in the 1990s. However, childcare is now increasingly thought of as an element within the context of providing for 'early childhood care and education'. This report estimates that 50,000 additional places would seem to be a reasonable level of provision for new State-supported childcare places. For the period 2010-2013, the focus would need to be broadened to take account of the need to improve and expand early childhood education. Additional infrastructure support would be needed to adapt existing school buildings, where possible, and provide non-school based places.

PRODUCTIVE SECTOR

In an economic climate of full employment and overheating of some sectors it is difficult to justify significant intervention in the productive sector. Rather than proposing significant direct

subsidisation of productive activities, we expect that the overall business environment will be significantly improved by the investments in the areas of infrastructure, education and training and research and development.

In the past many of the supports have been aimed at sectors, which have underperformed and indeed are not expected to increase their share of national output. Such interventions can only be justified if they result in a restructuring of the sector, which improves competitiveness and ultimately the viability of the sector.

Thus support to productive sector activities should be limited to areas of clear market failure and should be concentrated on the development of SMEs and for regional development purposes. There should be a shift from supporting underperforming industries towards enabling resources tied up in these industries to move to industries with better prospects.

CULTURE & RECREATION

Cultural and recreational facilities impact significantly on the quality of life and are, therefore, crucial in attracting and retaining skilled workers. Therefore, we recommend that some resources be devoted to this area of investment in the next NDP. Strategic planning in regard to the Sports Capital Programme and Swimming Pool Programme needs to be improved and, as far as possible, spending on this area should be delayed until an appropriate plan and information base is put in place. Expenditure on major arts facilities should be backed up by a longer-term plan ensuring sufficient demand and efficient management so as to maximise the return and the spatial distribution of investment should reflect the NSS.

1. INTRODUCTION

1.1 Objectives

As an input for the preparation of the next National Development Plan (NDP) for the period 2007 to 2013, the Department of Finance commissioned this study to identify investment priorities.

In accordance with the terms of reference the primary focus of this study is on the priorities for investment in the areas of transport, environment services, housing, education, health, childcare and R&D and for investment in human resources in the education and training fields. However, the study takes a wider view of investment and, therefore, also considers investment areas not covered by the NDP, such as energy, communications, and the productive sector.

As the choice of investment priorities crucially depends on the objectives that are to be achieved by the NDP, these form a central reference point for the analysis contained in this report. The key objective is to maintain national competitiveness within a sustainable economic and budgetary framework. The investment priorities should also reflect the aims of Government policy in relation to:

- The EU Lisbon Process.
- The National Spatial Strategy.
- The All-Island Dimension.
- Environmental Sustainability.
- Social Inclusion.

Ring fencing a small proportion of resources to investment specifically for the individual horizontal principals is unlikely to be successful. Rather, these goals can only be achieved if all investments are appropriately targeted. While this mainstreaming will go a long way in achieving the goals, some specific interventions may nevertheless be warranted.

The aims of the NDP could be achieved through individual unconnected sectoral investment programmes. However, such an uncoordinated approach is unlikely to yield the best return due to the inability of this approach to consider the complex trade-offs between the numerous policy alternatives that are available to policy-makers. The approach followed by successive Irish Governments in preparing comprehensive National Development Plans therefore has the advantage of incorporating investments in different sectoral areas that complement each other.

In determining the “appropriate” level of investment to facilitate economic growth the objective should be to maximise income (GNP) per head rather than merely maximising the level of GNP. This presents real issues for policy. More rapid growth in the

absolute size of the economy would require significantly higher immigration than would otherwise be the case. Accommodating such a higher population would, in turn, require more infrastructural investment.

While the overall budgetary situation may not give rise to significant concern, resources available for continued investment are not unlimited. The next National Development Plan will need to make best possible use of these scarce resources in providing for the needs of the economy and society well into the 21st century. The main aim of this study is to identify the priorities for investment over the period 2007 to 2013. An important aspect of this is to advise on the optimal way to achieve value for money, given that there has been some concern over inflation in the construction sector.

In contrast to previous plans the bulk of the funding for investment under the NDP will come from domestic sources, both public and private, with only a fraction coming from the EU Community Support Framework (CSF). While this might reduce the bureaucratic burden involved in drawing up and monitoring the next NDP it should not change the general approach to investment planning that was required for CSF. The central aim of the Structural Funds is to improve the economic structure of the recipient country or region, rather than providing funding for conventional demand side stabilisation programmes. In an ever-changing world this focus continues to be relevant.

The CSF introduced a number of innovations in the process of investment planning and implementation, which constitute an added benefit apart from the investment. For example, the long-term approach to planning investment has led to the introduction of multi-annual budgeting through the public capital programme. The commitment of successive governments to the NDP process reflects the extent to which this approach to investment has become part of the Irish policy framework. Other important process innovations such as the requirement for comprehensive monitoring and evaluation should also be continued in order to ensure that the public resources are put to the best possible use.

1.2 Progress

Very substantial resources both private and public have been allocated to investment in Ireland over recent years. A significantly larger proportion of Irish national income has been devoted to investment than in other countries that enjoy a similar living standard, and was therefore not available for consumption. The current NDP has contributed significantly to addressing the infrastructure deficits, which had become apparent in the course of the 1990s. The NDP has also had a substantial positive impact on the Irish economy through non-infrastructural investments, particularly in human resources and research and development (R&D), which have expanded the capacity of the economy. Given the very substantial investment to-date, and the changing domestic

and international conditions, it is important to consider carefully the investment priorities for the forthcoming planning period.

Ireland has achieved exceptionally high economic growth rates for more than a decade. The highest annual growth rates of the 1990s are unlikely to be reached again as both domestic and international conditions are no longer as favourable as they were. EU enlargement and increasing globalisation mean that Ireland faces strong competitive pressures. In order to face up to this challenge, inflationary tendencies must be reduced and infrastructure gaps filled. Furthermore, in order to boost the competitive position, continued investments in education and research and development (R&D) are required.

The medium-term prospects for the Irish economy are likely to involve significant differences in the prospects for growth across the different sectors of the economy. The major contributor to growth in employment, including skilled employment, will be the market services sector. The high-technology manufacturing sector, while growing more slowly than over the last decade, will still make an important contribution. However, the prospects for output growth in the agriculture, fishing and the food processing sectors will be limited. This shift in the sectoral structure will increase the need for investment in human capital and R&D.

Along with the economic success, the demographic situation has also changed substantially. While Ireland experienced significant net emigration during the 1980s, this trend was reversed in the 1990s so that there is now substantial net immigration into the country. Indeed, continued population growth is projected for the foreseeable future. Population growth and increased prosperity have resulted in exceptional demand for housing, which has initiated a building boom, so that Ireland is currently experiencing the highest rate of construction of dwellings (per head) of the EU. This in turn is putting major strain on environmental services and urban infrastructure.

The very favourable age structure of the 1990s will gradually be eroded as the population ages, implying increasing age dependence over time. The size of the adult population has grown, allowing for an increase of employment, but also resulting in demand for housing and transport. Due to the size of the female population of child-bearing age, the number of young children will increase over the coming years, implying increased demand for childcare and education.

Employment has grown substantially, by 860,000 since 1990, and the unemployment rates remain at historically low levels. The rapid growth in the economy is leading to capacity constraints for example in the energy and water supply sectors, while the changing nature of employment and lifestyles also require major new investment in communications. The increased priority being attached to environmental objectives in Ireland and in the EU, such as global warming, will further accelerate the investment needs of the energy sector.

Significant improvements in the educational system have resulted in increasing educational attainment rates. Despite this increase in average attainment rates, the proportion of pupils leaving school without any formal qualifications has persisted at a constant level for more than a decade. There also remain a large number of men and women in the mid-30 to 50s age group, who have not acquired the skills needed for a modern economy. This group of individuals is particularly disadvantaged in the modern labour market and they account for a disproportionate share of the long-term unemployed. Furthermore, the changing nature of a modern economy requires a flexible labour force that continues to up-skill through lifelong learning.

1.3 Outline of this Report

The approach chosen for this study is reflected in the layout of this report. First, in order to identify the economic rationale for public investment a substantial body of literature is reviewed in Chapter 2. This review highlights the role of investments that increase human capital, knowledge and the stock of infrastructure as key drivers of economic growth. Furthermore, the economic literature suggests that public investment is only warranted in areas where, if left to the private sector, the level of investment would be sub-optimal. Chapter 3 briefly outlines that methodology employed in this study.

A central aspect of this study is the analysis of the overall impact of the proposed investment package at the macroeconomic level. Chapter 4 considers the macroeconomic background including the medium-term outlook for the Irish economy including the external environment and demographic projections. Since the next NDP will build on previous NDP's it is also important to assess the appropriateness of previous plans. This analysis is carried out in Chapter 5, which also considers the macroeconomic impact of the proposed investment package.

While the public objectives such as implementing the National Spatial Strategy (NSS), environmental sustainability, social inclusion, implementing the Lisbon Strategy and enhancing North-South co-operation are considered where appropriate in the individual microeconomic chapters, their importance and overarching nature required a special analysis which helped inform the wider analysis contained in this report (Chapters 6 to 10).

While this report is centrally concerned with public investment it has to be recognised that a desired outcome can often be achieved at no costs through the implementation of other measures, which are considered in Chapter 11. For example, the efficient use of infrastructure is only guaranteed if the correct price signals are there to guide consumers. In many cases the appropriate pricing mechanisms are not in place, which results in excess usage (e.g. congestion), which could be solved through the provision of additional infrastructure or by putting the correct pricing mechanisms in place. Thus, such accompanying measures are

important in that they free up resources that can be used elsewhere while simultaneously tackling the inefficient use of resources.

Finally, a detailed analysis of investment priorities at the micro-level is contained in Chapters 12 to 23. These consider investments at a more detailed programme or measure level, drawing significantly on the analysis contained in previous evaluations and considering new micro-level evidence. Specifically the following investment areas are considered:

- Chapter 12. Transport Infrastructure
- Chapter 13. Housing
- Chapter 14. Water and Waste Water Infrastructure
- Chapter 15. Waste Infrastructure
- Chapter 16. Energy
- Chapter 17. Telecommunications
- Chapter 18. Human Resources
- Chapter 19. Research and Development
- Chapter 20. Productive Sector
- Chapter 21. Health
- Chapter 22. Childcare
- Chapter 23. Sports and Arts

2. BACKGROUND ANALYSIS

This study draws on a range of research, and is informed by changes in the economic environment and major policy development. It is, therefore, important to review this literature before progressing to the detailed macroeconomic and microeconomic analysis that was conducted to consider investment priorities.

2.1 The Role of Government

To start with it is useful to consider what the functions of Government are. In doing so the relevance of public intervention in investment programmes can be identified. The role of Government has been subject to substantial philosophical and political discourse. However, the brief discussion here is not aimed at deciding the best economic system but takes as given the fact that Ireland is a modern open market economy. In this context there is little debate about the functions of Government in general, but considerable debate about the importance of the different functions of Government and the most appropriate policies to fulfil these functions.

Musgrave (1959), identified stabilisation, allocation and redistribution as the functions of Government. Stabilisation refers to the fact that economies are subject to cycles and thus are unlikely to have stable and high levels of output, employment and stable prices at all time. At either extreme of a cycle the economy is subject to inefficiencies through the under- or over-utilisation of resources. Thus, Musgrave (1959) argued that Government should intervene and stabilise the economy to reduce the amplitude of the economic cycle. This function, which is of course central to Keynesian economics, is relevant to national development planning in that large investment plans due to the size of expenditure can have a significant effect on the economy and thereby smooth out a cycle or exaggerate it.

Markets may not allocate resources efficiently due to market failures and externalities. If mechanisms for private agents to rectify these market failures or to internalise the externalities do not exist, which is usually the case, Government should intervene in order to achieve an efficient allocation of resources.

Externalities are particularly associated with public goods. A pure public good is a good or service, which if supplied to one person is

still available to another person.³ Many infrastructures are public goods even if they may not be pure public good as their consumption could be prevented. For example, public road infrastructure allows all road users access. One feature of public goods that is particularly relevant is that the market is unlikely to supply the optimal level of public goods, because the benefits of their provision will typically be underestimated. Only Government intervention will ensure the optimal outcome. This is particularly important for productive infrastructures and other investments that have a strong influence on national performance.

Apart from public goods, the actions of agents in the course of their activities, can also have externalities. For example, the use of motor vehicles causes emissions, which have a negative impact on air quality. Since air is needed not only by motor vehicle users these impose the externality of poor air quality on others. While, such externalities could be mediated through the courts as argued by Coase (1960), such mediation may be difficult, requiring Government intervention. However, once a mechanism for internalising the externalities exists there is no reason for Government to get involved, other than to ensure that these mechanisms are indeed used.

Clearly there are two types of actions that Government can use to ensure the efficient allocation of resources. First, Government can provide the public goods directly, thereby ensuring that the optimal amount of public goods is available. Second, Government can enact laws or impose regulations, which force the market to produce an efficient outcome. For example, river quality can be protected by publicly provided sewerage facilities, or laws to prevent effluent discharges can be enacted and enforced requiring industry and households to pay for the provision of such infrastructures. The latter is preferable, since public provision has to be financed through taxes and, *ceteris paribus*, higher taxes impact negatively on growth.

Another area where Government intervention in the allocation of resources may be warranted is in the area of merit goods. Merit goods are goods that are seen to be beneficial to society and should therefore be consumed by everyone. If consumers are not willing to purchase the merit good then they should be compelled or encouraged to do so. In general low consumption of a merit good is due to information gaps, which may be usefully addressed by Government.

Finally, the redistribution function refers to the possibility that without Government there is unlikely to be an equitable distribution of income and resources. The distribution of income is likely to be inequitable since this depends on the ownership of resources as well as the structure of the economy and these will only yield an equitable outcome by chance. Again, inequalities can be tackled in a number of ways. The conventional approach is to redistribute some

³ This implies that a public good is non-rival in consumption and non-excludable, i.e. the provision of the public good means it is available to everyone (see Cornes and Sandler, 1996).

resources through the social welfare system from the rich to the poor. This approach while dealing with the symptoms of inequity by reducing it through social welfare payments does not deal with the root causes of inequity. To deal with these, direct measures are necessary. Since such measures have long-run benefits they can be considered an important investment and their inclusion in a National Development Plan (NDP) is therefore justified. In this respect measures that foster equality of opportunity and enable individuals to take the available opportunities are particularly warranted. On the other hand redistributive schemes, which do not tackle the root causes of inequity should not be part of an NDP but rather left to the social welfare system.

2.2 Growth Theory

While the main findings of the international literature on growth and development are well known, it is useful to briefly review this literature, since growth in this literature tends to be related to the accumulation of capital, both physical e.g. infrastructure and intellectual human capital, knowledge and innovation. Furthermore, the literature highlights the role of factors that determine the ease with which capital accumulation can take place e.g. availability of finance, social capital and factors that affect the return to capital such as trade openness. The brief review provides some guidance on the relative importance of different mechanisms in the growth process.

The factors that determine the growth of an economy have been amongst the most central research topics in economics. While economists have put forward theories of growth for at least two hundred years most advances have occurred in two more recent periods. In the immediate period following World War II neo-classical models were formalised into mathematical models, while over the 1980s and 1990s new more advanced models were developed that have become known as endogenous growth models.

The Solow-Swan growth model (see Solow, 1956) is a model where technological progress is exogenous and where returns to capital are diminishing. A key result of the model is that all economies will grow at the same “steady-state” rate in the long run where investment is just sufficient to maintain the existing capital stock. If countries have similar rates of technical progress, a lack of capital in under-developed regions or states implies higher returns in the short run. Thus, the model predicts convergence: the further a region is from its steady state, the faster it grows. Government policy can facilitate convergence by raising the stock of public capital. This increases productivity of private capital, pushes out the steady state potential output, and raises the growth rate (see, e.g. Arrow and Kurz, 1970). However, under this model policy does not have long-run impacts; it only speeds the convergence process.

The major shortcoming of this older literature on economic growth is the fact that technical progress, which is the ultimate source of growth, could not be modelled and was therefore taken to be exogenous. Thus, the long-run growth rate in these models

depends just on the rate of exogenous technical progress and/or population growth, which is also exogenous.

The recent endogenous growth theory has addressed the shortcomings of the earlier pioneering literature. In particular it has focused on how the limitations of diminishing returns could be overcome. These models have investigated how the accumulation of reproducible factors can affect growth (e.g. infrastructure, human capital or knowledge/innovation, specialisation, trade, financial intermediation and social capital). Clearly, it is these factors together that account for differences in growth rates between countries and there are important complementarities between them.

R&D/INNOVATION

The key driver of growth is technical progress that is to a large extent driven by research and development (R&D) activities. One approach to incorporating R&D into an economic growth model is to assume that innovations that result in new investment in plant and machinery increase the knowledge of the workforce as they 'learn by doing' (see Romer, 1986). Thus, the knowledge of the workforce is a function of the capital stock. Since the state of knowledge is embodied in capital, which can be reproduced many times and is therefore available to all possible producers, it is in effect a public good. Thus, investment by individual producers generates an externality through an increase in this public good, which gives rise to increasing returns at the aggregate economy wide level. An alternative approach with similar results is to assume that R&D results in improvements in the quality of intermediate inputs (e.g. Aghion and Howitt, 1992; 1998).

Romer (1990) derived a further model where R&D is subject to fixed costs and where the market structure is characterised by monopolistic competition. This model predicts that the rate of technical change is sensitive to the interest rate since research needs to be carried out now in order to yield technical progress in the future so the benefits of research do not accrue immediately. In this model research is carried out by individuals with high human capital and the stock of human capital generates growth, but in equilibrium there is not enough human capital, suggesting Government intervention is required.

In another model (Ben-David and Loewy, 2000), the level of human capital in a country is determined by knowledge accumulation in that country and by knowledge accumulation in other countries. The impact of 'foreign' knowledge accumulation on the domestic economy depends on the ability of the domestic economy to access this knowledge, which is determined by trade. Higher levels of trade result in higher growth rates since this increases the spillover (externality) from foreign knowledge. Thus, investment in human capital has a higher return if the country is open to trade, which facilitates knowledge spillovers. This mechanism may be particularly appropriate in explaining the recent exceptional performance of the Irish economy.

HUMAN CAPITAL

The role of human capital in stimulating growth has been studied widely. Human capital is of particular importance to growth and competitiveness since this type of capital can be viewed as an essential prerequisite to the adoption of the types of change induced by globalisation and new technologies and, therefore, is a key determinant of productivity. Two approaches of modelling the impact of human capital on growth have been utilised, which have very distinct implications for policy.

Human capital can be acquired through education, learning-by-doing or passed on between generations. If one considers a model where human capital has a direct effect on productivity and where the marginal product of human capital, that is the extra output produced by adding just one unit of human capital, does not diminish. In this situation the return to human capital remains positive regardless of the state of technology, then the growth of the stock of human capital turns out to be the key driver of growth and should therefore be pursued by policymakers. This approach which was put forward by Lucas (1988) does not stand up to closer analysis as some of the assumptions made are unrealistic. This is most readily seen if one considers a manufacturing firm that uses particular machines to produce a product. If the workers in that firm are well trained so that they get the best out of the machinery they work with, acquiring additional skills is unlikely to result in more output being produced. Rather, the skills development would need to be complemented by changes in the machinery.

A different approach is taken by Aghion and Howitt, (1992) who argue that human capital has an indirect impact by determining the ability to perform R&D, which results in technical progress. The more human capital is available the higher the level of technical progress and, therefore, the faster the growth rate. Thus, this approach results in scale effects so that large countries should grow faster since; other things being equal large countries possess a larger stock of human capital. This result would imply that a relatively small country like Ireland could not sustain high growth rates due to human capital development. Given the recent growth experience in Ireland and other smaller countries it is not surprising that this prediction is not supported by empirical research (see Jones, 1995; Cannon, 2000).

While these approaches are quite different and have significantly different policy implications, they both provide a strong rationale for public intervention since in both cases the accumulation in human capital results in externalities.

Despite the strong policy focus on the development of human capital, the empirical evidence at the macro level is not conclusive regarding the growth effects of human capital. Thus, while studies by Benhabib and Spiegel (1994) and Pritchett (2001) find little evidence that human capital growth positively affects output growth, other studies (e.g. Temple, 1999 and Bassanini and Scarpetta, 2001) do find a correlation between the two. At least to some extent these conflicting results can be attributed to the difficulty in measuring

human capital (Hanushek and Kimko, 2000). In the empirical literature human capital has been proxied by the percentage of the population of school going age which takes part in second level education, the average years of schooling of the population, the pupil teacher ratio, expenditure in education and average test results. In contrast to the empirical macroeconomic literature there is a broad consensus in the empirical microeconomic literature that education has a positive and significant effect on individual earnings (see Ashenfelter, Harmon and Oosterbeek, 1999).

At the micro-level there are a number of papers, which consider the return to education in Ireland.⁴ For example, Callan and Harmon (1999) found that an extra year of education increased earning by approximately 10 per cent. *The Mid-Term Evaluation of the NDP* (Fitz Gerald, McCarthy, Morgenroth and O'Connell, 2003) updated the results of Barrett, Fitz Gerald and Nolan (2002) who considered the return to different qualifications rather than years of schooling. Their results suggest that holding a university degree yields an 80 per cent increase in earnings compared to no qualifications, which clearly constitutes a significant return. Interestingly, this return has decreased from 100 per cent in 1994, which appears to be related to high-skilled immigration resulting in increased supply of skilled labour.

This issue has also been investigated in a macroeconomic context by Bergin and Kearney (2004). They found that investment in human capital over the 1990s appears to have resulted in lower skilled wage rates than might otherwise have been the case since these investments increased the supply of skilled labour. Despite the dampening effect on high-skilled wages the rapidly rising demand for skilled labour meant that skilled wage rates did not fall and that they were still sufficient to attract high-skilled individuals through immigration, further increasing high-skilled labour supply. This improved the competitiveness of the economy. In addition, by reducing the supply of low skilled labour, low skilled wage rates were supported and the unemployment rate was greatly reduced. By turning unskilled labour into productive skilled labour the potential growth rate of the economy was enhanced.

An interesting finding of this literature is that the dampening of high-skilled wages along with the introduction of the minimum wage has resulted in a reduction in earnings inequality and has, therefore, supported the equality and social inclusion horizontal principle of the NDP.

INFRASTRUCTURE

Despite the obvious excludability characteristic, public infrastructure is often put forward as the classic public good. If in addition to labour, capital, intermediate products and energy, public infrastructure is required for the production process, then the non-

⁴ See. Callan and Harmon (1999); Barrett, Callan and Nolan (1999a); Barrett, Callan and Nolan (1999b); Barrett, Fitz Gerald and Nolan (2002).

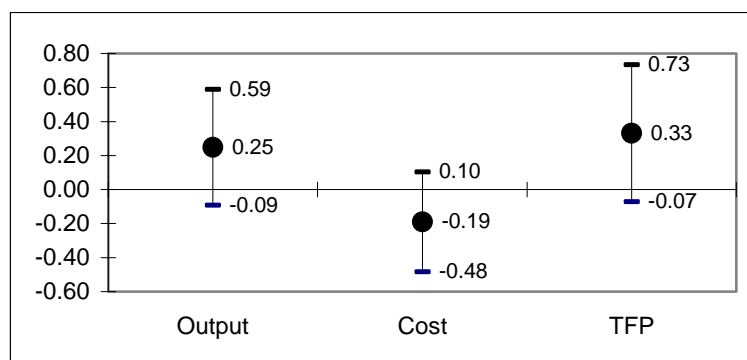
rival nature of infrastructure can result in constant or even increasing returns to scale in all inputs (Barro, 1990; Futagami *et al.*, 1993). The same unit of public infrastructure raises the marginal product of all private capital thus sustaining growth. However, as infrastructure is only non-rival to a degree, excess use, which results in congestion, reduces the overall growth stimulus provided by infrastructure.

The most obvious way in which transport infrastructure impacts on the economy is by facilitating trade. Thus, infrastructure allows a firm to serve a larger market. This expansion of markets results in increased specialisation, which improves efficiency. Thus infrastructure can generate growth through these returns to specialisation (see Kelly, 1997). In this model growth is subject to threshold effects, requiring sufficient infrastructure before the benefits of the investment accrue. Transport infrastructure can reduce the cost of intermediate inputs into the production, which results in increased specialisation (Bougheas, Demetriades and Mamuneas, 2000). This model yields a non-monotonic relationship between infrastructure and long-run growth. An important finding of this model is that infrastructure accumulation is very productive if the tax rate is low and counter-productive if the tax rate is too high.

Much of the recent literature on the effects of infrastructure on growth has focused on the estimation of the rate of return to infrastructure. A consensus is emerging that infrastructure has a positive impact on growth, but that this impact is more modest than had been put forward in early studies such as that by Aschauer (1989). Provided the infrastructure serves some productive purpose, the gross return should be positive. However, if one considers the alternative use to which the resources devoted to infrastructure could have been put the net return may be negative. This suggests that project selection is particularly important.

The next NDP will comprise a substantial investment in infrastructure. Consequently, it is useful to summarise the substantial body of empirical research identifying the return to infrastructure. As the stock of infrastructure in Ireland is relatively low it is most useful to restrict the review of impacts to countries with lagging infrastructure which, given the above discussion, should have a higher return to network infrastructure. The empirical results for Ireland, Greece, Portugal, Spain and Italy utilising three different approaches are summarised in Figure 2.1. The impact of infrastructure on output and total factor productivity (TFP) would be expected to be positive, while infrastructure should decrease costs. The results support these theoretical predictions. For example, on average a 1 per cent increase in the stock of infrastructure raises output by 0.25 per cent. Alternatively a 1 per cent increase in infrastructure reduces costs by 0.19 per cent. The bands around the average elasticity suggest that the output elasticities are likely to range between zero and 0.6, while the cost elasticities tend to be smaller, not exceeding 0.5.

Figure 2.1: Physical Infrastructure: Average Elasticities and Confidence Intervals



Source: Bradley, Mitze, Morgenroth and Untiedt (2005).

This crude meta-analysis supports the findings that were reported in the *Mid-Term Evaluation of the NDP* (see Fitz Gerald, Mc Carthy, Morgenroth and O’Connell, 2003). However, those findings distinguished different types of infrastructure and found that for some types of infrastructure, such as environmental infrastructure, the returns as measured through a production function were not significantly different from zero while those for roads infrastructure were positive and increasing.

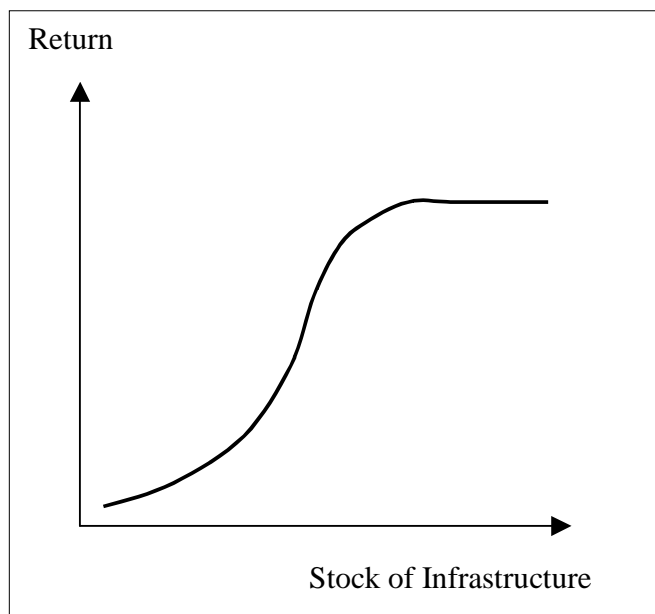
The return of infrastructure has almost exclusively been modelled in a conventional way where, as the stock of infrastructure increases, the return as measured by the marginal product declines.⁵ This ignores the network aspect particularly of transport and telecommunications infrastructures. It is well known that in a network the piece of infrastructure that completes the network has the highest return because it improves the usefulness of all other infrastructure already in place.⁶ This would suggest that if one starts in a hypothetical situation where there is no network, the initial investment has a relatively low return since it cannot generate the full network externalities (Figure 2.2). On the other hand, the last piece of infrastructure that completes a network has a very high return. Once the network is complete adding additional infrastructure carries no return – only one well functioning network is needed (see also Fernald, 1999). This is particularly relevant to Ireland where, due to low levels of investment over a longer period, key network infrastructures such as a motorway network are underdeveloped. With substantial progress in the current NDP, investments that will be part of the next NDP are likely to largely complete the motorway network, so that this investment will have a particularly high return while subsequent investment in motorways

⁵ An exception is the paper by Duggal, Saltzman and Klein (1999) which allows for an S-shaped production function that is capable of representing not only long-run production but also short-run production.

⁶ This argument also points to the returns from integration of different transport modes.

is likely to have a lower return. This suggests that with regards to motorways at least investment should be scaled back after the network has been completed.

Figure 2.2: Relationship Between Network Infrastructure Stock and Return of Adding to the Stock



FINANCE

If firms do not have access to finance they may be unable to invest as accumulating the resources to invest requires the investment to be in place. Thus, an important factor in the development of firms, and particularly start-up firms, is the role of financial intermediation (see the review by Pagano, 1993). Even if finance is available to firms, high interest rates can have a negative impact on investment in R&D and thus reduce growth. Government policy through the imposition of high reserve requirements, taxes or other regulation can also significantly reduce the fraction of savings that is funnelled into investment.

Through their lending activities financial intermediaries play an important role in the allocation of capital. If they allocate resources to inefficient companies then growth is likely to be lower than if they allocated the capital to highly efficient firms. Risk plays an important role in the decision making of financial intermediaries. While the investments with the higher potential return also are often those with the higher risk, the presence of this high risk might result in an activity not securing funding. In general financial intermediaries through their portfolio can hedge the risk better than individuals, which implies that the more risky but potentially more productive investment is more likely to be undertaken by financial intermediaries thereby stimulating growth (Greenwood and Jovanovich, 1990; King and Levine, 1993a).

Empirically there is some support for the theoretical models. For example, King and Levine (1993b) find support for the link between financial development and growth in cross-country regressions using a range of indicators. However, one needs to be careful in interpreting such results since they ignore the peculiarities of the financial sectors of the individual countries (see Arestis and Demetriades, 1997). Furthermore, the causation is not always from finance to growth as pointed out in the work of Demetriades and Hussein (1996).

TRADE

As was outlined above, accumulation of transport infrastructure opens markets and the benefits of human capital are increased through knowledge transfers as a result of trade. Clearly, trade allows firms access to larger markets than their own domestic market and this may also, therefore, drive growth. Rivera-Batiz and Romer (1991) show in a simple model that if the mechanism that generates growth, e.g. R&D, is subject to increasing returns to scale then integration, by increasing the extent of the market, will lead to growth. Along similar lines, trade allows for a transfer of technology, which should lead to higher growth in countries that lag behind in terms of technological development. However, in models where such spillovers are limited geographically the general result is that the trade pattern after integration will be determined by initial conditions. Thus, countries that are ahead in their technological development end up dominating the market in these high-tech sectors and will grow faster, despite the fact that trade is welfare-improving in all countries. A further implication of being locked into the low-tech sectors is that the returns to education drop and therefore the incentives for individuals to gain higher levels of education decline thus reinforcing the lagging nature of that economy (Saarenheimo, 1993). However, Government policy in the form of R&D subsidies can help change this outcome and allow a lagging country to become dominant in the high-tech sector (Grossman and Helpman, 1991). Of course, trade will also lead to increasing competition, which should reduce prices and improve efficiency.

There is empirical evidence to support some of these models. For example, a study by Coe and Moghadam (1993) finds that a large proportion of the growth of the French economy was derived from the benefits of increasing integration and trade in the EU. However, one needs to interpret some of the empirical evidence carefully since the causation may also run from growth to trade and particularly exports.

SOCIAL CAPITAL

The context in which individuals make decisions is an important determinant of the type of investment decision that will be made. The institutional framework, the rule of law, absence of corruption, the existence of trust among individuals etc., which might be

summarised by the term social capital, are also important. Zak and Knack (2001) show that in an environment where there is little trust investment will be lower, which will reduce growth. In this literature social capital affects the development of all other types of capital mentioned above. Overall, there appears to be empirical support for the notion that social capital matters (see, Knack and Keefer, 1997; Zak and Knack, 2001; Hall and Jones, 1999). Consequently, Government can play an important role by ensuring that the aspects of social capital, which are under its control such as the rule of law and absence of corruption are promoted.

2.3 Economic Geography

While the role of location and space had not been a central theme of economic research, it has become a popular research area over the last decade and a half. Economic geography models are not only relevant for regional development within Ireland but also for Ireland as a whole since the country could be seen as a region of Europe.

The advances in economic geography, as elaborated by economists, show that there are forces that foster agglomeration and those that foster dispersion. In the basic new economic geography models (e.g. Krugman 1980 and Brander and Krugman, 1983) increasing returns arise out of the increase in the variety of goods rather than due to spillovers. Other than having a two region structure, geography is introduced into the model through transport costs. These have the effect that countries/regions will export the goods for which there is a large domestic demand. A larger domestic market allows firms to produce at a lower cost, which means that their exports are also cheaper after transport costs have been added than when domestic demand is low. Thus, the assumption of increasing returns in conjunction with transport costs gives rise to a 'home market effect'.

With labour mobility between countries/regions an interesting result emerges. If there are just two types of workers, agricultural workers and manufacturing workers then, agricultural workers are immobile, as they cannot move their land. Manufacturing workers choose to live in the region where their real wage is highest, which in turn depends on the transport costs, the initial share of manufacturing, and returns to scale. For example, if transport costs are low, a region with a slightly higher starting population will attract manufacturing firms due to increasing returns provided these are sufficient to outweigh the transport costs incurred in serving the smaller market. This will also result in lower prices for consumption goods in that region which will attract more workers which further reinforces the agglomeration process in manufacturing. Thus these models can explain a core-periphery distribution of economic activity and point to a process of cumulative causation (vicious/virtuous circle), which locks regions into a particular development pattern in the absence of effective policies.

A phenomenon that has been observed in a number of countries including Ireland is a pattern of divergence between regions within a country while the country as a whole is converging. Giannetti (2002)

in an interesting paper seeks to explain this phenomenon. In this model of two countries, each with two regions and two sectors, the high-tech sector is subject to endogenous productivity growth. This productivity growth arises through 'learning by doing' and this process benefits from international knowledge spillovers. The initial sectoral composition of regional economies determines the performance of the regions and thus the convergence performance. If high-tech firms have a greater tendency to agglomerate, regions, which have a higher initial concentration in the high-tech sector or factors that are conducive to this sector will grow faster. This leads to divergence between the regions within a country. With productivity driven by international knowledge spillovers the high-tech sector grows faster than the traditional sector and thereby accounts for a growing share of the economy. Through knowledge spillovers the sector becomes more similar across the countries, which together with growing shares will result in convergence across countries. Again a process of cumulative causation means that regions can be trapped in a vicious circle.

While these results suggest that peripheral regions with initial development gaps are doomed to perform poorly due to agglomeration economies, these forces can also work in favour of lagging regions in that excessive agglomeration in the core will result in diseconomies associated with congestion and excess demand. If congestion and excess demand result in excessive production costs then peripheral regions that have lower costs may attract firms from the agglomeration.

Williamson (1965) argued that promoting national growth might require concentration of economic activity in the core region at the expense of the lagging periphery. At the earlier stages of economic integration, inter-regional linkages, factor movements and central Government policies are selective in favour of the more developed centres, while this tendency is reversed as integration proceeds and the income levels become higher. Thus, during rapid development countries tend to develop a core-periphery pattern. However, as development proceeds, the benefits of growth spread to all regions reducing the regional differences. This so called "Williamson Hypothesis" has been largely ignored by researchers except for a small number of recent contributions (e.g. Hallet, 1997; 2002). Some empirical evidence has supported the existence of the trade-off between equity and efficiency (e.g. Barrios and Strobl, 2005, De la Fuente, 1996, Morgenroth, 2002).

Dluhosh (2000) analysed the relationship between the integration process in the EU spatial division of labour, encompassing not only the new economic geography models but also the role of factors such as communications costs, cost competition and technology. The main conclusion of this study is that while transport costs and the monopolistic competition of the Krugman type models have some role to play, cost competition due to the integration yields a more fragmented economic geography.

In general the empirical evidence on the existence and dynamics of agglomerations is quite strong (e.g. Ciccone and Hall, 1996;

Ciccone, 2002; Ellison and Glaser, 1997). In the Irish context the relationship between urbanisation and regional growth has been highlighted by Bradley and Morgenroth (2000) and Boyle, McCarthy and Walsh (1999). However, a key result of the New Economic Geography literature, that increasing returns industries should agglomerate, appears not to be supported by empirical analysis. Recent evidence both for Ireland (Morgenroth, 2006) and in a range of European countries (Morgenroth, 2005), shows that increasing returns industries are actually becoming less agglomerated. Thus, while agglomeration forces appear strong the new theories may not have found the correct mechanism through which these agglomeration economies arise.

The role of diversified industrial structure rather than specialisation has been investigated in a study of innovation in urban centres (Duranton and Puga, 2001), which picks up ideas first outlined by Jakobs (1969). Their analysis suggests that innovation flourishes better in diversified cities as the diversity fosters the cross fertilisation of ideas. However, production appears to favour specialised cities where production costs are lower. Thus, this paper also suggests a rationale for FDI, where firms innovate in their headquarters in diversified cities but produce the products elsewhere.

Apart from the economic geography models outlined so far, substantial research effort has gone into analysing the determinants of firm location. In this respect the classic paper (by Coughlin, Terza and Arromdee, 1991), which shows that the factors discussed above in the context of growth models will be key drivers of firm location. The precise requirements of the firm will determine which of the factors is more important. Industries that are resource intensive tend to locate where their key resources can be found. Traditionally, therefore, the abundance of natural resources was a key driver of firm location. However, with a gradual shift towards high-tech and services activities the role of natural resources is declining and instead the key resource now is high-skilled individuals. These are particularly important in knowledge intensive activities. Apart from the availability of skilled workers, countries can compete for mobile firms by offering a lower cost structure, which may include better infrastructure (see Taylor, 1992) or lower taxes (see Bayindir-Uppman, 1998). Firm location is also closely related to the concept of competitiveness, which is discussed below.

2.4 Competitiveness

With increasing globalisation and therefore global competition, competitiveness, has become a central focus of policy. At the EU level the Lisbon Strategy sets out the target for Europe *...to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion* (Presidency Conclusions, Lisbon European Council, 23 and 24 March, 2000).

While competitiveness is at the forefront of public policy, the basic concept that appears to be behind this public concern does not

emerge from economic theory. As Krugman (1996) notes, countries do not compete like firms and the underlying assumption of a zero sum game in world trade is false.⁷ Nevertheless, competitiveness can be analysed with economic models provided the concept is properly defined and the false premises are discounted.

Policy concerns about competitiveness concentrate on two issues: international trade shares and cost differences. A vast literature dealing with both issues exists and it is beyond the scope of this chapter to review this literature thoroughly.

With regard to trade shares, trade theories yield a range of useful results that predict trade patterns and changes thereof due to changes in the underlying economy (technology, endowments etc.) and trade barriers. These models predict that countries will specialise in industries in which they have a comparative advantage. It is important to note that it is comparative advantage and not absolute advantage that determines trade patterns which means that even if one country is more efficient at producing all goods, it will only trade those goods at which it is most efficient.

Since economies are not static, their comparative advantage changes over time as various factors such as exchange rates, wages and productivity evolve. Furthermore, innovation can induce substantial change in the comparative advantage of a country. In the empirical literature on changing trade shares and comparative advantage the following factors have been considered. These include:

- Relative productivity (Lee and Tang, 2000, Choudri and Schembri, 2002).
- Trade barriers.
- Resource endowments (Gustavson *et al.*, 1999).
- R&D/technology (Kravis and Lipsey, 1992, Fageberg, 1996, Carlin *et al.*, 2001).
- Fixed capital (Oughton, 1997).
- Labour market flexibility (Saint-Paul, 1997).
- Industrial strategy (El Agra, 1997).
- Exchange rate volatility (Cote, 1994).
- Relative taxation (Bovenberg, 1989, Salvatore, 2002).
- Market power (Pieretti and Bourgain, 2003).

With increasing integration and globalisation it is also reasonable to expect these developments to impact on the sensitivity of export share to relative costs.

A paper by Carlin *et al.* (2001) provides a quantification of likely effects of changes in relative costs on national export shares. The key focus is on the impact of changes in relative unit labour costs on competitiveness, which is measured as the share that each country has of the global export markets. Furthermore, since sensitivity of competitiveness to changes in relative unit labour costs differs

⁷ With growing world trade a declining trade share can still mean increasing trade volumes.

between countries they also investigate the factors that determine these differences.

Finally, the general tax environment, which is closely linked to public expenditure, can impose a substantial burden. Interestingly, at the aggregate level Carlin *et al.*, did not find a negative relationship between relative unit labour costs and export market share, which would be expected. However, once individual sectors are considered, a very strong and stable connection emerges between relative unit labour costs and export market shares

Further investigation revealed that relative R&D and relative patent performance play little or no role in explaining shifts in export market share. On the other hand, the relative investment share, which might proxy embodied technological change, was found to have a modest positive but highly significant impact on export market share. Other factors that were found to be significant were human capital, trend growth in total factor productivity across the entire business sector, and the structure of corporate ownership. An important conclusion from that study was that policy should be directed at improving the conditions for innovation rather than promoting R&D activities *per se* or of promoting specific industries.

Ultimately, trade shares are driven by price competitiveness i.e. relative prices – the real exchange rate. The determination of prices has been analysed extensively in the context of the related literature on open economy macroeconomics. This literature highlights the role of transaction costs, nominal exchange rate fluctuations and the degree of competition/market power as key factors in determining persistent deviations of the real exchange rate from unity. Other factors that have more transitory effects on the real exchange rate but more permanent effects on the real economy include wage inflation in excess of productivity growth or changes in demand for domestically produced goods.

Excessive wage inflation perhaps due to an over-estimate of future productivity growth will lead to lower profitability and consequently firm relocation or investment in labour-saving technology, which will ultimately reduce the demand for labour and lead to a downward adjustment of relative wages. If demand for domestically produced goods increases profits rise in the short term but some of these will be captured through higher wages in those sectors where the demand has increased, leading to resource reallocation across sectors. Of course, the reallocation of labour across sectors is only feasible if the skills set is transferable. This highlights the role of human capital in industrial restructuring and the possible transition costs inherent in restructuring.

3. METHODOLOGY

Analysing a large and complex programme of public investment, such as the NDP, is not a simple task and there is no “correct” prioritisation of investment needs. Rather, the best that can be achieved is to determine an appropriate investment programme. The difficulty lies in defining the most appropriate prioritisation results from the vast range of alternative investments that could be chosen even within a particular area. For example, in the area of education one could prioritise investment in the primary, the secondary or third level education. Within secondary education investment could be prioritised towards early school leavers or developing the science curriculum etc. Clearly, public intervention is warranted in many different areas and deciding between these is not straightforward.

The range of information available on the large number of possible projects is not always ideal and the time and resources available to analyse them is limited. This process is made more difficult since the NDP will aim to achieve a number of objectives, which in some cases may even be contradictory. Thus, for example the aim to maintain national competitiveness might undermine the aim of achieving environmental sustainability.

Given these limitations it is important to apply a methodology that can satisfy the demands of deciding between the wide range of possible investments while still being tractable. The textbook approach to welfare analysis is not suitable for the analysis of such a wide-ranging investment programme as the NDP. However, some of the lessons of the literature can be built into the approach. In this chapter the approach and more detailed methodology adopted in this study is outlined.

3.1 Overall Approach

The usual approach to evaluating public investment is to conduct a cost-benefit analysis for each project. While this micro-level analysis is very useful in deciding between individual projects within a particular investment area, on its own it cannot be used to determine the content of the NDP. This methodology is primarily applicable and appropriate in situations where the policy decision being examined is a well demarcated and a priori precisely defined project, which does not generate many un-priced externalities. As only some of the investments considered here are precisely defined, and even these are likely to be subject to substantial externalities, cost-benefit analysis (CBA) on its own cannot provide a prioritisation across all the projects potentially included in the NDP. This is a serious limitation for the task of this study since it is concerned with a more general policy programme of which the

details and even sometimes the major features are unknown. Furthermore, it is impossible to carrying out cost-benefit analysis of thousands of projects which would be beyond the scope of a single study. Nevertheless, where CBA undertaken in line with the appropriate guidelines (Department of Finance, 1999) is available use is made of them in this report.

Consequently, rather than utilising CBA, here we utilise an approach that has been developed by ESRI researchers in a range of NDP and CSF evaluations in Ireland and internationally combining macroeconomic with a microeconomic analysis. The benefit of the macroeconomic analysis is that it is able to capture the supply side externalities of many investments, and can be used to ensure that the chosen overall investment programme is consistent with the broad macroeconomic aims. Since the macroeconomic modelling can only investigate the macroeconomic impacts of quite aggregated investment areas, it is important to also conduct a micro-level analysis that considers the detailed investment projects within the more aggregated categories used by the macro model. Thus, productive investments within a particular micro-area can still be chosen even if the particular micro-area is of low importance in the overall recommendations. Furthermore, the micro-level analysis has the benefit of allowing all micro-investment areas to be considered using a common set of criteria, which allows for a proper ranking of investments. The advice received from the consultation with Government Departments, Regional Assemblies and the Social Partners, forms an important aspect of the micro-evaluation. Apart from identifying the appropriate investment priorities and the level of financial resources needed in each micro-area, the microeconomic analysis is also likely to identify issues regarding project management and non-financial constraints that need to be addressed.

It is important to note that the macroeconomic and microeconomic evaluations are not conducted in isolation of each other. Rather, an initial macroeconomic projection is used to determine the appropriate overall funding envelope that fits within the macroeconomic criteria such as the borrowing requirement and the need to maintain the competitiveness of the tradable sector of the economy. The microeconomic evaluation is used to decide on an initial set of priorities, which are aggregated and again evaluated within the framework of the macroeconomic model.

The macroeconomic framework provides a quantified assessment of where intervention by the public sector can enhance the growth potential of the economy and will identify potential constraints and bottlenecks.

3.2 Macroeconomic Evaluation

A central issue in framing investment priorities is to ensure the sustainability of the recent economic and employment growth. This can only be accomplished through the development of a framework or model in which the factors driving Irish economic growth can be considered. A full analysis of the external environment facing the Irish economy needs to be undertaken in this respect, which will

consider how it has changed since the current NDP was drawn up. This analysis is carried out using the ESRI *HERMES* macroeconomic model in conjunction with the *NiGEM* world model that was developed by the UK National Institute of Economic and Social Research (NIESR). These two models are used together to prepare medium-term forecasts for the Irish and world economy. The use of these models ensures that there is a consistent basis for these forecasts and it also allows for the sensitivity of these forecasts to be tested for alternative assumptions on key external variables. Conditional on the external environment, a full set of medium-term forecasts for the Irish economy is prepared.

Because of the uncertainty inherent in any forecasts it is important to ensure that the choice of NDP priorities is robust in the face of a range of possible economic outcomes. The *HERMES* model provides a suitable framework for considering the inflationary pressures facing the economy, especially the inflationary pressures in certain key sectors such as building and construction. The model has also been augmented so that forecasts for energy demand and for greenhouse gas emissions can be made consistent with the range of underlying economic scenarios.

An important starting point is to consider the prospects for the Irish economy over the next decade. This takes into account the major changes in the external environment facing the Irish economy. Factors such as the enlargement of the EU and increasing energy costs also have implications for the future prospects and needs of the economy. This process identifies how the changing structure of the economy (and demography) will impact on policy.

Finally, the review of economic prospects provides crucial information on the scope for public financing of future infrastructural investment. In this respect the *Growth and Stability Pact* is a binding constraint that will have to be adhered to. This analysis frames the overall investment priorities that are chosen with the microeconomic analysis described below. Once microeconomic priorities are chosen their impact is evaluated within the macroeconomic model.

3.3 Microeconomic Evaluation

The broad priorities derived from the macroanalysis need to be supplemented by microanalysis in order to derive a detailed set of quantified investment programmes for specific types of investment. This process of identifying individual priorities has to take account of the integrated nature of the process of economic development. Many of the different priority areas will interact with one another so that the process of selection is not unidimensional.

The key consideration in deciding on investment priorities is to decide on areas where government investment is warranted. The rationale for government intervention and the key investment areas where the economic literature suggests a role for Government intervention were outlined in Chapter 2 and these form the basis for the microeconomic analysis. In a second step the areas where

Government intervention is warranted are accorded a priority ranking. This analysis needs to consider both the progress that has been achieved in previous investment plans and the impact of changed conditions. Thus, if significant physical progress in an area has been made, the analysis needs to question whether further investment is still needed.

Ideally, the social rate of return should be calculated for each project and that project should only be funded if the rate of return is greater than the social cost of financing the project, but this is rarely possible given the available information. Allowance should also be made for the risks inherent in any project. The forecasts for future revenue or social returns on any project are necessarily uncertain, as is also often the forecast for the cost of the investment. Where projects are particularly risky or where the rate of return is very uncertain it is necessary to take this into account before deciding on whether to invest. Risky investments, even if promising a high return, will be less attractive than more reliable projects with more limited returns. For example, the riskiness of investment in R&D must be balanced against the expected high returns, while investment in non-national roads may offer a lower but more certain return. While in many cases it is difficult to undertake these calculations in a formal way, it is important in any project selection process to take them into account at least in a more qualitative fashion.

A further issue, which must be considered in any process of project selection, is the optimal timing for undertaking the investment. If, for example, roads or metro systems could be bought in supermarkets in unlimited quantities then there would be no need to buy them over a period of many years. The optimal answer would be to borrow and to buy and deploy all the roads needed immediately. However, reality is very different. Most of the investment in physical or human capital or R&D can only be undertaken gradually. The roads have to be built which takes time and likewise no amount of money will overnight convert someone with a Leaving Certificate into a university graduate, with all the attendant skills and expertise.

In the analysis of economic welfare the rationale for public investment spending involves issues of both *efficiency* and *equity/distribution* as outlined above as part of the literature review. The *1997 Mid-Term Evaluation of the CSF* defined efficiency as follows: “[T]he economy is functioning efficiently if it is producing as much as possible with the resources available, and investing enough to generate sustained growth of capacity subject to respecting the needs of current consumption and environmental protection.” (Honohan, 1997, p.75.) Where the economy fails to function efficiently because of what is termed “market failure” or “distortions”, then there is a basis for justifying public intervention. This approach limits the scope for public interventions to just those areas where market failures and distortions exist. This is particularly important when considering potential ‘investment’ in productive sector activities. These are often either not warranted as they do not

address market failures or distortions, or where such problems exist they can more effectively be dealt with through regulation. The fact that an industry is important is not a justification for public intervention. Furthermore, subsidies for declining industries that do not deal with the underlying problem that makes these industries declining industries should not be considered an investment. Evidence shows that propping up sunset industries not only has a low return but it also slows down the required restructuring and reorientation of resources. Similarly, most redistributive measures only have a role in an investment plan if they deal with the underlying problems that require redistribution.

In order to formalise the microeconomic analysis multi-criteria decision analysis (MCDA) has been used in previous evaluations in the form of a scoring model (e.g. Honohan, 1997 and Fitz Gerald *et al.*, 2003). This tool is particularly useful in situations where investments have already been put in place so that these can be assessed.⁸ As the precise projects that are going to be funded in the next NDP are not known at this point (except perhaps some of the larger projects) applying the MCDA is somewhat more difficult. However, as the current NDP is taken as the point of departure for the microeconomic analysis of future investment priorities, significant insights can be gained from the *Mid-Term Evaluation* of the current NDP (Fitz Gerald *et al.*, 2003), which carried out a detailed MCDA analysis.

Specifically the *MTE*, following Honohan (1997) categorised all measures into four categories, namely:

1. Public Goods.
2. Corrective Pricing.
3. Corrective Subsidy.
4. Redistribution.

Category 1: Public Goods

The basis for public sector involvement in the provision of services or facilities that have public good characteristics arises from the difficulty or impossibility of charging the users of the facilities directly for the benefit, which they receive (difficulties with operating exclusionary pricing). Public goods measures can be classified into three types: *information, infrastructure and cultural*. ‘Information type’ public goods involve a number of different activities such as research and evaluation/technical assistance. ‘Infrastructure’ covers spending on roads, environmental services, and basic education (the training of all people to some minimum standard). ‘Cultural spending’ (e.g. monuments, parks etc.) is a classic example of a ‘merit good’.⁹

⁸ See Roy (2005), Belton and Stewart (2002) or Dyer *et al.* (1992) for a wider review of MCDA. A thorough review of the methods involved in MCDA in the context of identifying investment priorities is also provided in Bradley *et al.* (2005).

⁹ A ‘merit good’ is either a good or a service that ‘society’ believes should be made available for consumption to all.

It is important to note that since most public goods are not pure public goods in the sense that consumers can be excluded from using the infrastructure (excludable) or in the sense that the use of the public good by one consumer does have an impact on the utility other consumers can derive from the public good (non-rival). For example, the drinking water supply because it requires a network of pipes it has public good qualities. However, it is trivial to exclude individuals from the network and additional users on a network may have a negative impact on water pressures. Consequently, it is not surprising that drinking water supply has been organised by individuals working together, for example, through group water schemes. In such cases it may be more appropriate to consider the investment under the next category.

Category 2: Corrective Pricing

The most pervasive examples of a need for corrective pricing arise in relation to certain infrastructure projects. In many cases the price for using the infrastructure does not reflect the full cost to society. Alternatively, there may be cases where the cost to the private sector of investing takes no account of wider societal benefits from the investment.

An example of such a distortion could be where the cost of clean technologies for generating electricity does not take account of the environmental benefits that they confer. A subsidy for renewable energy falls within this category as it could provide the correct price signals to potential investors.¹⁰ This category of intervention opens up possibilities for innovative forms of public and private sector partnerships. The crucial point is that there needs to be a “truer” pricing of infrastructural usage. Where such corrective pricing is implemented through a subsidy, it is generally appropriate that the subsidy be fixed at an appropriate rate and the volume of demand will determine the level of expenditure. This makes budgeting more complex than where the total expenditure is specified in advance.

Category 3: Targeted Interventions

Expenditure in this category is warranted principally where private agents lack information or are too risk averse to undertake (potentially) profitable activities. For example, they may lack the information necessary to make the optimal level of investment in energy saving in their homes. If such information is provided (either directly or indirectly) through Government support they may as a result, be able to overcome the problem, and subsequently such supports can, and should be, phased out. Key areas of investment, identified as predominantly targeted interventions, are training, energy efficiency and R&D support for business.

¹⁰ As discussed in Chapter 14, a better way of incentivising appropriate investment in clean technologies is to tax the dirtier technologies.

In effect, these interventions are aimed at reducing or eliminating distortions that would otherwise impair the economy from performing optimally, both in terms of efficiency criteria and distributional consequences. In these cases it is probably appropriate to specify the size of the budget needed to trigger appropriate private sector action and then allocate that budget through some competitive mechanism as described above.

Category 4: Redistribution

Redistribution is generally best tackled through the tax and social welfare systems. Nevertheless, there are still some aspects of investment programmes that have a redistributive function. The most obvious example is social housing.

Using the results of the scoring exercise carried out in the last *Mid-Term Evaluation of the NDP*, it is possible to summarise the types of market failures that might necessitate further investment in the various investment areas (Table 3.1). This together with the results of the scoring exercise (final column) guides the further analysis in terms of appropriateness and justification of investment needs for the next NDP. A striking feature of Table 3.1 is the poor scores for the productive sector measures. On average only the energy measures achieve the cut-off score of 0.5. This of course corresponds to the difficulty in identifying market failure or even where a market failure exists often cheaper regulatory measures are sufficient to deal with these. It should also be noted that the modest score for the transport measures was largely by the inclusion of harbours. If these are excluded the average score increased to 0.74 and if the regional airports measure is further excluded the score increases to 0.77. Similarly, R&D would have a higher average score if the sectoral measures were excluded. Overall, the scoring exercise suggests that a high priority should be accorded to investment in health; housing; childcare; social inclusion; regional, urban and rural development; education; general R&D measures; and most of the transport infrastructures and to a lesser extent arts/sports. Low priority should be accorded to investments in the areas of agriculture; forestry and fishing; tourism; enterprise/industry; telecommunications; energy and the environment.

In the microeconomic chapters these results from the scoring analysis are taken as the point of departure and the individual investment areas are again assessed in terms of the rationale for public intervention. Since the economic, social and demographic environment has changed and significant progress has been made in some areas these chapters consider the appropriate level and targeting of investment going forward. They also consider public policies in each area and any new analysis that has emerged. Furthermore, since in many cases the level of existing analysis is insufficient the chapters provide some additional analysis. However, given the scope of this study it is impossible to fill all the gaps in the analysis. For investment areas where public investment was not deemed to be justified, the argument for this conclusion as well as relevant trends in these areas are reviewed.

Table 3.1: Classification of Investments

	Public Good	Corrective	Targeted	Redistribution	Average Score
Public Physical Infrastructure	%	%	%	%	
Transport (incl. Ports, Harbours, Airports)	80	20			0.59
Environmental Infrastructure	50	50			0.50
Housing	10			90	0.76
Sport & Arts	30	30	30	10	0.53
Human Resources					
Education	90	10			0.65
Training	10		70	20	0.58
R&D	30	10	60		0.47
Productive Sector					
Energy	20	70	10		0.50
Telecommunications	20	80			0.40
Agriculture, Forestry, Fishing	10	40	40	10	0.26
Tourism	40		60		0.24
Enterprise/Industry	10	10	80		0.43
Equality/Social Inclusion			50	50	0.62
Health	100				0.80
Childcare				100	0.70
Regional Urban and Rural Development	10		80	10	0.70

Source: Fitz Gerald *et al.* (2003).

3.4 Accompanying Measures

A range of non-investment measures are needed to make the most of current and future investment and these measures are as important as the choice of the appropriate investment package. For that reason these issues are highlighted first at this point rather than just later on, since the implementation of accompanying measures is likely to reduce investment needs in a number of areas.

The effective utilisation of the existing capital stock needs to be considered. There are many examples where use of the appropriate pricing mechanism will yield a more efficient outcome and result in lower investment needs. This is important since the cost of raising a euro of revenue through taxation is greater than a euro because of the distortions inherent in any tax system. Consequently, higher taxes result in lower growth. Therefore, if an efficient outcome can be achieved through accompanying measures, in particular through appropriate pricing, this is preferable to achieving it through investment.

In some cases the current expenditure implications of capital investment are substantial. For example, if hospitals are built without current funding in place to operate them this leads to underutilisation of the capital stock.

Investments, particularly in the productive sector, may be subject to considerable deadweight, i.e. the investment would have been carried out by the private operators anyway without public intervention. Furthermore, there may be a risk that private agents 'free ride' on public good efforts targeted specifically at the productive sector. Measures can be taken to minimise the risk of deadweight and free riding, which in some cases have already been enacted.

4. MACROECONOMIC BACKGROUND

In this chapter we present our assessment of the medium-term prospects for the Irish economy over the time horizon of the next National Development Plan (to 2013). These prospects are broadly based on the forecasts presented in the recently published *Medium-Term Review*¹¹ (MTR). While the Irish economy grew very rapidly over the last ten years, its potential to grow further is less today than it was five years ago and it will be lower still over the period to 2015. Ireland's changing demographic structure will play a key role in this slowdown. The unutilised resources available in the economy are being used up and, while there has been a major improvement in the quality of infrastructure in the economy over the last decade, the benefits of this improvement have been partially offset by the rapid growth in demand for that same infrastructure. As a result, the economy remains constrained by the limited stock of dwellings and public infrastructure with consequent high prices and congestion.

Despite this inevitable slowdown, the fundamental factors driving growth remain quite favourable and the economy still has the potential to grow at between 4 and 5 per cent a year out to the end of the current decade. In particular, the economy will continue to face a very fortunate set of demographic circumstances over the next fifteen years. However, a number of downside risks exist. Specifically, the very high level of dependence on the building industry poses a threat. The internal risks to future prosperity must also be seen against the background of the global economic imbalances that, if anything, are growing in magnitude. A key factor determining the medium-term prospects for the Irish economy is the future evolution of these global imbalances.

The chapter is structured as follows. In Section 4.1 we discuss background assumptions relating to the external environment, demographic prospects and the building and construction sector. Section 4.2 provides an overview of the economic outlook implied by the MTR *High Growth* scenario. Section 4.3 outlines the impact that a period of low growth, either driven by an external shock or an internal housing shock, would have on this economic outlook. Finally, in Section 4.4 we look at the context of these forecasts for the next National Development Plan. We discuss the implications of

¹¹ Fitz Gerald, J., A. Bergin, I. Kearney, A. Barrett, D. Duffy, S. Garrett and Y. McCarthy (2005), *Medium-Term Review: 2005-2012*, Number 10, December.

the demographic profile out to 2013, the issue of crowding out effects due to an increased level of investment, and also the high level of uncertainty surrounding future growth prospects.

4.1 Background Assumptions

THE EXTERNAL ENVIRONMENT

As an exceptionally open economy, Ireland is very much dependent on what happens in the rest of the world. The economy remains exposed to events outside the Euro Area due to the importance of FDI, particularly from the US, and the growing importance of services exports. However, the future prospects for the Euro Area are clearly also of crucial importance for the Irish economy. Developments in the domestic economy must be assessed against a backdrop incorporating this external environment.

A major cause of uncertainty about the future prospects for the world economy is the large macroeconomic imbalances that are evident in the US economy. The magnitude of the current account balance has focused attention on its sustainability and at some point in the future the US economy will adjust and experience a slow-down in growth. However, considerable ambiguity remains as to the timing of the adjustment, whether it will occur gradually or sharply and the mechanism(s) by which it will take place. As a result, the MTR presented two scenarios for the external environment facing Ireland. In the first, labelled the *High Growth* scenario, the US economy does not adjust to correct for its imbalances that currently exist. As such, the US economy continues to experience robust growth, although remaining on a growth path that is unsustainable in the longer term. This scenario is used as the basis for consideration of the NDP. In the second scenario, labelled the *Low Growth* scenario, the US current account deficit declines gradually to a long-run sustainable level. The implications of this lower growth scenario for the NDP, if and when it should occur, are considered later in this chapter.

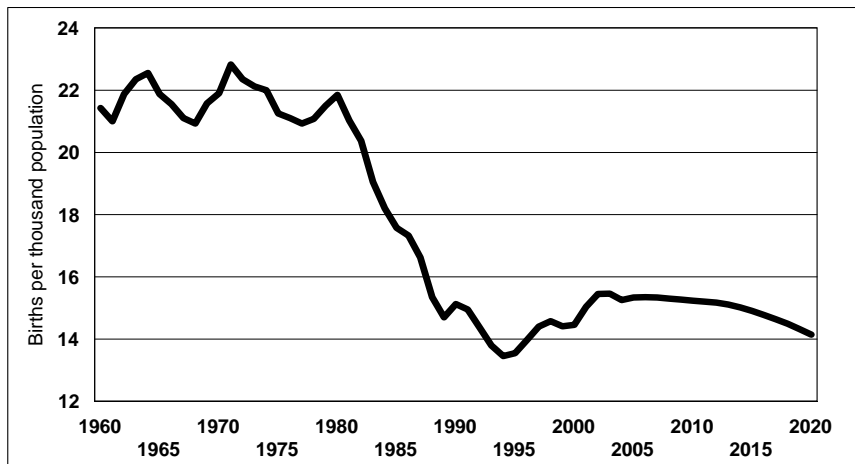
In the more favourable *High Growth* scenario, it is assumed that the US economy can go on growing at a rapid pace until 2015, with a gradual worsening in its external and Government deficits. If realised, this scenario would provide a very favourable backdrop for the Irish economy for the next decade. However, although the more benign *High Growth* scenario is considered more likely for the next few years, it is not possible for the US to continue forever on this path and we do not pursue the details of this scenario beyond 2015. When the adjustment eventually takes place the US economy will switch to a lower growth path having negative implications for that economy and also for the global economy, including Ireland. The effects of what happens in the US will be transmitted to Ireland directly through trade and FDI. However, even more important will be the indirect effects as mediated through the wider Euro Area economy.

DEMOGRAPHIC BACKGROUND

The Irish demographic profile is unique. It is characterised by a relatively young population with approximately one-fifth of the adult population in the 15-24 year age cohort. Such a favourable position means that the problems caused by ageing populations in many other EU and OECD countries are not as prevalent in Ireland today. However, this favourable structure of the population looks set to deteriorate over the longer term, as the now relatively young population ages, with fewer children coming behind. As these structural changes occur they will have an important effect on the potential growth rate of the economy, mainly through their effect on labour supply and dependency ratios. It is thus pertinent for policy-makers to incorporate such effects into medium- and long-term plans now (Barrett and Bergin, 2005).

In the past, the demographic profile has been largely shaped by the patterns observed in birth rates and migratory flows and these factors will continue to shape the demographic profile in the future. The Irish **birth rate** has undergone significant change over the last half century. Over the next decade, our forecasts suggest that the birth rate will level off at approximately 15 births per thousand of population. This means that in years to come, there will be relatively fewer persons in the younger age cohorts, provided there are no offsetting increases caused by migration. The births are forecast on the basis of a fairly constant Total Fertility Rate (TFR) of between 1.9 and 2.0.¹²

Figure 4.1: The Birth Rate



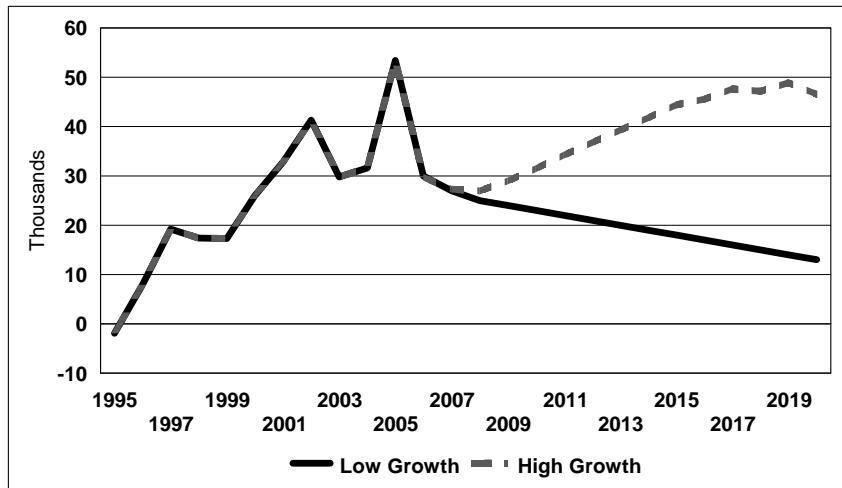
The forecast limited rise in the birth rate over the rest of the decade is accounted for by the fact that there will be an increasing number of women in their late twenties and thirties, the age at which women now typically become mothers; the population bulge of

¹²This is an artificial measure that represents the potential number of children over her lifetime for a representative woman.

young people born in the 1970s is mirrored 30 years later as they themselves begin to have children.

Migration flows have long played a crucial role in driving changes in both the population structure and the labour force. Following high net emigration rates in the 1980s, the improvement in Ireland's economic fortunes relative to its EU partners in the 1990s resulted in a reversal of this trend; the numbers immigrating greatly outweighed the numbers leaving the country since 1996. Such flows reached record highs in the year ended April 2005, when net immigration was 53,000. Over the next decade, it is expected that net inward migration will continue. The magnitude of the inflows will depend on the likely growth trajectory of the economy, as discussed in subsequent sections. The size and nature of these inflows will play an important role in the future growth of the economy and they will impact on the future demand for infrastructure, including housing.

Figure 4.2: Alternative Projections for Net Immigration



As outlined under the “external environment”, the medium term prospects for the Irish economy are dependent on external developments in the global economy, and in particular on whether or not adjustment occurs in the US. If no adjustment occurs and the Irish economy continues to grow along the *High Growth* trajectory, described in detail in the next section, net immigration would continue at a high level as shown by the dashed line in Figure 4.2. However, should the reality turn out to be close to the *Low Growth* scenario, consequent on a major readjustment in the US, immigration would gradually slowdown to around 10,000 a year. These two alternative scenarios have very different implications for the economy generally and for the housing market in particular. (The implications for the housing market are considered in more detail in Chapter 13.)

Today the economic dependency ratio (Figure 4.3) is at an all time low in Ireland and, under the *High Growth* scenario, it is set to fall even further, stabilising in the next decade at a rate of between

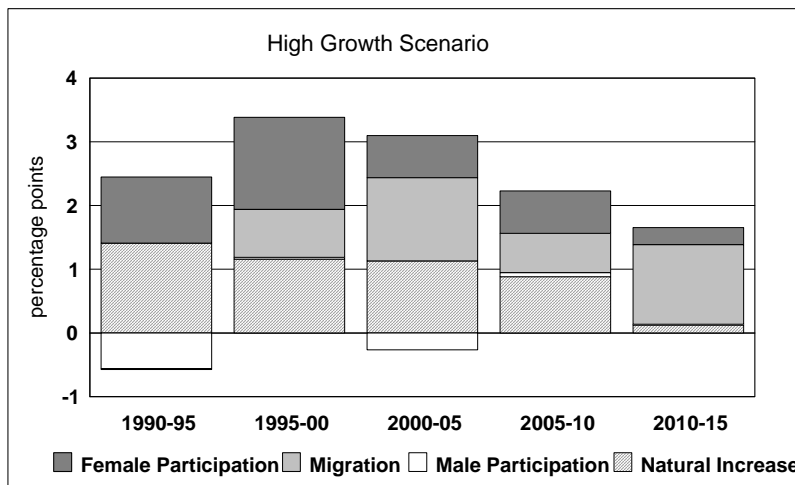
1.0 and 1.1. This means that every individual who is working will only have to support one other individual who is not. It is only after 2020 that the economic dependency rate will begin to rise. This turning point will be postponed a few years as a result of the considerable level of immigration envisaged as part of this scenario. However, the postponement will be very limited and the ratio will rise continuously from 2020 onwards. What this means is that Ireland faces an unusual demographic window of opportunity over the next fifteen years when dependency will be at an exceptionally low level. It will be important that public policy uses this demographic dividend to prepare for the long-term problems of rising old-age dependency over the following fifty years.

Figure 4.3: Economic Dependency Ratio



Turning to **labour supply**, it is driven by three main factors: the natural increase in the population, participation rates and migration. Over the last decade, these three factors have combined to produce an expansion in the supply of labour in the economy, causing it to increase from 1.44 million in 1995 to an estimated 1.96 million in 2005. Over the next decade, the rate of growth in the supply of labour is likely to decrease significantly, having important implications for the economy and for potential growth rates in particular. There is also likely to be a change in the relative weights of the different factors driving the growth in labour supply, with the role of the natural increase and rising participation rates decreasing over time and that of migration increasing, as illustrated in Figure 4.4.

The rise in female labour force participation, which played a very important role in the growth in labour supply in the 1990s, is likely to be much more limited in the future. This is because the increase already registered over the last ten years has meant that the pool of potential market entrants has become much smaller, with a large majority of the 25 to 64 year olds, particularly the younger members of this group, already in the labour force. Participation rates are now high by EU standards for women under 35 years, leaving little scope

Figure 4.4: Decomposition of the Growth in Labour Supply

for further increase. It is thus likely that much of the increase will come from the older age cohorts, whose participation rates are relatively low by EU standards. The educational attainment rates among these older women are substantially lower than those of woman under the age of 35, which will have implications for investment needs in the areas of training and life-long learning.

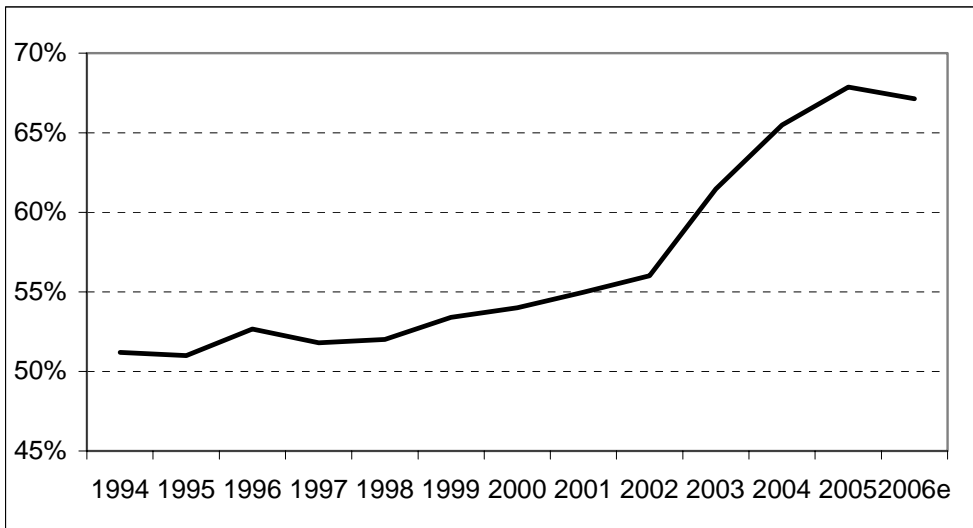
Male participation rates are not expected to contribute much to labour supply over the next ten years, while given the demographic changes already discussed, the role played by the natural increase is likely to fall significantly. On the other hand, it is anticipated that immigration will contribute around one percentage point a year to the growth in the labour force over the rest of this decade.

THE BUILDING AND CONSTRUCTION SECTOR

Over the past decade housing has become a key sector of the economy. The gross value of housing output (both new housing and repair and maintenance) was just over €20 billion in 2005, which is equivalent to 15.2 per cent of GNP, compared with 7 per cent in 1994. The economy is now very dependent on the housing sector. A strong housing market has a positive impact on the economy, not only through its direct contribution to GDP via new residential construction and home related purchases, but also through enabling home owners to extract equity from their homes to finance current consumption. Housing also influences activity and employment in the construction, financial and other business services sectors of the economy.

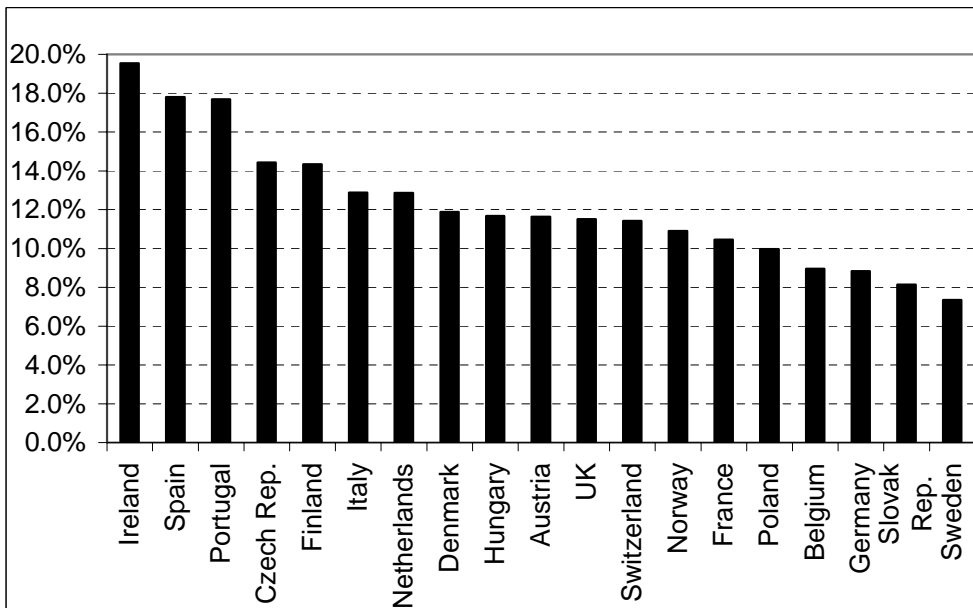
Residential construction is estimated to account for around 65 per cent of total construction output as against 51 per cent in 1994 (Figure 4.5). As a result the building and construction sector, measured in gross value added terms, represents around 18 per cent of GDP compared with an average of just over 11 per cent across 19 Western and Central European countries (see Figure 4.6).

Figure 4.5: Residential Construction Share of Total Construction Output (%) 1994-2006e



Source: DoEHLG, DKM.

Figure 4.6: Building and Construction as Percentage of GDP in 15 Western and 4 Central and Eastern European Countries, 2005e



Since 2002 the residential construction share of total construction output has increased considerably as Figure 4.5 illustrates. In the absence of any breakdown of the employment numbers between the individual sub-sectors of construction, we suspect that the strong employment growth in the sector can be attributed to the strong growth in residential construction activity. If

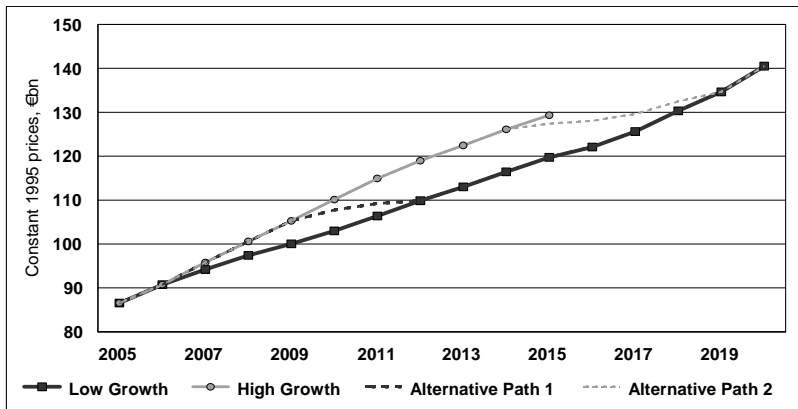
so, the economy is now very vulnerable to any slowdown in residential construction.

Our analysis of housing demand suggests that demand will remain at a high level over the medium term. Given the situation outlined above, it is important to ensure that Ireland is in a strong position to cater for the continued growth in demand without increasing the economy’s vulnerability to any overheating of the housing market and thus any potential housing crash which would adversely impact on the wider economy.

**4.2
Overview of
Economic
Outlook**

Against the external backdrop and the demographic profile outlined above, the *Medium-Term Review* (MTR) (Fitz Gerald *et al.*, 2005) presented two sets of forecasts for the Irish economy. The *High Growth* and the *Low Growth* scenarios describe two paths for the growth of GNP over the next fifteen years.¹³ Within the limits set by these two scenarios a range of possible adjustment paths exist. At some point, when and if the adjustment begins, the path of Irish GNP could switch from the *High Growth* to the *Low Growth* scenario. Possible paths for real GNP implied by these two scenarios are shown in Figure 4.7. Our conclusion is that by 2020 Ireland will end up closer to the lower growth path for GNP. However, when the economy will switch from the high growth path to the lower one, will depend on how long the necessary adjustment is delayed in the US. In analysing the prospects for the next NDP we use the *High Growth* scenario as a basis and later consider the implications for the NDP if the outturn should be closer to the *Low Growth* scenario.

Figure 4.7: Alternative Growth Paths for Real GNP



These alternative scenarios can be interpreted as an overview of the future prospects for the Irish economy over two horizons. In the first horizon, the seven years 2007 to 2013, if the US economy does not adjust over this period, the Irish economy could grow at a

¹³ These two paths for GNP do not represent “confidence limits”. It is quite possible that GNP could perform better than in the *High Growth* scenario or worse than in the *Low Growth* scenario.

rate slightly above its long-term potential growth rate, averaging 4.4 per cent per annum. However, such a strong rate of growth, and the attendant high immigration flows it would require to maintain sufficient labour supply, will put strong pressure on the capacity of the economy to accommodate such growth, particularly in the housing market and the delivery of infrastructure more generally. In addition, the Irish labour market has been operating at close to full employment for a number of years so that a further seven years of strong growth and low unemployment, coupled with rising congestion costs, could see the emergence of a wage-price spiral which would eventually challenge the competitiveness of the economy.

The *High Growth* scenario provides a forecast for the Irish economy assuming that the current pattern of growth in the rest of the world continues. Here we use this forecast as the basis for our analysis of the potential impact of the NDP on the economy. On this basis it seems likely that the economy will show quite robust growth out to the end of the decade (Table 4.1). This should see living standards, measured in terms of the more appropriate indicator of GNP per head, also rising quite rapidly by around 3.4 per cent a year. The growth in output per worker (productivity), which has been particularly slow over the first half of the decade, is expected to grow at 2.5 per cent a year out to 2010, more in line with the pre-1995 experience. The growth in wage rates is expected to be between 4 and 4.5 per cent a year for the rest of the decade. Given that the rate of inflation is expected to remain close to 2 per cent a year, this should see continuing significant rises in real wage rates.

Table 4.1: Forecast Summary, *High Growth* Scenario

	1990-95	1995-00	2000-05	2005-10
	Average Annual Growth, %			
GNP	4.4	8.8	4	4.9
GNP per head	3.9	7.7	2.2	3.4
GNP per worker	2.5	3.7	0.9	2.5
Non-Agricultural Wage Rates	4.4	6	5.5	4.3
Consumption Deflator	2.7	3.2	3.4	2.1
Employment, April	1.9	5	3.1	2.4
Labour Force, April	1.9	3.4	2.9	2.3
For end Year:	1995	2000	2005	2010
Net Immigration, thousands	-2	26	53	31
Unemployment rate, ILO Basis %	12.2	4.3	4.2	3.6
Balance of Payments, % of GNP	3.2	-0.3	-1.8	0.1
General Government Balance, % of GNP	-2.3	5.1	-0.6	0.3
Debt/GNP Ratio ¹	83.6	34.3	22.4	17.2
Housing Completions	31	50	79	70
Greenhouse gas emissions relative to 1990	8.2%	28.2%	30.1%	32.4%

¹ The National Pension Reserve Fund has been netted off the debt.

In this forecast the Government is assumed to maintain a small surplus over the forecast horizon. (Of course, funding the NDP at a level to be agreed will have implications for the public finances. This issue is dealt with when we analyse different scenarios on the NDP.) As a result, the net indebtedness of the Government sector will fall. The external balance should remain close to zero in spite of the continuing high level of investment in housing.

After the spectacular employment performance of the recent past, growth is expected to revert to a more normal rate of around 2.4 per cent a year out to 2010. This growth should be accompanied by a small fall in the unemployment rate. With the supply of labour domestically slowing, this will require a substantial continuing net inflow of skilled labour from abroad. However, the fact that GNP per head is expected to rise quite rapidly would suggest that the additional growth which is made possible by the immigration of skilled labour will enhance the living standards of the population as a whole.

After 2010, under this scenario, increasing pressures build up within the economy resulting in accelerating inflation, in terms of both prices and wages, and a serious loss of competitiveness. The tightness of the labour market is reflected in the continuing fall in the unemployment rate. The housing market also shows pressures with a continuing very high level of output and corresponding improbably high prices. All this would suggest that even if the US growth were to continue unchecked, the Irish economy could begin to encounter serious problems early in the next decade as a result of a prolonged period of exceptional growth.

The likely gradual tightening of the labour market and the resulting growth in wage inflation after 2010 under this scenario is of serious concern. The loss of competitiveness could obviously have significant medium-term consequences for the economy. In planning the next NDP, one of the objectives should be to minimise any inflationary consequences from undertaking the necessary investment. Obviously, the infrastructure when completed will go to ease some of these inflationary pressures but the time scale of such projects could mean that the short- to medium-term consequences of undertaking the investment could, none the less, be inflationary.

4.3 Summary of Possible Shocks

While the *High Growth* scenario seems the most appropriate when looking forward to the end of this decade, there is a significant chance that the US economy will begin to adjust to its imbalances before the end of the planning horizon for the NDP. As a result, it is important to consider how the policy environment would be changed by a less favourable economic outturn. The objective should be to try and choose a path for the NDP that will be robust in the face of economic “surprises”.

THE LOW GROWTH SCENARIO

Over the longer term, the MTR argues that adjustment in the US economy is inevitable, albeit that the timing and scale of any such

adjustment is uncertain. In the *Low Growth* scenario it is assumed that the adjustment process is gradually spread over a number of years beginning in 2007. In practice, if it is to occur, the adjustment may be more of a short sharp shock. This could portend a much more unpleasant environment for the Irish economy in the year it happened, but provided that the sharper adjustment did not provoke a collapse in the domestic housing market the more rapid restoration of the world to a sustainable growth path could prove beneficial.

Table 4.2¹⁴ summarises the major aggregates under this *Low Growth* scenario out to 2020. The cost of an immediate US adjustment beginning in 2007 is reflected in a fall in the average growth rate of Irish GNP to 3.5 per cent per annum between 2005-10, well below the estimated potential growth rate of 4.4 per cent. This underperformance would continue in the opening years of the following decade with GNP growing at 3.1 per cent per annum out to 2015 against a potential growth rate of 3.5 per cent. Beyond 2015, as the US economy returns to a sustainable growth path and begins to grow again at near its long-term capacity, the Irish economy would also start to pick up. By the end of the next decade the Irish growth rate would exceed its potential, catching up on some of the lost potential output of the years of adjustment.

This finding is significant as it suggests that even if there is a less favourable than assumed economic outturn there is little danger that investment undertaken as part of the NDP will be “wasted”. The remaining infrastructure backlog is such that the optimal stock of public infrastructure will not have been attained by the end of the next NDP, still requiring a continuing elevated level of public investment out to 2020.

Table 4.2: Low Growth Forecast, Growth in Major Aggregates

	1995- 2000	2000- 2005	2005- 2010	2010- 2015	2015- 2020
Average Annual % Growth					
GDP	9.8	5.4	4.2	4.2	3.2
GNP	8.8	4.0	3.5	3.5	3.3
GNDI	8.2	3.5	3.1	3.1	3.4
GNP per head	7.7	2.2	2.1	2.1	2.2
Investment/GNP ratio	25.6	28.6	28.6	28.6	26.5
Personal Consumption	7.7	4.3	2.6	2.6	2.6
Employment (PES) – % change	5.0	3.1	1.5	1.5	1.4
Real after tax non-agricultural wage rates, %					
	2.8	2.3	1.5	1.5	1.3
Non agricultural wage rates %	6.0	5.5	4.1	4.1	3.2
As Per Cent of GNP	2000	2005	2010	2015	2020
Balance of payments surplus	-0.3	-1.8	-0.4	3.0	6.0
Debt/GNP ratio	34.3	22.4	18.6	15.5	12.5

The sluggish growth performance in the period after 2007 would lead to a rise in unemployment while the adjustment process was under way, and a gradual easing of wage inflation. The deterioration

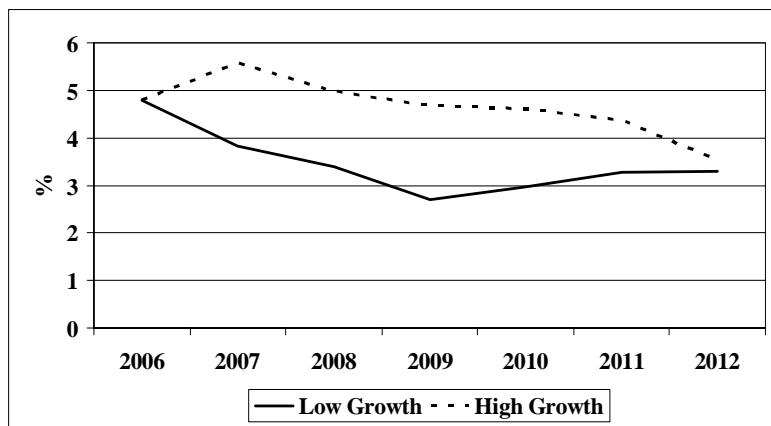
¹⁴ Tabulated results for the *Low Growth* scenario in this chapter are presented using five year averages since our focus is on the longer term.

in employment prospects and the reduced rate of growth in incomes would together feed into a low rate of personal consumption growth. Such a dampening of employment prospects relative to the past ten years would lead to an easing of net inward migration flows relative to those recorded in recent years. While some net immigration would be expected to continue, the inflow in 2010 would be less than half that recorded in 2005 and by 2020 net immigration flows could fall to around 13,000.

This scenario presents a more sombre picture of the prospects for the Irish economy over the medium term than in the case of the *High Growth* scenario. As shown in Figure 4.8, during the adjustment process for five years the growth in GNP would be significantly lower than in the *High Growth* case. However, after 2012 growth would be somewhat higher than in the *High Growth* scenario, although the lost ground of the 2007-2012 period would never be fully made up.

Under this *Low Growth* scenario, by 2010 the level of GNP would be almost 7 per cent lower than in the *High Growth* scenario with 90,000 fewer jobs. This sluggishness would be entirely attributable to external factors throwing the Irish economy off its current growth path. None the less, the results of the *High Growth* simulation point to emerging pressures in the labour market by the end of the current decade and suggest that even with a continued benign external environment internal pressures could lead to a gradual unwinding of Ireland's competitive position over the longer term.

Figure 4.8: Alternative Projections for Growth in GNP Per Head



SHOCK TO THE HOUSING SECTOR

In the Irish economy there is a considerable exposure to any disturbance affecting the building sector. In the *Low Growth* scenario there would be a rise in unemployment consequent on an economic slowdown in 2007, and such a rise could unsettle the confidence of the household sector. The demand for housing is particularly sensitive to changes in personal disposable income and the increase in unemployment could give rise to significant fears among many of those still employed about their job security. Given the high level of

indebtedness of the household sector, many households are not in a good position to sustain a prolonged loss of employment. Such a fall in confidence could precipitate a much more dramatic internal adjustment process affecting the building and construction sector. Some of those who lost their jobs could be forced to sell on a market where many potential buyers were holding off buying until their own personal position was clarified. Even if the number of forced sales were limited, the consequence could be a major fall in house prices over a short period of time.

The MTR examined what would happen if just such a sudden loss of confidence did occur in Ireland by calibrating a housing price shock with an illustrative fall in house prices of approximately a third. A fall in house prices of this magnitude would be within the range experienced in many other countries in the past. This illustrative fall in house prices would contrast with the steady small rise in prices of 2 per cent a year envisaged in the *Low Growth* scenario. This stylised treatment of a housing shock assumes that it begins in 2007. However, if it happens at all, it could occur at any time over the course of the next NDP.

Such a sudden large decline in house prices would precipitate a rapid adjustment in the output of the building industry. Builders would see their profits turning to losses and they would rapidly adjust their activity rate. Instead of housing completions falling from their peak of between 70,000 and 80,000 next year to around 62,000 in 2010 as in the *Low Growth* scenario, they would fall to under 40,000 in 2009 in the housing shock scenario. This would represent a near halving of output over a three-year period. Such a fall in output would, in turn, trigger a very large cumulative fall in employment in the building and construction sector of 15 per cent spread over 2007-09.

Given that the building sector now represents a very large share of the economy, accounting for almost 10 per cent of GVA in 2004 and almost 13 per cent of total employment, such a large shock to that sector would have major consequences for the economy as a whole. GNP would grow by only just over 1 per cent in the first year (here assumed to be 2007) as a result of the collapse of the housing market and it would grow at less than 3 per cent in the second year of the shock, 2008. It is only from 2009 onwards that the economy would begin to recover with the growth in GNP per head rising more rapidly than in the *Low Growth* case. The consequence of this would be that unemployment would rise very rapidly to 10 per cent or more from 2008 to 2010. Such a large rise in the unemployment rate would further damage confidence in the economy and increase uncertainty about the future.

Many of those who would lose their jobs as a result of such a downturn would seek employment outside of Ireland provided that the rest of Europe did not also suffer as serious a decline in output. The consequence would be that by 2010 net immigration would almost cease, further reducing the potential demand for dwellings. This reduction in immigration would see a reduction in the population below the *Low Growth* scenario.

These simulations suggest that the worst effects of the downturn in the housing market would be felt in the first two years. After three years the economy would be beginning to recover. An important part of the recovery would be a very much lower growth in wage rates than is assumed in the *Low Growth* scenario. The reduction in the rate of increase in nominal wage rates, with a small fall in nominal wages in 2010, would be a consequence of the very high rate of unemployment. By contrast with the 1970s and the 1980s, today we see a significant Philips curve effect, with wage rates responding to unemployment and growing at a slower rate. This would help improve the competitiveness of the economy in the period after 2010. However, even with an improvement in competitiveness it would be some considerable time before employment growth in other sectors of the economy would come to replace the jobs lost in the building sector. It would probably take about five to seven years for the economy to recover fully from this very substantial shock, returning employment to near the level it would have attained without the collapse in housing prices.

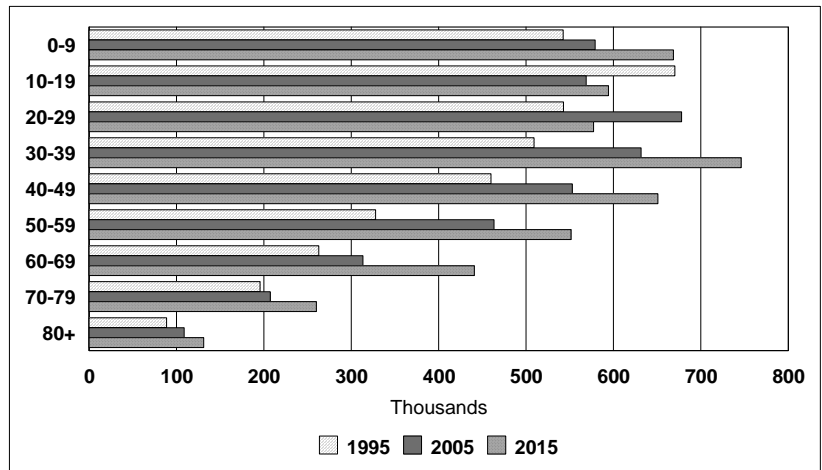
4.4 The Context for the Plan

DEMOGRAPHIC PROFILE

Over the course of the next NDP the population structure will remain broadly favourable. However, some changes in the demographic profile (Figure 4.9) will have significant implications for youth-related spending, such as provision for education and childcare. Demographic trends also have important consequences for the housing market, which are dealt with in Chapter 13. Finally regional demographic changes can have a major impact on infrastructure needs, especially on transport and housing.

The rise in the birth rate since the mid-1990s means that the number of young people of school going age will increase over the course of the next NDP. The impact of demographic change will have substantial implications for education expenditure even if there is no improvement in service quality or if participation rates remain unchanged. Between 2007 and 2012 the number of children of primary school age is projected to increase by 11.6 per cent or by 46,000, compared to a more modest increase of 1.5 per cent in the 5-year period prior to that (Table 4.3). Between 2001 and 2006 the number of individuals of secondary school age (between 13 and 18 years) fell by 8.1 per cent, however the magnitude of this decline is unlikely to continue and we anticipate that the number of people in this age cohort is likely to stabilise between 2007 and 2012. The decline in the birth rate from 1980 to the mid-1990s means that the number of individuals between the ages of 19 to 22 years is likely to continue declining over the course of the next NDP. Although the impact of demographic change may moderate spending pressure for third-level education, rising participation rates are likely to offset this.

Figure 4.9: Population Structure



Source: Medium-Term Review 2005-2012 (2005).

Table 4.3: Projected Change in Population of School Going Age, Thousands

	2007	2008	2009	2010	2011	2012	Percentage Increase Between	
							2001 and 2006	2007 and 2012
							%	%
Between Ages of 6 and 12	395	401	412	421	431	441	1.5	11.6
Between Ages of 13 and 18	337	333	331	330	331	336	-8.1	-0.1
Between Ages of 19 and 22	245	238	234	231	229	227	-5.2	-7.4

Source: ESRI Demographic Model.

Demographic change will also have a big influence on the demand for childcare in the future. The Childcare Census reports that 57,000 children were in centre-based childcare in 1999-2000. Current figures suggest that by the end of the current NDP the numbers will meet the revised target of 31,000 childcare places. Combining our population projections for the number of children with the forecast percentage requiring centre-based care (see Chapter 22, Table 22.3) means that 137,000 places will be required by 2012. This means that over the period of the next NDP an additional 57,000 places will be required.

An increase in the provision of childcare facilities of this magnitude will necessitate a marked increase in childcare employment. Sexton *et al.* (2004) indicate that employment in childcare and related services will increase by 117 per cent or by 16,000 over the period 2001 to 2010. Traditionally individuals with lower levels of educational attainment (Junior Certificate or less) have accounted for a significant number of those at work in the childcare sector, although more recently an increase in the educational attainment of childcare workers has been observed. In 2000 around 40 per cent of those employed in childcare and related services were low skilled, this proportion has been falling steadily and in 2004 stood at approximately 20 per cent. This has implications for the opportunity cost of high skilled workers going

forwards and may lead to substantial upwards pressure on wage rates in that sector.

As discussed above, rising female labour force participation rates, which were pivotal to the growth in labour supply in the 1990s, will continue to be an important source of future labour supply growth, albeit contributing less to labour supply growth than before (see Figure 4.4). At present the employment rate for women with children under the age of 5 years is 55 per cent and their activity rate is 58 per cent. Any changes in future female participation rates will be affected by public policy; in particular, the participation rates of mothers will be affected by the availability and conditions of childcare. In addition, whether the individual or the State pays for the cost of childcare will have a significant impact on female participation rates.

Finally, the rapid economic growth envisaged over the next fifteen years will be accompanied by a substantial increase in the population, especially the population of working age. The implications of this for the housing market are dealt with later in Chapter 11. However, the composition of the growth will also have implications for the nature and location of the physical development that is likely to take place.

CROWDING OUT

As discussed above, over the last decade the building industry has seen a sustained boom. Housing completions have risen every year since 1993 to their current peak of around 80,000 units. As a result, as shown in Figure 4.10, the share of GNP accounted for by investment in building and construction at 22 per cent in 2005¹⁵ was at an all-time high. While that investment includes a substantial input of materials and services, the bulk of those materials were also sourced domestically. Thus the share of the economy accounted for either directly or indirectly by building and construction is very large. It is much greater than the share that is found in other developed economies and reflects the huge effort being made by both the private and the public sector to rapidly increase Ireland's capital stock.

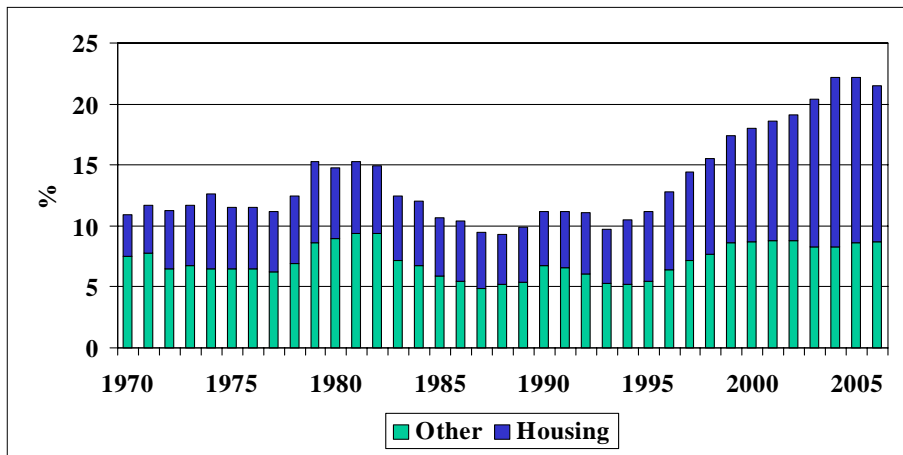
While to some extent this dramatic rise in output share has been facilitated by immigration, the bulk of the additional resources required to accommodate the increase have had to come from other sectors, leading to a reallocation of resources within the economy. While jobs in manufacturing and building are not necessarily interchangeable, it is often the case that they require the same basic level of educational qualifications. As a result, over time, this reallocation of resources can occur when new job market entrants choose employment in the building industry rather than replacing those retiring in the manufacturing or services sectors. The boom in

¹⁵ This differs from the building sector's value added as it is calculated as the gross output of the sector (total investment in building and construction) including all the materials and services used by the sector.

the building sector has meant that a significant share of new labour market entrants have chosen the building and construction sector over manufacturing or services. For example, the number of students doing civil engineering has increased while the numbers doing electrical and electronic engineering has fallen.^{16, 17}

The key signal to the labour market about the need to reallocate resources has been changes in relative wage rates. In Ireland, the building and construction sector has seen a rapid rise in wage rates relative to the rest of the economy. This has gradually bid resources away from other sectors. The resultant reduction in the supply of labour available for sectors such as manufacturing has meant that employers there have had to compete by also raising their wages. This has seen some attrition as firms have closed being unable to sustain the higher labour costs.

Figure 4.10: Building and Construction Sector as Per Cent of GNP



This natural process whereby an economy reallocates resources to areas where prices signal that the value of output is greatest does not pose a problem if the change in sectoral composition of output is expected to be permanent and sustainable. However, in the Irish case the share of resources devoted to building and construction is very much higher than the norm for developed economies. In the long run the output of the building sector will fall. As a result by 2020 that sector will account for a much smaller share of national

¹⁶ A crude comparison of total number of undergraduate students enrolled in civil engineering and electrical and electronic engineering for 1999 and 2003 using HEA data shows that the number of civil engineering students increased by 20 per cent while the number of electronic and electrical engineering students fell by 5 per cent.

¹⁷ In the case of Ireland, what we do know is that those who lost their jobs over the last five years have found suitable employment elsewhere, albeit maybe not in the building industry. In turn some of those jobs may have been vacant either because previous incumbents had found employment in building or else, more likely, because school leavers who would previously have chosen an alternative career path, instead chose the building industry.

output than today. This will necessitate a rise in the share of the output of the economy produced by other sectors including the tradable sector, both manufacturing and market services.

If the fall in the output of the building and construction sector occurs suddenly, it may be very difficult to rapidly move resources back to manufacturing or services sectors. The businesses that may be forced to close because they are no longer competitive as a result of the increase in wage rates may not reopen quickly if labour market pressures ease. The result could be a substantial period of unemployment (and reduced immigration or even emigration) as the economy gradually adjusts.

In addition, a further concern exists about the sustainability of the current exceptional allocation of national resources to building and construction. As already discussed, the result of the higher cost base of the Irish economy arising from the building boom is that many firms in the tradable sector have been forced to close. If Ireland were financing all of the investment in construction without significant foreign borrowing this would not be a major problem. However, there are signs that the counterpart to the squeezing of the tradable sector of the economy is that the balance of payments deficit is deteriorating. If such a deterioration were to continue indefinitely, requiring an ever-increasing capital inflow to finance the exceptional level of investment, the situation could eventually become unsustainable. While as yet this is not a major problem, it raises concerns that having seen the closure of significant sections of the tradable sector of the economy to make room for increased building activity, the reversal of this process at some date in the future could prove costly and take some considerable time.

Finally, the building and construction boom, even if it sucks in additional resources from outside Ireland, is putting pressure on the economy by increasing congestion and adding to pressure on existing infrastructure. Returning emigrants and immigrant workers need accommodation to live here, contributing to pressure on rents and housing prices. The workers in the sector have to commute to work and the building and construction sector needs large volumes of materials (and equipment) to move around the country thus putting additional pressure on roads, transport infrastructure, and the environment. A substantial part of the waste stream generated by the economy each year comes from the building and construction sector. All of these environmental pressures add to costs and, in turn, this puts pressure on the tradable sector of the economy.

Looking forward to 2013, the *High Growth* scenario shows little sign of an easing in the high level of building and construction activity. As a result, wage rates will continue to rise more rapidly than in our EU partners. This trend loss of competitiveness could become even more marked if the *High Growth* scenario persists after 2010 out to 2013. The MTR suggests that such a continuation could see some further acceleration in the rate of wage inflation reflecting increasing labour market pressures.

This is the context in which the next National Development Plan must be viewed. The key concern will be how ambitious a NDP the

economy will be able to deliver without putting even greater pressure on the tradable sector of the economy through labour market tightening. At its simplest, the pressure that the delivery of the NDP will put on the economy can be gauged by considering its effects on the share of the economy accounted for by the output of the building and construction sector.

UNCERTAINTY ABOUT FUTURE GROWTH

The analysis above suggests that under the *High Growth* scenario the key issue is the ability of the economy to deliver the required level of investment in infrastructure. The constraints are likely to be the ability of the building and construction sector to produce the required output without serious inflationary consequences for the economy as a whole. The ability of the Government sector to finance any likely required level of investment is not in doubt under this scenario.

The *Low Growth* scenario, in particular when combined with a housing shock, portrays a very different picture of the economy. Under such circumstances the growth in the years immediately following such a shock would be well below that envisaged in the *High Growth* scenario. The analysis in the MTR shows that, with appropriate policies, the economy would be likely to recover in the medium-term making up some of the lost ground. Even under the *Low Growth* scenario the average growth in output (and output per head) to 2020 would still be very significant. This suggests that even with a negative shock to the economy, reducing growth below potential, there will still be a need for very substantial investment in infrastructure.

While this analysis would suggest that the infrastructure gap is sufficiently large that it will not be closed over the period to 2013 no matter what the likely outturn in terms of growth, there must be concern about the ability of the Government sector to finance a high level of investment in the face of an albeit temporary downturn. Simulations with the *HERMES* model suggest that even with an accommodating fiscal policy, where the deficit was allowed to rise as a result of the shock, the General Government Borrowing would peak at a deficit of under 3 percentage points of GNP or GDP. If the shock were to occur in 2007 the peak effect on Government borrowing would be in 2009. Thereafter, as the economy recovered, the public finances would gradually return towards their original path. However, the debt GNP ratio would end up between 10 and 15 percentage points higher than under the *High Growth* scenario. While undesirable, this would not pose major long-term dangers for the economy.

What these simulations suggest is that choosing the appropriate NDP profile based on the *High Growth* forecast will be close to a “no regrets” policy. Even if the economy is subsequently hit by unexpected unpleasant shocks, provided that an appropriate policy stance is adopted, there should be no need to reconsider the planned infrastructural expenditure. However, as discussed above, prudence

would suggest that maintaining a tight fiscal stance under the *High Growth* scenario would be appropriate. Building up a financial reserve to be used to fund the NDP in case of unexpectedly low growth would provide an important insurance against shocks. Also, as discussed below, a tighter fiscal policy today, especially if it is achieved by taking money out of the building sector, would reduce dangerous inflationary pressures under the *High Growth* scenario.

5. MACROECONOMIC IMPACT

There have been three National Development Plans (NDPs) since 1989; the third of these, covering the period 2000-2006, is now nearing completion. This report considers the preferred composition and the likely impact of the fourth NDP covering the period 2007-2013. Over the course of the previous three plans the prioritisation of different investment channels has slowly evolved. Throughout the three NDPs considerable importance has been attached to developing human capital. As a result, Ireland devoted a higher proportion of its EU Structural Funds to this task than did the other cohesion countries (Fitz Gerald, 2006). In the first two NDPs, covering the period 1989-1999, continuing attention was devoted to support for private sector investment, as well as some income support. However, in the third NDP, which is nearing completion, these supports were substantially reduced in importance and much greater emphasis was given to investment in physical infrastructure – both in transport and environmental services. The analysis in the *Mid-Term Evaluation* of the current NDP (2000-2006) showed that even after all the progress of the last fifteen years, the infrastructural constraint remains the key priority area for further investment (Fitz Gerald *et al.*, 2003). The substantial role that these NDPs have played in facilitating Ireland’s economic success and the strategy for the next NDP is reviewed briefly in Section 5.1.

A crucial issue in considering the appropriate size and configuration of the next National Development Plan (NDP) is the macroeconomic context in which it is to be implemented. This context will determine the infrastructure needs that the NDP must address; the rapid growth of the last decade has meant that the economy has, in a sense, “outgrown its clothes”. The prospect of continuing significant growth over the coming decade means that these infrastructural needs will continue to grow. However, delivery of the NDP investment will require major resources, so that the macroeconomic context will itself affect the cost of the planned investment.

In Section 5.2 we outline briefly our “recommended NDP” which is based on the detailed analysis of individual programmes, covered in later chapters. This “recommended” profile takes account of the supply constraints that the macroeconomic analysis in Chapter 4 has raised.

The potential effects of the 2007-2013 NDP on the output capacity of the Irish economy in the longer term are examined in

Section 5.3. This analysis compares the likely trajectory of economic growth over the next fifteen years where the “recommended” NDP is implemented against the counterfactual where the NDP is not implemented and the infrastructural constraint proves ever more restrictive on growth.

If the necessary infrastructure could be bought ready-made from a supermarket then the optimal strategy would be to undertake the investment very rapidly. However, the bulk of the infrastructure has to be produced domestically, in particular by the building sector. This means that the more rapid the deployment of new infrastructure the greater the share of national resources that have to be diverted away from other sectors of the economy to produce the infrastructure. In Section 5.4 we consider the implications of undertaking an even more ambitious investment programme and compare the results to those of the “recommended” NDP analysed in Section 5.3. In this case the more ambitious programme considered is that outlined in the *multi-annual capital investment framework* (MACIF), published in *Budget 2006*. The results of this analysis suggests that such an ambitious programme, if delivered without accompanying fiscal measures, would produce unacceptable inflationary pressures.

Section 5.5 provides some conclusions concerning the next NDP and the capacity of the economy to deliver an appropriate level of investment.

5.1 Strategy of Previous National Development Plans

The evolving priorities of successive NDPs reflected the changing needs of the economy over the last seventeen years. The recent *Mid-Term Evaluation of the National Development Plan and Community Support Framework for Ireland 2000 to 2006* (Fitz Gerald *et al.*, 2003) suggested a high rate of return on investment in human capital and in physical infrastructure (see also the discussion of these results in Chapter 2). However, it suggested that there was a generally lower rate of return on aid to the private sector, with the exception of support for R&D. This reflected the limited evidence of continuing market failure that would justify such aid. As a result, it was recommended that funding be redirected to human capital and physical infrastructure over the remainder of the current NDP. This recommendation remains appropriate for the next NDP.

The strategy of targeting investment in physical infrastructure has evolved over time. In the second NDP, covering the period 1993-1999, the importance of developing the primary road system was given priority. The key justification for this prioritisation was that the existing poor roads infrastructure placed a constraint on normal economic activity, in particular on the activity of firms involved in exporting (Fitz Gerald and Keegan, 1993) (Fitz Gerald and Shortall, 1998). To ensure good value for money a methodology was developed by the National Roads Authority (NRA), which allowed for the prioritisation of the roads investment on a systematic basis. The methodology remains as relevant today as when it was used to

prioritise investment under the current NDP. (Fitz Gerald *et al.*, 2003.)

By the late 1990s it was becoming apparent to many economic agents, including all the social partners, that the poor quality of all transport infrastructure was constraining economic development, not just because it posed obstacles for exporters, but also because it was affecting labour supply (Fitz Gerald *et al.*, 1999). This latter effect was due to rising commuting times and the limited supply of housing at reasonable cost in the vicinity of the growth poles for new employment.

This does not mean that the emphasis on investment in upgrading the national primary road system was wrong. On the contrary, with the benefit of hindsight it would probably have been appropriate to have invested even more Irish taxpayers funds in the second half of the 1990s in upgrading the road system than was actually the case. However, the changing economic circumstances meant that there was also a growing need to provide the public infrastructure necessary to allow the rapid development of sustainable cities. In particular, there was a need to focus more on investment in public transport, as well as completing the necessary upgrading of the environmental services infrastructure to facilitate the huge private sector investment in housing. The absence of appropriate public transport infrastructure was perceived as having a serious negative impact on labour supply, affecting overall competitiveness (Fitz Gerald *et al.*, 1999).

The current NDP has prioritised the completion of the urban primary road system, which will now be achieved during the course of the next NDP. This is still the top priority for investment in physical infrastructure because the completion of the final links in key networks, such as the roads system, produces particularly high returns.

An increased priority has been accorded to public transport in the current NDP, although, as indicated in the *Mid-Term Evaluation* (Fitz Gerald *et al.*, 2003), there were concerns about the process of project selection and related concerns about value for money. None the less, the importance of developing the necessary public transport infrastructure to support in a sustainable manner the prospective economic and demographic expansion was acknowledged as is the case with major roads investment. A comprehensive system for prioritisation of public transport investment is necessary.

In the *ex ante* study for the second NDP (Fitz Gerald and Keegan, 1993) concerns were expressed about the prioritisation of environmental services investment, which was primarily driven by the need to comply with the EU Urban Waste Water Directive (UWWD) rather than by Irish environmental priorities, or the need to provide for prospective economic development. As a result, despite major investment in the intervening period, there remain serious problems with pollution of rivers and lakes and there is also a need for additional investment to provide water for new residential and commercial developments. None the less, since Ireland is now largely compliant with the EU directive, these priorities can be

funded within a reduced envelope for investment in this area in the next NDP.

The report on investment priorities (Fitz Gerald *et al.*, 1999), which preceded the current NDP, identified for the first time a major role for investment in research and development. The importance of such investment in building competitiveness has more recently been acknowledged in the Lisbon Agenda. Investment under this heading has risen rapidly under the current NDP and it will remain an important objective for funding under the next NDP (albeit, that the sums involved are small when compared to areas such as transport). Going forward it will be necessary to ensure value for money for such investments, particularly through increased commercialisation (see Chapter 19).

Investment in human capital – both in training and education – has been central to all three NDPs. The analysis of investment in human capital has been complicated by the fact that much of primary and secondary education has not been treated as part of the NDP process. The research evidence continues to point to the importance of raising educational attainment, especially for early school leavers (see Breen and Shortall (1992) and Bergin and Kearney (2004) on the economy-wide returns to investment in human capital). Because the numbers in the first and second-level systems have declined and the numbers of young adults are currently declining, the pressures on the educational system have been limited. This has allowed some increase in investment per head in human capital without requiring a major increase in funding under the current NDP. While the evolving demographics over the course of the next NDP will if anything ease pressures, especially on the third-level system, continuing economic development will require further investment in human capital. The importance of this form of investment in underpinning the success of the economy was analysed in the *Mid-Term Evaluation*, (Fitz Gerald *et al.*, 2003) and these results have been further examined in Bergin and Kearney, 2004.

While the overall strategy pursued under successive National Development Plans was appropriate, with the benefit of hindsight some limited problems can be identified. In the second NDP the level of investment, especially in transport infrastructure, was not sufficiently adventurous. In the current NDP the level of investment in physical infrastructure was, if anything, ramped up too rapidly with significant inflationary consequences. While the stance of fiscal policy under the first two NDPs was supportive of their objectives, under the current NDP fiscal policy has aggravated the inflationary consequences of the investment expenditure. This has reduced the albeit high rate of return below what might otherwise have been obtained. Finally, in programmes where there has been a major increase in levels of public investment in a short space of time there have in a number of cases been problems with project management.

For the next NDP the strategy remains rather similar to that identified in the *Mid-Term Evaluation* of the current NDP. There is a need to complete the investment in the major primary roads as soon

as possible. To provide for sustainable economic development over the coming decades there is a need to invest effectively in public transport serving major urban areas, especially Dublin. Investment in R&D and human capital also remains an important priority. With the achievement of compliance with the EU urban waste water directive there can be some slowdown in investment in that area in the next NDP. Generally, with the economy operating at close to capacity direct supports for the business sector ranging from manufacturing to tourism and agriculture should be phased out.

This report concentrates principally on the areas of infrastructure directly under state control. However, there are a number of other crucial areas where the infrastructure will be provided on a commercial basis – energy and telecommunications. In these cases the state has an important regulatory role to ensure that market failures do not prevent the crucial investment being undertaken within the necessary time scale.

As identified in Chapter 11, if the NDP is to address the infrastructural needs of the economy effectively a series of supporting measures will be required. Many of these measures were identified in previous reports (Fitz Gerald *et al.*, 1999 and Fitz Gerald *et al.*, 2003) but have not yet been fully implemented. The success of the next NDP will necessitate closer attention being paid to such measures if the best results are to be obtained from the planned huge investment programme.

5.2 Summary of Recommended NDP

One of the tasks of this report is to consider what level of public investment would be most appropriate given the likely trajectory of the economy over the coming fifteen years. While significant progress has been made over the current NDP in tackling the existing large deficit in infrastructure, it is clear that much more still needs to be done. If infrastructure could be bought ready-made and installed without cost then the answer would be somewhat simpler than is the case in the real world. The only task would be to determine the optimal stock of infrastructure, given its cost and likely rate of return. However, because the infrastructure has to be largely produced in Ireland it takes time to implement investment decisions. Also, because production of infrastructure uses up resources that could be used for other purposes there is an opportunity cost to undertaking the investment. Even if it can be shown that for an individual project the cost-benefit ratio strongly favours investing, because the cost is itself affected by the speed with which the investment is undertaken, the optimal time path for that investment is not necessarily clear. In some cases a slower implementation would so reduce the cost that this saving would more than offset delaying the benefits from the introduction of the new infrastructure.

In this section we set out a very brief summary of our recommended profile for the NDP. This recommended profile is built on the basis of the detailed microeconomic recommendations for individual investment categories set out in subsequent chapters.

Given the macroeconomic implication of the implied large investment programme the microeconomic recommendations also take account of the supply constraints that the analysis in Chapter 4 has highlighted. This “recommended” NDP, if implemented, would permit a major increase in the output capacity of the economy. It should allow for the completion of the ongoing programme to upgrade the key primary road system and it should also allow major improvements in public transport, though these will not be completed until close to the end of the next decade. The planned investment in education, training and R&D should prepare the labour force for the needs of the changing economy of the next decade.

The recommended profile for public investment assumes that no supporting fiscal policy measures are introduced to release extra capacity in the economy. As indicated later, if fiscal policy were tightened or special measures were taken to free up capacity in the building and construction sector in particular, an even more ambitious Plan could be entertained.

Where there is an enduring large infrastructure deficit we have also taken into account two additional considerations:

1. Sectors where the desired investment is increased at a particularly rapid rate are subjected to scrutiny. This reflects past experience showing that there can be serious project management problems with dramatic changes in the pace of investment.
2. Where the cost-benefit analysis is as yet incomplete it is premature to commit to large investment programmes. This applies particularly in the case of investment in environmental infrastructure and transport. In the case of transport, while a significant amount of work has been undertaken, there is as yet no comprehensive framework for assessing the costs and benefits of the full programme of investment considered as a whole (in contrast with the case of roads). There also needs to be a centralisation of the process of cost-benefit analysis, preferably under the aegis of the Department of Finance, to ensure a standardisation in approach.

Table 5.1 shows the broad outlines of the “recommended” NDP for 2007-2013. The key points in the recommendations are set out below.

As shown in Table 5.1, this report recommends a major increase in investment on transport. This should allow the completion of the programme of upgrading the primary road system over the course of the next NDP. It should also allow an ambitious programme of investment in public transport, which should provide for sustainable economic growth beyond the end of the next decade. However, this programme should be rear-end loaded within the next NDP, as the necessary analysis to support such a programme has not been completed and, previous dramatic increases in the tempo of investment in transport infrastructure have given rise to project management problems. As discussed later, this means that, as

envisaged by the Minister for Finance, all transport projects should undergo a rigorous cost-benefit analysis, preferably overseen by the Department of Finance. On the basis of this analysis, and assuming that the projects pass the required rate of return, the highest value projects should be undertaken during the course of the next NDP. Where projects pass the rate of return test but have a lower expected value they should be undertaken as part of the NDP beginning in 2014.

This report recommends a 10 per cent cut in expenditure on public investment in housing, not because such housing does not bring significant social benefits, but rather because the economy does not have the capacity to deliver such a higher level of investment without more severe inflationary consequences.

Table 5.1: “Recommended” NDP Government Capital Expenditure, €Millions

	2006	2007-2013, Annual Average at 2006 Prices Recommended
Transport	2,555	3,374
Housing	1,245	1,133
Public Administration	1,029	1,125
Health	645	721
Education	684	858
Enterprise Sector	601	521
Agriculture	214	174
Environment	590	497
Total	7,563	8,403

The investment in public administration has not been analysed in this report as it is not part of the NDP, though it is part of the Multi-Annual Capital Investment Framework (MACIF). The provision included above in Table 5.1 is taken from the *Multi-Annual Capital Investment Framework* (MACIF) published as part of *Budget 2006*. However, it has significance for the NDP because of the large size of the planned investment, nearly all of it in building and construction. It includes a provision of up to €1 billion over the course of the next NDP to provide for decentralisation. If the provision for investment in public administration could be substantially reduced it would release resources to be used elsewhere in the NDP.

For investment in health infrastructure there is provision for a volume increase for the “recommended” NDP. The rationale for this is shown later in Chapter 21.

This report also proposes a significant increase in investment in education infrastructure.

In the case of investment in the enterprise sector, including agriculture, but excluding R&D, it is recommended that expenditure should be cut back over the course of the next NDP. The role of the state is to provide the appropriate context for the business sector to operate. The direct investment by the business sector should then be determined by that sector depending on its likely commercial profitability. The same rules should be applied to the

energy and telecommunications sectors as to the rest of the business sector – no direct support by the taxpayer. With the economy continuing to run at capacity over most of the current NDP, the arguments previously advanced for providing direct support for commercial activity are further reduced.

This report also recommends a significant reduction in investment in environmental infrastructure. This recommended reduction takes account of the fact that the requirements of the EU Urban Waste Water Directive (UWWD) are now nearly achieved. In addition, the cost-benefit analysis to support such a continuing high level of investment is not as yet available.

5.3 Effects of Recommended NDP

In this section we examine the likely long-term impact of the “recommended” NDP on the macroeconomy. In undertaking this task we have considered in detail the channels through which the detailed programmes of investment, outlined in later chapters would impact on the economy. (The same methodology has been employed in this report as was used in Honohan (1997), Fitz Gerald *et al.* (1999) and in Fitz Gerald *et al.* (2003)). Here we consider in a stylised way the likely macroeconomic benefits of the “recommended” NDP. It is these permanent benefits, enhancing the productive capacity of the economy which should be crucial in prioritising individual investment projects in the next NDP.

In undertaking this analysis we first consider the short-term demand side impact of the investment, including the impact on inflation. This is important to establish the feasibility of the planned investment in the context of the prospect of continued rapid growth in the economy.

Having considered the demand side impact – the direct effects of spending the money – we then analyse the likely supply side impact of such an NDP – its *raison d'être*. This provides a measure of the return on the large sums of money to be invested as part of our “recommended” NDP.

All of this analysis is undertaken using the *HERMES* macroeconomic model. While necessarily unrealistic, we adopt the stylised approach used in all previous studies where the path of the economy assuming the NDP is implemented is compared to the counterfactual path it would follow if none of the investment in the “recommended” NDP were to take place. This stylised approach is necessary to identify the difference that the NDP makes to the Irish economy.

Obviously such an approach is utterly unrealistic – no Government would choose to undertake no capital investment. However, it does give an idea of the important long-term contribution to growth of the NDP process. With appropriate scaling these results can be used to estimate what the impact would be on the economy of a marginal increase or decrease in the NDP.

In the figures and tables shown here the effects of the NDP are shown as changes in levels compared to the stylised base of “no NDP”. Table 5.1 summarised the Government Capital Expenditure

elements of this “recommended” NDP and compared them to the allocations for 2006. Figure 5.1 shows the “recommended” NDP Capital Expenditure as a share of GNP over the period 2007-2013. On the basis of the macroeconomic scenario used, NDP Capital Expenditure would lie in the region of 4.5 to 5.2 per cent of GNP out to 2013.¹⁸

Figure 5.1: Public Capital Programme as Percentage of GNP

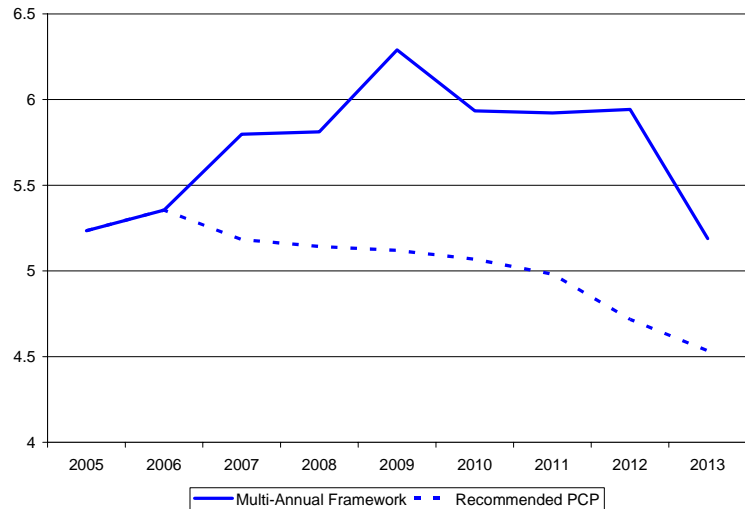
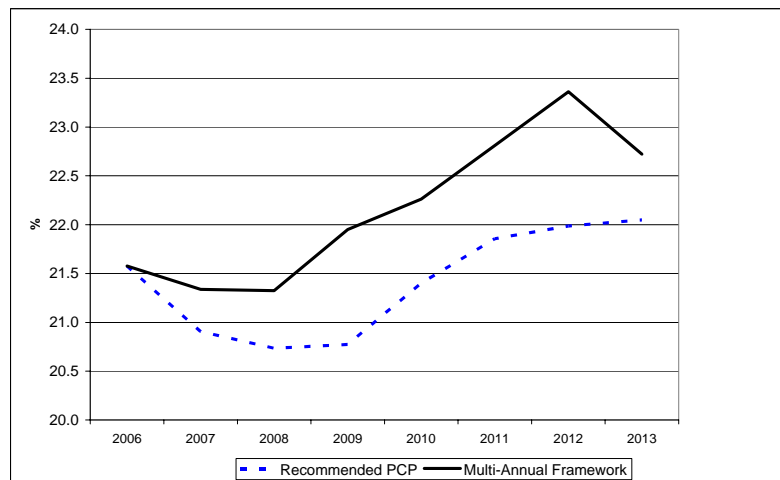


Figure 5.2: Investment in Building and Construction as Percentage of GNP



¹⁸ The figure also shows the higher *multi-annual capital investment framework* (MACIF, published with *Budget 2006*), level of investment discussed later in this chapter, which would see the share of NDP Capital Expenditure rising from its current high level of 5.4 per cent of GNP to 6.3 per cent by 2009.

Figure 5.2 shows the resulting aggregate level of building and construction investment in the economy as a percentage of GNP. This shows that under the “recommended” NDP, if the economy continues to grow rapidly compared to 2006, such investment will marginally increase its share of GNP by 2012. This analysis suggests that in the context of continuing rapid growth in the economy and a high level of private investment, the “recommended” level of investment under the NDP is probably as large as the economy can safely absorb.

The level of investment envisaged in the “recommended NDP” coincidentally turns out to be very similar in magnitude to the profile for public investment assumed in the recent *MTR High Growth* scenario. Thus, the outlook under the *High Growth* scenario, discussed above in Chapter 4, is consistent with this configuration for the NDP. The resulting forecast for the period to 2015 is shown in Table 4.1.

Under this scenario non-agricultural wages would rise at almost 7 per cent a year in the period 2010 to 2015. As discussed in the *Medium-Term Review* such a rate of growth would not be sustainable. This lack of sustainability would have more deep-rooted causes than the NDP and, as discussed in the *MTR* it is suggested that over the course of the next NDP the economy could find itself moving towards the *MTR Low Growth* scenario. However, as discussed above such a scenario would also be compatible with an NDP along the lines of that recommended in this report.

ASSUMPTIONS ON “RECOMMENDED” NDP

In this section we assess the full macroeconomic impact of the “recommended” NDP on the economy. We use the *MTR High Growth* scenario as the benchmark “with NDP” scenario, and then examine the effects on the economy with the NDP 2007-2013 expenditures set to zero. In addition to quantifying the demand side impact of the “recommended” NDP on the economy, we also estimate the crucial supply side effect of these investments, which can be regarded as a measure of the “rate of return” on the public investment. The supply side impact is the sustained increase in GNP (and other key variables) when the investment has been completed. It may take some time after the completion of the investment before the full supply side benefits are complete. The long-term supply side effect is the key measure of the success of the NDP over the longer term.

The “recommended” NDP is equivalent to an average of between 4.5 and 5.2 per cent of GNP per annum over the period 2007-2013 (Figure 5.1). This represents an important stimulus to the economy. In order to estimate the demand side effects of these expenditures we prepared stylised annual expenditure numbers as shown in Table 5.2. The largest single item of capital expenditure, 30 per cent of the total, is Government investment on transport infrastructure. Other significant items include current (16 per cent) and capital (14 per cent) expenditure on health and education and

investment in housing (11 per cent) and public administration (11 per cent).

Table 5.2: “Recommended” NDP 2007-2013, Current Prices

	2006	2007	2008	2009	2010	2011	2012	2013
Current Expenditure								
R&D	449	507	573	648	732	827	935	1,056
Education	1,795	1,829	1,864	1,899	1,935	1,972	2,009	2,048
Other Current	239	258	279	301	325	351	379	409
Total Current	2,483	2,594	2,716	2,848	2,992	3,150	3,323	3,513
Capital Expenditure								
Housing	1,245	1,168	1,232	1,310	1,401	1,495	1,595	1,698
Public Administration	1,029	1,143	1,159	1,178	1,206	1,239	1,280	1,325
Health and Education	1,329	1,401	1,705	1,710	1,745	1,783	1,821	1,871
Transport	2,555	2,725	2,923	3,299	3,756	4,214	4,294	45,70
Enterprise Sector	601	592	580	567	557	547	538	531
Agriculture	214	207	200	193	186	180	175	169
Environment	590	573	557	542	532	524	517	510
Total Capital	7,563	7,809	8,356	8,799	9,384	9,982	10,219	10,675
Total Expenditure	10,046	10,403	11,072	11,283	12,376	13,132	13,542	14,188

In considering the long-term impact of the “recommended” NDP on the economy we consider three main channels, namely, infrastructural investment (roads and public transport), human capital and aids to the private sector. We follow closely the methodology adopted in the mid-term evaluation of the previous NDP (Fitz Gerald *et al.*, 2003) as summarised briefly here.

As discussed in Fitz Gerald *et al.* (2003), p. 63, in quantifying the supply-side effect of roads investment, we apply an elasticity of 0.5 for manufacturing value added, and 0.25 for market services value added with respect to investment in roads. Combining these effects gives an implied realised rate of return on this investment of about 25 per cent. In addition to this direct productivity effect, the alleviation of congestion will reduce consumer costs. To capture this we include a realised rate of return (1.25) on this investment applied to consumer prices. In quantifying the effect of public transport investment we apply a rate of return of 7.5 per cent, similar to that used in the previous *Mid-Term Evaluation* (Honohan, 1997). Because of the major share of the NDP expenditure to be devoted to this type of investment it would be appropriate to undertake further research into the appropriate rate of return to use in future. This feeds through directly into an increase in output potential in the market services’ transport and communications sector.

Human capital investment includes all expenditure on education and training. These investments will raise educational throughput, with consequent increases in skilled labour, a fall in the skilled/unskilled wage rate and a rise in labour force participation. This is estimated to lead to a cumulative total productivity increase of around 0.6 per cent. We implement this long-term productivity increase in the *HERMES* model in both the manufacturing and

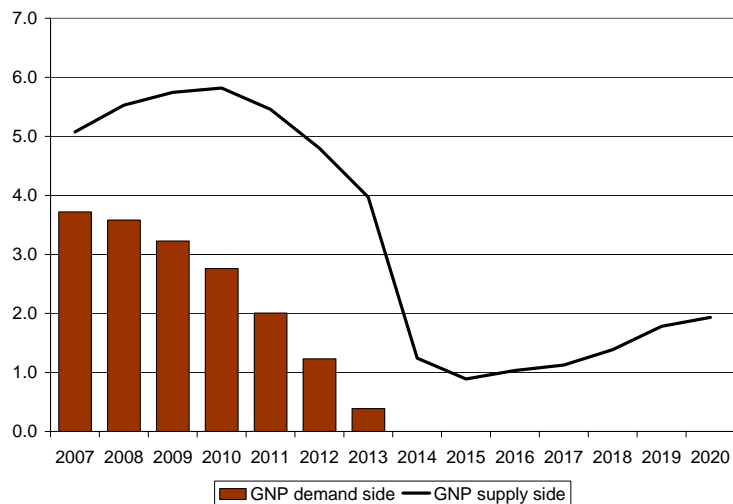
market services sectors, introducing it gradually until it reaches its full impact in 2020. Because there is a time delay involved in the education and training process, we only begin to implement this productivity effect in 2013.

Finally spending on R&D and investment in the enterprise sector are both treated as an aid to the private sector helping to stimulate investment, thereby increasing productivity and reducing costs. This investment is assumed to have a long-run return, similar to that used in previous *Mid-Term Evaluations* of about 7.5 per cent (Fitz Gerald *et al.*, 2003, Honohan, 1997).

DEMAND SIDE EFFECTS

Figure 5.3 summarises the results for the demand and the supply side effects. Here we first consider the short-term demand side effects. These effects are calculated against the stylised base of “no expenditure”.¹⁹ The cumulative demand side effects of the NDP raises GNP by less than one half of a percentage point by 2013. However the supply side effects²⁰ are substantial and lead to an increase in GNP of almost 2 percentage points by 2020. As is clear from the graph, the full supply side effects are not even complete by 2020. In the very long run the increase in GNP would probably settle at somewhere between 2 per cent and 3 per cent.

Figure 5.3: Total Effects of the “Recommended” NDP on GNP



The cumulative demand side effect of the “recommended” NDP on GNP is very small by 2013 at under 0.5 per cent above the base line. Initially the impact is sizeable, in the first two years GNP is more than 3.5 percentage points higher than in the base. This is closer to the initial demand-side injection; while the actual size of

¹⁹ The need to use this counterfactual as the baseline for the estimation of the effects of the NDP was discussed earlier.

²⁰ These supply side effects include the demand side effects in the period 2007-2013.

the “recommended” NDP is in the order of 5.0 per cent per annum, the demand-side impact in an open economy will be lower due *inter alia* to leakage through imports of capital goods and material inputs.

However, the positive demand side impact declines very rapidly in magnitude in the ensuing years because of the inflationary effect, principally on wage rates. The rise in building employment leads to a strong growth in wages, leaving the level of non-agricultural wage rates almost 20 percentage points higher than would otherwise be the case by 2013 (Table 5.3). This in turn reduces competitiveness dramatically and leads to crowding out of the manufacturing sector. Notably the “recommended” NDP has a negative impact on manufacturing employment in the short term, which will be 55,000 lower by 2013. This crowding out effect is much stronger than in any of the previous NDPs.

The dramatic difference between demand side effects in this NDP relative to results in previous studies prompted us to explore further the reasons why this is occurring, starting with the hypothesis that this is being driven by a strong crowding out effect, which implies that the key constraint lies in the labour market. To investigate this we simulated the demand side effects of the “recommended” NDP holding the unemployment rate constant. This should prevent a rapid rise in wage rates (through the Philips curve), the cause of the deterioration in competitiveness in other sectors of the economy.

The results are shown in Figure 5.4. They suggest that the demand side effects of the “recommended” NDP on GNP (2.4 per cent) would be around 2 percentage points higher by 2013 were it not for the labour market constraint. This is because the tightness of the labour market means that increased demand tends to feed into increased wages. In the past when we assessed the likely demand impact of previous NDPs there was greater spare capacity in the economy and the inflationary consequences of any demand stimulus was much more attenuated.

Figure 5.4: Effects of Labour Market Constraint on GNP Effects of the “Recommended” NDP

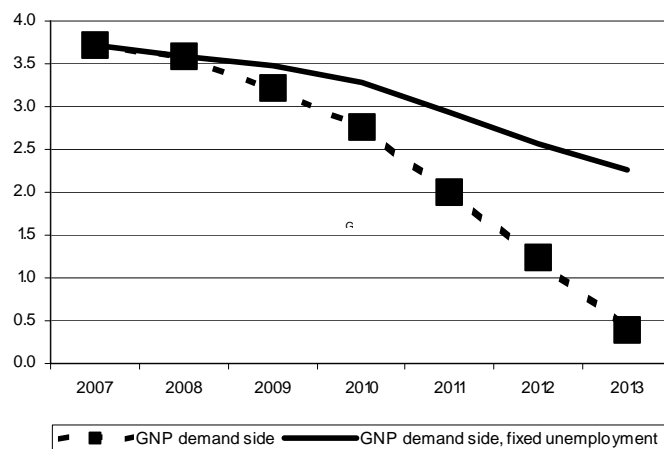


Table 5.3: Short-Run Effect of the “Recommended” NDP on Key Variables

	2007	2008	2009	2010	2011	2012	2013
GDP (%)	3.9	3.8	3.6	3.2	2.5	1.8	1.1
GNP (%)	3.7	3.6	3.2	2.8	2.0	1.2	0.4
Balance of Payments as % of GNP	-3.5	-3.7	-4.1	-4.7	-5.2	-5.5	-5.8
Exchequer Surplus as % of GNP	-5.2	-4.7	-5.7	-6.0	-6.2	-6.0	-6.2
Debt-GNP Ratio as % of GNP	4.2	8.7	13.5	18.4	23.3	27.6	31.8
Consumer Prices (%)	-0.2	-0.2	2.9	6.1	8.6	10.3	11.6
Total Investment (%)	18.5	19.4	20.4	21.1	20.7	19.7	18.8
Manufacturing Employment (thousands)	0.1	0.5	-8.9	-21.3	-33.3	-44.2	-54.9
Building Employment (thousands)	59.5	63.4	68.4	74.2	77.8	76.7	76.0
Labour Force (%)	0.6	0.6	0.4	0.4	0.6	1.0	1.3
Net Migration (thousands)	0.0	0.4	1.1	-6.2	-12.8	-16.4	-17.8
Unemployment Rate (% of Labour Force)	-5.4	-5.8	-4.1	-2.7	-1.8	-1.6	-0.7
Non-Agricultural Wages (%)	-0.2	-0.2	5.4	11.0	15.1	17.8	19.6
Investment Deflator (%)	0.6	1.4	3.9	7.7	10.9	13.2	14.4
New House Prices (%)	5.3	7.4	11.9	17.8	21.9	24.4	25.2

SUPPLY SIDE EFFECTS

At the heart of any extensive investment programme is an objective to boost the economy’s long-run growth potential. The best performance indicator of the success or failure of this objective is the impact on GNP and GDP. In Figure 5.5 we show the impact of the “recommended” NDP on the level of GNP and GDP beyond 2013 when the investment programme of the next NDP will be complete. The effects are shown relative to a base of what would have happened without the NDP. This indicates that the supply-side effects take some time to fully work through the economy. It is only from 2015 onwards that the long-run impact of the “recommended” NDP begins to be seen. (Part of the slow response is due to the fact that it is assumed that the investment in human capital does not begin to produce a return till after 2013.²¹) Indeed even by 2020 the effects on GDP and GNP would not yet have reached equilibrium with both trajectories still on an upward path. However, by the end of the period the positive impact of the supply side effects will emerge as the public finances end up with a larger surplus (smaller deficit) due to the stronger performance of the economy consequent on the “recommended” NDP investment (Figure 5.6).

²¹ It takes time for those in the educational system to move into paid employment. In addition, investment in the human capital of the cohort of 20 year olds will continue to add to their productivity while that cohort are still in the labour force – for roughly another 45 years.

This is the assumption used in all previous analysis of NDP’s. It allows direct comparison of the results here with previous such studies.

Figure 5.5: Impact of the “Recommended” NDP on GDP and GNP Relative to Base

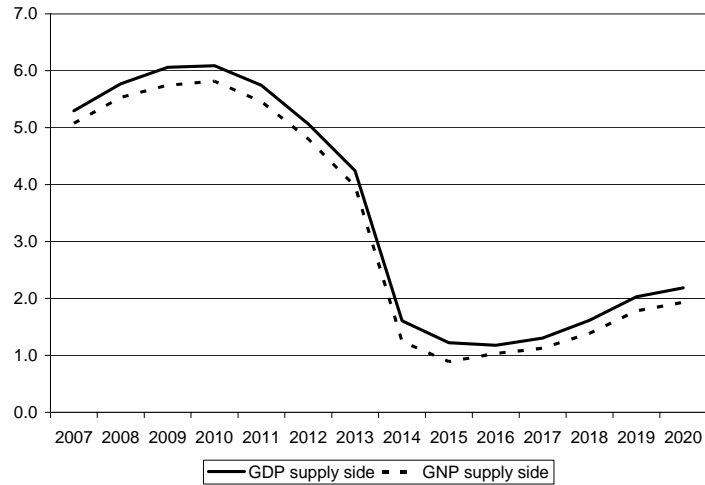
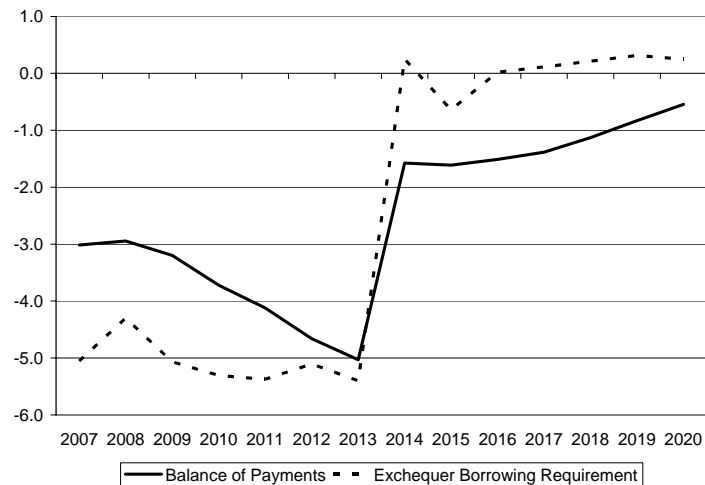


Figure 5.6: Impact of the “Recommended” NDP on Balance of Payments and Government Surplus Relative to Base



The cumulative expenditure on the “recommended” NDP over the period 2007 to 2013 would amount to a little under 29 per cent of GDP with a long-run sustained increase in GDP of around 2 per cent.²² Without making an allowance for the timing of the costs and the benefits this would suggest a crude rate of return of around 7.5 per cent. This return would eventually be significantly higher since it is clear from Figure 5.5 that by 2020 GDP would not yet have reached its equilibrium level. In addition, the model does not fully take account of the extent to which the new investment results in an

²² For simplicity we have not applied an appropriate rate of discount to future costs and benefits. However, it would make little difference to the overall conclusions.

outward shift in the production frontier, reducing the long-term inflationary pressures.

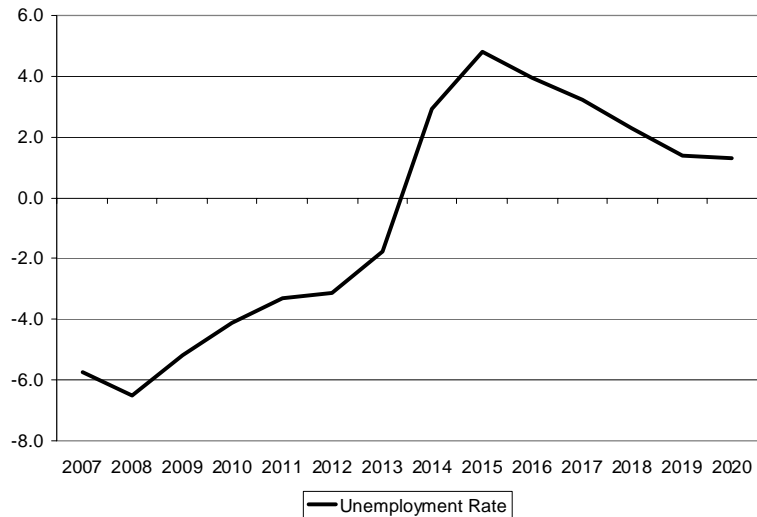
As shown in Table 5.4, over the long term the inflationary effects of the “recommended” NDP would persist with prices and wages up by 6.2 per cent and 11.7 per cent respectively by 2020. The strong employment effects of the “recommended” NDP in the building sector would fall off beyond 2013, however, employment in the manufacturing sector, having been crowded out by the demand side impact of the “recommended” NDP, would not have fully recovered by 2020 compared to the base. While the productivity effects of increases in human capital, infrastructure and aids to the private sector together would ensure a long-run positive effect on output by 2020, the unemployment rate would still be higher than in the base. However, as the economy further adjusts over the 2020s the excess unemployment would be eliminated.²³

Table 5.4: Long-Run Effect of the “Recommended” NDP on Key Macroeconomic Variables Relative to Base

	2010	2013	2015	2020
GDP (%)	6.1	4.2	1.2	2.2
GNP (%)	5.8	4.0	0.9	1.9
Balance of Payments (as % of GNP)	-3.7	-5.0	-1.6	-0.5
Exchequer Surplus (as % of GNP)	-5.3	-5.4	-0.6	0.2
Debt-GNP Ratio as % of GNP	16.4	28.0	23.7	14.1
Consumer Prices (%)	4.9	11.6	13.2	6.2
Industrial Output (%)	6.4	2.3	-1.8	0.4
Market Services Output (%)	5.3	4.3	2.6	3.2
Manufacturing Employment (thousands)	-12.8	-44.7	-63.0	-15.5
Building Employment (thousands)	78.4	82.8	7.8	3.7
Labour Force (%)	0.7	1.8	2.1	3.5
Net Migration (thousands)	-6.4	-21.3	-24.8	-0.8
Unemployment Rate (% of labour force)	-4.1	-1.8	4.8	1.3
Non-Agricultural Wages (%)	10.3	21.6	24.8	11.7
New House Prices (%)	19.0	29.2	26.8	11.0

²³ This result is not considered significant as it arises from the artificial effects of different lag lengths assumed in the wage formation process and in determining labour supply.

Figure 5.7: Impact of the “Recommended” NDP on Unemployment Rate Relative to Base



It is interesting to note the time-path of these effects. Initially the NDP substantially raises employment in the building and construction sector, resulting in a fall in unemployment. However, the reduction in unemployment and the related higher wage rates, in turn, encourages more immigration and higher labour force participation by women, which gradually restores the unemployment level back to where it would have been without the NDP. Once the initial demand-side stimulus ends after 2013, this process is reversed; there would be an increase in the unemployment rate peaking at 4.8 percentage points of the labour force (Figure 5.7) in 2015 above the base of no NDP. Thereafter, it would fall back towards its long-run equilibrium through lower immigration. This is mainly due to the assumption that all investment under the NDP ceases after 2013, resulting in a sudden fall in building sector employment.²⁴

In the long run the improvement in competitiveness, arising from the “recommended” NDP, results in a marginal increase in value added in industry by 2020. Output in the market services sector is over 3.2 per cent above the “no NDP” levels. This is due to some direct supply-side effects from the “recommended” NDP, but also to the indirect multiplier effects of the demand stimulus to the economy.

Despite an initial deterioration in the public finances due to funding the “recommended” NDP, the long-run consequences for the public finances are positive due to the high rate of return on these investments. By 2020 the exchequer surplus as a percentage of

²⁴ In practise there will be another NDP after 2013, albeit of a different magnitude and no such discontinuity will be observed. However, this assumption of a sudden discontinuity is essential to allow us to identify the effects of the 2007-2013 NDP on its own.

GNP would be one-half of a percentage point higher and the debt/GNP ratio, having risen by over 28 percentage points in 2013 would begin to adjust downwards rapidly so that by 2020 it would be only 14 percentage points higher. This reflects the revenue buoyancy consequent on the long-run stimulus to the economy through positive supply-side effects.

EFFECTS OF TAXATION TO REDUCE PRIVATE DEMAND FOR BUILDING

One option, albeit an unpalatable option, to ensure that adequate productive resources are made available for the NDP would be to take action to reduce private sector demand for the output of the building sector. If sufficient resources were freed up in the building industry to undertake the necessary public investment this would mean that the pressures on the labour market, and hence on the tradable sector's competitiveness, would be minimised. Here we consider the implementation of a tax to reduce private sector demand for building sector output and in the next section we consider the scenario where a slowdown in the economy also releases resources.

Using the *HERMES* model we made a stylised policy change where a tax was imposed on private sector purchases of the services of the building and construction sector, reducing private sector demand. Such a tax could include a change in the VAT rate, a property tax, the elimination of tax incentives through the income tax or corporate tax system or some other similar measures.

The effect of this policy change, even before the benefits of recycling the tax revenue through a reduction in other taxes is considered, would be to reduce the demand for labour in the building sector and in the economy as a whole. The result would be a reduction in wage rates of over 1 percentage point compared to where they would otherwise be. This would reduce crowding out of the tradable sector and as a result of this employment in the manufacturing sector would be higher.

If such a policy measure was combined with a more ambitious NDP, such as that implied by the MACIF, the effect would be to leave the tradable sector in a somewhat better position than if private sector demand for building services were left unchecked. The economy could thus benefit from a more rapid deployment of necessary infrastructure than is envisaged under the "recommended" NDP, while at the same time not suffering from the adverse inflationary consequences.

THE *LOW GROWTH* SCENARIO AND THE NDP

Provided that the *High Growth* scenario of the recent *MTR* is realised in practise, the loss of competitiveness that it would cause in the period to 2013 would eventually be made good in the years after its completion. However, it would take a number of years for the tradable sector to respond to a return to a more normal level of competitiveness and in the interim there would be considerable

economic costs. The firms that had closed in the intervening years would be unlikely to reopen. Instead there would have to be a slow process of new firms establishing a base in Ireland or existing firms expanding to fill the gap.

However, as outlined in the *MTR*, we feel it unlikely that Ireland will continue on the *High Growth* path indefinitely. In fact, the *MTR* suggested that the transition to the *Low Growth* path could happen quite quickly and would, in any event, be likely to happen by 2015. In the event of the Irish economy shifting to a lower growth path through an external shock there would be three implications for the NDP:

1. It would reduce the labour market pressures and the ability of the economy to deliver the infrastructure at reasonable cost would be enhanced.
2. Any loss of competitiveness that had occurred prior to the downturn would be heavily penalised.
3. The firms that closed in the intervening years through a loss of competitiveness would be sorely missed.

A series of simulations was undertaken where a more ambitious NDP (based on the MACIF) was superimposed on the *Low Growth* scenario. These simulations indicated that even with the higher NDP expenditure the non-agricultural wage rate would end up 8.5 percentage points lower in 2013 than under the *High Growth* Scenario (including the NDP). The much slower growth, especially the lower growth in the demand for the output of the building and construction sector, would leave spare resources available to undertake the necessary investment.

As discussed above in Chapter 4, even under the *Low Growth* scenario, when combined with a housing market shock, the public finances would still be able to sustain a significant level of infrastructural investment without breaching the limits of the *Stability and Growth Pact*. Under the more ambitious investment plans of the MACIF the deficit could temporarily exceed 3 percentage points of GDP in the face of a serious economic downturn. This would suggest that a prudent fiscal policy to accompany such an ambitious investment programme would incorporate a significant budget surplus in the coming years when growth is quite rapid. This would both reduce the inflationary pressures in the economy and would provide headroom in case of an unexpected economic downturn.

5.4 Possible Effects of a More Ambitious NDP

As discussed earlier, the infrastructure deficit in Ireland is currently substantial. While the “recommended” NDP outlined above will make major progress in tackling the outstanding deficit there will be still a significant deficit remaining to be addressed in the period after 2013. On the *High Growth* macroeconomic scenario the Government sector could potentially fund an even more ambitious investment programme. However, as discussed in Chapter 4, the constraint preventing even greater progress being made is the ability of the economy to deliver the necessary investment without

serious inflationary consequences. The “recommended” NDP outlined in the previous two sections is adjudged the maximum level of investment that the economy could sustain without causing very serious crowding out of the tradable sector.²⁵

Table 5.5: Alternative Assumptions on NDP Expenditure, €Millions

	2007-2013, Annual Average at 2006 Prices		
	2006	Recommended	Multi-Annual Framework
Transport	2,590	3,374	4,042
Housing	1,211	1,133	1,308
Public administration	1,112	1,125	1,142
Health	579	721	870
Education	645	858	888
Enterprise sector	610	521	745
Agriculture	210	174	290
Environment	699	497	707
Total	7,656	8,403	9,992

In this section we consider an alternative investment programme that would involve more rapid progress in tackling the infrastructural deficit. For illustrative purposes we use the figures contained in the MACIF published in *Budget 2006*. The composition of the MACIF is compared with the “recommended” NDP in Table 5.5. The analysis in this section illustrates how an investment programme of substantially greater magnitude than that set out in the previous section would have inflationary consequences in the absence of suitable accompanying fiscal measures.

Because no details of investment in human capital and R&D are contained in the MACIF we concentrate here on the Public Capital Programme expenditure. As a result, the outcome shown here must be considered as only a partial assessment of the impact of an NDP based on the MACIF.²⁶

Throughout the simulations we have assumed that the Government finances the NDP by additional borrowing or by less repayment of debt compared to the MTR. This would still see a gradual decline in the debt to GNP ratio over the forecast period so that this approach is sustainable. On the basis of the *High Growth* scenario for the medium term, it would also be sustainable in the sense that the General Government Borrowing would never exceed 3 percentage points of GDP over the period to 2013.

The impact effect of such a larger NDP would be to raise demand for resources in implementing the investment. In turn, this demand would add to output and employment. The effects would

²⁵ As outlined above, if suitable fiscal policy measures were taken a more ambitious NDP would be possible without running the risk of adding to inflationary pressures.

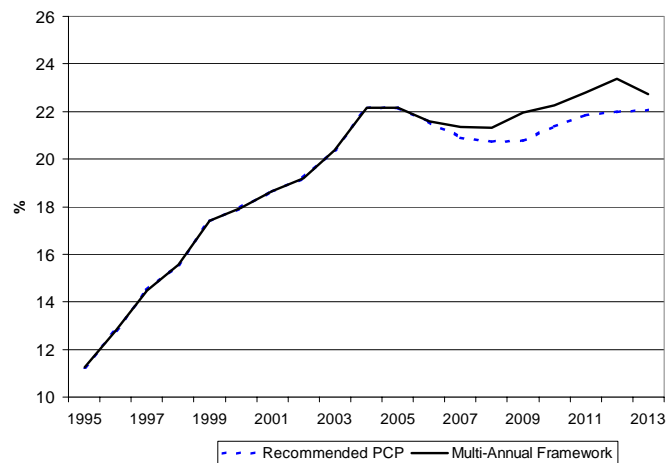
²⁶ The effects of the investment in human capital and R&D were considered in Section 5.3 above when we examined the effects of the recommendations in this report for the next NDP.

be complex as there would be a multiplier effect on output as well as an effect on prices depending on the supply profile for national resources, especially labour. These effects are considered first below.

As in the case of the analysis above, when the investment is spent the increased endowment of physical infrastructure or human capital would increase the long-term productive capacity of the economy after 2013. It is this long-term pay back which would represent the major return on the state's investment.

The MACIF version of the NDP would result in a significant increase in the share of building and construction activity in GNP compared to the "recommended" NDP. As shown in Figure 5.1 above, the "recommended" NDP envisaged some fall in Government Investment as a share of GNP over the period 2007-2013, which contrasts with a rise in share based on the MACIF. As shown in Figure 5.8, the "Recommended" NDP would put significantly lower pressure on the building and construction sector over the period 2007-2013. The bulk of the difference between MACIF compared to the "recommended" NDP would be in building and construction. The implementation of the MACIF would require even more resources to be reallocated from elsewhere in the economy to the building sector than would be the case under the "recommended" NDP.

Figure 5.8: Building and Construction Sector of GNP



This increased demand for labour in the building and construction sector would put further pressure on wage rates, initially in the building sector, but eventually in the whole economy. By 2013 wage rates in the economy would be almost 3 percentage points above the level under the "recommended" NDP (Table 5.6). This would represent a significant loss of competitiveness, having significant implications for the tradable sector of the economy.

The impact on house prices would be even greater (see Table 5.6). This would arise partly from the increase in costs facing the building sector and partly from the increased demand for housing consequent on higher incomes, higher immigration and a higher

population. The result would be that housing prices would peak at over 4.2 percentage points above the forecast for the “recommended” NDP by 2013. This would have knock-on effects on the economy, making Ireland a less attractive place to live, contributing to the pressure on wage rates. Consumer prices would be less affected, though still rising to 1.7 percentage points above base by 2013. None the less this would result in a significant additional loss of competitiveness over the period of the NDP.

Table 5.6: Change in Key Aggregates – Inflation and Output: MACIF Compared to Recommended NDP

		2007	2008	2009	2010	2013	2015
Non-Agricultural Wages	%	0.0	0.0	0.3	0.9	2.9	3.7
New House Prices	%	0.5	0.6	1.3	1.9	4.2	4.4
Building Investment Prices	%	0.0	-0.1	-0.2	0.4	2.5	3.1
Consumption Deflator	%	0.0	0.0	0.2	0.5	1.7	2.1
GNP	%	0.2	0.3	0.6	0.4	-0.1	-0.3
GDP	%	0.3	0.3	0.7	0.4	0.1	-0.2
Industrial Output	%	0.4	0.5	1.0	0.5	-0.3	-0.7
<i>of which:</i>							
Manufacturing	%	0.1	0.1	0.1	0.0	-0.5	-0.8
Market Services Output	%	0.2	0.3	0.5	0.4	0.2	0.0

The effect of the loss of competitiveness would eventually be to further crowd out the tradable sector. It would not be until the positive supply side effects of the enhanced infrastructure began to kick in at the end of the next decade that the level of GNP would rise above the level under the “recommended” NDP.

Table 5.7: Change in Key Aggregates: MACIF Compared to Recommended NDP, Percentage Points

	2007	2008	2009	2010	2013	2015
Balance of Payments	-0.3	-0.4	-0.7	-0.6	-0.8	-0.8
Government Borrowing	0.5	0.5	0.9	0.8	0.8	0.9
Debt-GNP Ratio	0.4	0.8	1.6	2.3	4.3	5.3

The higher level of Government borrowing needed to finance the increased investment is reflected in the higher balance of payments deficit (Table 5.7). The latter higher deficit arises from the need to import more goods and services to fuel the faster economic growth, especially the higher level of investment. However, it also reflects the negative effect on exports of goods and services as the tradable sector is crowded out by the building sector. Of course, in the long run the productive capacity of the economy will be expanded as a result of the higher stock of infrastructure. The implications of this enhanced supply capacity post-2013 were discussed in the last section.

Table 5.8: Change in Key Aggregates: MACIF Compared to Recommended NDP

		2007	2008	2009	2010	2013	2015
Labour Force	%	0.0	0.1	0.1	0.1	0.1	0.2
Employment							
Total	%	0.4	0.6	1.0	0.6	0.1	-0.2
Industrial	%	1.2	1.6	3.2	2.1	0.4	-0.6
Manufacturing	(000)	0.0	0.0	-0.4	-1.4	-6.5	-9.8
Building	(000)	6.2	8.7	18.0	13.1	9.1	6.6
Market Services	%	0.1	0.3	0.4	0.2	-0.1	-0.1
Unemployment Rate	% of labour force	-0.3	-0.5	-0.9	-0.5	0.1	0.4

As shown in Table 5.8, the demand side effects of the MACIF would see total employment peaking at around 1 percentage point above the level in the “recommended” NDP. To undertake the additional building activity almost 18,000 additional workers would be needed in the building sector in 2009 compared to the already high employment under the “recommended” NDP. As the loss of competitiveness began to bite towards the end of the NDP process the employment in manufacturing would begin to fall. Market services employment would show relatively little change with employment in traded market services probably suffering some fall roughly compensated for by a growth in employment in services serving the domestic economy. Some of these additional jobs would be in the areas of services meeting the needs of the building and construction sector – legal and accounting services, engineering, architectural and other related services.

When the building sector eventually contracts to a “normal” size (after 2013), even with flexible wage rates (downwards) it would take some considerable time for the tradable sector to recover competitiveness and take up the slack in the economy.

The unemployment rate, which was already expected to be close to the full employment rate in the period to 2010, could see a further temporary reduction by almost 1 percentage point in 2009. This reduction is based on the assumption that migration trends react slowly to domestic labour market circumstances. This was the experience of the 1960-2000 period. However, a more rapid adjustment in the labour force towards its long-run equilibrium level through a faster response of immigration could see a smaller reduction in unemployment and it could shave something off the anticipated significant increase in wage rates.

The results of this simulation make it clear that higher levels of public investment can only be bought at the expense of further squeezing out the tradable sector of the economy. Because it will take time for the tradable sector of the economy to adjust back upwards when the public investment programme nears completion, this could lead to significant disruption, especially in the labour market.

5.5 The Implications for the NDP

In addition, the higher level of investment would also see the investment deflator for building and construction rising about 1 percentage point above the level in the “recommended” NDP. This would mean that not only would the additional investment under this scenario cost more, but other investment, which would take place anyway, would also be more expensive. This would adversely affect the rate of return on the investments.

The analysis in this chapter largely replicates the results from previous such studies suggesting a high rate of return to successful investment in infrastructure, human capital and research and development. Ireland still has a substantial infrastructural deficit to be made up as a result of historically low levels of investment in previous decades and the very high rate of growth experienced over the past decade.

For the next NDP the strategy remains similar to that identified in the *Mid-Term Evaluation* of the current NDP. There is a need to complete the investment in the major primary roads as soon as possible. To provide for sustainable economic development over the coming decades there is a need to invest effectively in public transport serving major urban areas, especially Dublin. Investment in R&D and human capital also remains an important priority. Given the achievement of compliance with the EU urban waste water directive there can be some slowdown in investment in that area in the next NDP. Generally, with the economy operating at close to capacity direct supports for the business sector ranging from manufacturing to tourism and agriculture should be phased out. This prioritisation has been reflected in the structure of the NDP recommended in this chapter.

The analysis in Section 5.3 indicates that the planned investment in the next NDP, through relaxing the infrastructural constraint, would allow the economy to grow more rapidly in the next decade. Over the course of the decade after completion of the next NDP the capacity level of GNP would be raised by at least 2 percentage points and possibly even 3 percentage points above the level it would be without such investment. The analysis in this chapter also suggests that the rate of return to the state on the investment would be quite high, fully justifying the very substantial commitment of resources.

However, while there is a high rate of return to efficient investment the results presented in this chapter also suggest that the economy will have difficulty delivering the much-needed investment at a reasonable cost. While the funding may theoretically be there to close the infrastructure gap rapidly, the economy does not have the ability to produce all the necessary infrastructure over the period to 2013 without squeezing out other important economic activity. This means that any attempt to close the gap too rapidly will seriously raise the cost of the investment, reducing the potential rate of return.

There are two possible responses to this constraint:

- Given the likely long-term importance of the proposed infrastructure probably the best approach would be to use the tax system specifically to reduce private sector demand for the output of the building sector. This would allow the public sector to buy the necessary infrastructure at reasonable cost without putting undue pressure on the tradable sector of the economy. (It might also reduce the risk of a bubble in the housing market.) Even if the building and construction demand were not targeted specifically, a tight fiscal policy would also reduce existing demand pressures in the economy though reducing Government expenditure or increasing general taxation.
- The alternative approach, which is assumed in this report, would see the start up of some major projects being postponed by a year or two. This would delay the benefits that will undoubtedly accrue from that investment. The counterpart to this delay would be significantly lower costs for the economy in delivering the investment. The profile of investment recommended in this chapter, in our view, provides the best compromise between the urgency of the need for the infrastructure and the importance of maintaining the competitiveness of the economy in the medium term. While a “second best” result, the objective of this phasing of investment over the period 2007-2013 would be that it would ensure that the share of the economy accounted for by the building sector would not increase and would preferably show a gradual reduction towards its long-run sustainable level. The downside of such an approach would be that the economy would not have the benefit of the valuable infrastructure as early as it would under the first of these approaches.
- As the first of these approaches (tightening fiscal policy) may not prove generally acceptable, the approach adopted in this report is to recommend an NDP for the 2007 to 2013 period that, while still very ambitious, would be significantly below that envisaged in the multi-annual capital investment framework (MACIF) published as part of *Budget 2006*. This analysis argues for a slower ramping up of the investment, with more of it taking place after 2010 when there is a higher probability of the economy having slowed down. It also argues for the Government saving the money not spent due to a postponement by running a surplus, so that it would be available post-2010 to finance the higher investment programme even if the public finances had been hit by an economic slowdown.
- In terms of prioritisation the analysis would suggest that there will be less constraints in delivering on the necessary investment in human capital than there will be in the case for investment requiring building and construction. For the

infrastructural investment it will be very important to undertake the necessary cost-benefit studies to allow the prioritisation of different projects. This will be especially important in the case of the transport investment to ensure that very large projects are correctly sequenced to produce the maximum return to the economy and to minimise the direct and the indirect costs of delivery.

6. THE NATIONAL SPATIAL STRATEGY: REGIONAL, URBAN AND RURAL DEVELOPMENT

6.1 Introduction

A key recommendation of the last ESRI *Investment Priorities Study* (Fitz Gerald *et al.*, 1999) was the urgent need for a strategic spatial planning framework, since investment needs are not independent of the spatial pattern of development, and investment in itself is a regional policy tool. Following a process of consultation and research, which started in 2000, the Government published the *National Spatial Strategy 2002-2020* (NSS) in 2002. The NSS constitutes both a statement of Government policy and a blueprint for the spatial aspects of development in Ireland.

While the NSS is the spatial planning strategy for the country it does not incorporate specific investment plans. Rather the implementation of the NSS relies on other Government plans and primarily the National Development Plans. However, as the current *National Development Plan* (NDP) was published at the end of 1999, it could not reflect and incorporate the NSS. Consequently, it is not surprising that the *Mid-Term Evaluation* of the current NDP found that while the NDP did make some provision for regional development that had a positive impact, there were significant areas of the NDP that could be better tailored to implementing the long-term strategy of the NSS. Therefore, it is imperative that the next NDP fully reflects and targets investments in accordance with the NSS. Failure to do so risks that undesirable spatial development patterns continue that cannot be changed subsequently and therefore render the NSS irrelevant.

This chapter outlines our recommendations on the proper implementation of the NSS and, therefore, covers the spatial dimension of the investments priorities under the main investment headings covered in the later chapters. While these cover the bulk of relevant investments, a number of specific investment areas are covered in this chapter. These include rural development, urban and village regeneration and heritage, which were part of the current NDP. These are reviewed as part of this chapter and investment recommendations regarding these will also be made.

6.2 The National Spatial Strategy

As in all countries, population and economic activity in Ireland are not spread evenly across the country. While Ireland has experienced very rapid growth, this appears to have led to a more uneven economic development across the regions. There has been a high level of concentration of both economic activity and population growth in certain areas, which has led to congestion and other symptoms of excess concentration, which are likely to damage the overall prospects for the Irish economy, the environment and quality of life.

To deal with the uneven regional development during the 1990s, the Government published the *National Spatial Strategy* (NSS), which was to guide the spatial distribution of investment. The NSS constitutes the most important regional policy document since the *Buchanan Report* in 1968, which also sought to guide spatial planning for the whole country. However, in contrast to the *Buchanan Report*, the NSS is wider ranging in that it does not concentrate on enterprise development alone, also considering the wider set of factors driving regional development in a modern economy.

The general approach adopted in the NSS is based on 5 key principles:

- While the NSS must by definition deal with spatial imbalances within Ireland it recognises the key role that Dublin plays for Ireland since it is the only city of sufficient scale to be recognised as a major European city.
- The NSS recognises and attempts to improve the quality of life of individuals particularly as spatial planning can have a significant impact on issues such as long-distance commuting and pollution.
- Accommodating the substantial population growth within existing settlements will result in and need substantial change in our urban centres.
- Proper planning of land use and particularly planning for more compact higher density urban centres and the minimisation of urban sprawl will be a key factor in determining the success of the NSS.
- Implementation of the NSS is to be achieved primarily by ensuring that all policies and programmes are consistent with the NSS.

These principles are to ensure that all areas of the State develop their full potential and thus contribute to the overall performance of the State in economic, social and environmental terms.

The key recommendation of the NSS is that balanced regional development is to be achieved through promotion of places that have sufficient critical mass to attract investment. Critical mass is the scale and concentration of the population and economic activity and the concept implicitly assumes that below a certain size, centres are not able to generate a sufficient economic dynamic to support higher levels of economic activity. This centre-based approach is firmly supported by economic theory (see the discussion of agglomeration economies in Chapter 2). Empirically a number of

studies have shown that productivity is positively related to the density of economic activity (see Ciccone and Hall, 1996 and Ciccone, 2002). In contrast to a simple 'growth centres' approach the NSS strives to actively link the development of the hinterlands of the chosen centres to that of the centres themselves.

In addition to the 'gateways' identified in the current National Development Plan (namely Dublin, Cork, Galway, Limerick and Waterford), four further gateways were announced, which are Sligo, Letterkenny (working closely with Derry), Dundalk and, fourthly, the linked gateway of Athlone, Tullamore and Mullingar. Furthermore, nine 'hubs' were identified, which will play an important role in ensuring that all parts of the country will benefit from growth and development.

Given the strong agglomeration and urbanisation economies present in modern economies, the success of the gateways and hubs will define the success of the NSS. This means that the gateways and hubs need to be supported in the appropriate manner. In this respect there are two key aspects. First, since critical mass development relates to the scale and density of urban centres strong land use planning guidelines need to be drawn up and implemented. In this respect substantial progress has been made since the publication of the NSS, with the production of regional planning guidelines for all planning regions. Strong planning needs to ensure that settlement patterns are sustainable and facilitate public transport. Low-density development means that public transport is not practical or viable and therefore induces unsustainable transport patterns, which have a negative impact on the environment and quality of life. The importance of the planning system in achieving efficiency and sustainability is further outlined in Chapter 11.

The second way in which the NSS needs to be supported is through the targeting of public investment. In this respect the next NDP will play a key role, and, therefore, the spatial targeting of investments is considered in more detail in this chapter. In this respect it is important to note the experience from the current NDP, which was outlined in *The Mid-Term Evaluation* (Fitz Gerald *et al.*, 2003).

LESSONS FROM THE NDP

The Mid-Term Evaluation (Fitz Gerald *et al.*, 2003) showed that for all priorities the Southern and Eastern Region was to receive a substantially larger allocation of resources than the Border, Midlands and Western (BMW) region, which of course reflects the different relative size of the regions in terms of population. In per capita terms, however, expenditure in the BMW region was planned to exceed that of the Southern and Eastern region, although the relative allocations within OPs vary in some cases. For example, in the Productive Sector OP, there is a heavier emphasis on RTDI in the Southern and Eastern region which, perhaps reflects the concentration of the Third-Level Education institutions in that

region, while there is a higher weighting given to the Industry priority in the BMW region.

When it came to the actual progress the *MTE* showed that these differences were magnified in the outturn. For example, progress in the RTDI priority in the BMW region had been behind that in the Southern and Eastern Region. In general, progress was slower in the BMW region. This was particularly driven by poor progress on national roads, public transport and RTDI in the BMW region. Of course, it is important to note that some investments that have taken place in the Southern and Eastern region can also have a significant positive impact on the BMW region. This is particularly relevant in the case of transport. Thus, an improvement of a section of national road in the Southern and Eastern region can help improve market access and reduce transport costs for businesses in the BMW region.

The *MTE* argued strongly for a more appropriate project selection process where projects first need to satisfy basic economic criteria and the horizontal principles, which would address market failures or externalities that may differ between regions. For example, as outlined in Chapter 17 in relation to broadband access a market failure exists in rural less densely populated areas while none exists in urban areas.

There is little evidence that the measures in the current NDP have been specifically tailored to the needs of regions and essentially the same measures were applied in both regions. This ignores the substantial differences between and within regions. Thus, a measure that addresses the needs of some regions may be completely inappropriate in other regions. In this respect one might also consider the very substantial heterogeneity with the Southern and Eastern region, which contains the very dynamic greater Dublin region and the much less dynamic South-East.

Project selection criteria must explicitly reflect the goal of achieving balanced regional development in accordance with the NSS. In the case of two projects with identical merit but with one in a designated gateway or hub and the other in a non-designated area then the one in the gateway or hub should receive preference. In other words at the margin only projects in gateways or hubs should be supported. This prioritisation is particularly important in the context where not all economically advantageous projects should be funded in order to avoid further inflationary pressures.

Importantly, the current NDP contained no measures specifically aimed at critical mass development, and those measures that can contribute to critical mass development do not appear to be specifically targeted.

Finally, the primary regional focus of the current NDP was on the two NUTS 2 regions. These regions were primarily established for EU Structural Funds purposes and do not constitute natural economic entities. Consequently a stronger focus on the NUTS 3 level should be considered. This will also require better data collection both for evaluation purposes but more importantly for targeting purposes.

6.3 Regional Development Trends

The *Mid-term Evaluation* could only conduct a very partial evaluation of the impact of the NDP on regional development due to the lack of data for the period since 2000. Apart from the lack of data, the necessary evaluation infrastructure has also not been developed. Thus, while this study and the *MTE* could evaluate the macroeconomic impact of the NDP on a range of interconnected variables with the use of the *HERMES* macroeconometric model, such a model is not available at the regional level. Such a model is necessary in order to identify the counterfactual situation that would have obtained without the policy intervention. For example, while one may find that regional differences have increased, which might be interpreted as a failure of policies, the policies that were enacted may actually managed to limit the degree of divergence.

While data constraints and particularly the timely availability of data continue to constrain the analysis of regional development some relevant data has become available since 2003, which allows us to consider the effect of the NDP. In this context it is more appropriate to consider the NUTS 3 regions rather than the two NUTS 2 regions. A more detailed analysis of the gateways and hubs that were identified in the NSS is more difficult since many variables such as income or output are not available at this level of spatial aggregation.

Here we consider three indicators of regional development namely, output per capita, income per capita and the unemployment rate. Clearly, many other variables could be added to this list including quality of life measures, which would clearly be desirable but is beyond the scope of this chapter. Table 6.1 shows two values for each variable. One relating to 1999 and one for the most recent period for which data is available, which in the case of the income and output indicators is 2002. Both the income and output indicators are expressed as an index relative to the national average. Thus, the Border region in 1999 had per capita Gross Value Added (GVA), which was just 73.5 per cent of the national average.

Considering the output measure, per capita Gross Value Added first, it is evident that the gap between the highest value in the table and the lowest value has decreased slightly. Thus for 1999 the lowest value was 62.6 per cent (Midlands) while the highest was 133.4 per cent (Dublin), which constitutes a gap of 70.8 per cent. While the Midlands still had the lowest index in 2002 (63.4 per cent), the highest value was slightly down at 131.4 per cent (Mid-West). However, overall the dispersion, as measured by the standard deviation has increased, suggesting divergence across the regions.

This process of divergence over recent years is a continuation of a process that started in the late 1980s, which followed a period where there appears to have been at least limited convergence. In fact there appears to be something of a convergence club, in that all regions other than the South- West, Dublin and Mid-East (Greater Dublin) regions are following a similar relative growth path.

An important aspect of the divergence among Irish regions is the contribution of the different sectors to this. Data limitations mean that the regional gross value added data can only be disaggregated

into three broad sectors namely: (1) agriculture, forestry and fishing, (2) manufacturing, building and construction, and finally (3) market and non-market services, for a relatively short period of time.

An analysis of these sectors at the regional level shows the substantial decline of the primary (agricultural) sector in all regions. Furthermore, the secondary sector (industry) has increased its importance, while overall the tertiary sector has maintained its share. Unfortunately, it is not possible to disaggregate the secondary sector into building and construction and manufacturing in order to assess the role of the construction sector in driving the growth of the secondary sector.

Decomposing the sectoral contributions to overall growth in the regions yields some interesting results (see Morgenroth and O'Malley, 2003). While the overall performance of the primary sector is very poor, given the relatively small share of the primary sector this has a relatively small contribution to the overall growth rate. The tertiary sector has on average the largest contribution to overall growth, but in the case of two regions, namely the Mid-East and the South-West, the secondary sector has grown particularly strongly.

Considering the performance of each sector in each region relative to the national performance of that sector reveals the source of the convergence trends. This analysis reveals that the performance of the secondary sector has the largest bearing on the convergence/divergence performance of the regions. Of course the data limitations do not allow for a disaggregation, which could reveal which sub-sector has contributed most to divergence. However, sectoral employment trends indicate that the regional differences in the building and construction sector may in fact be the source of the regional divergence. Furthermore, a more detailed sectoral breakdown, were it available, might indicate whether some of the divergence is simply driven data distortions due to transfer pricing by foreign multinationals.

As part of the literature review above, the possibility of a negative relationship between national growth rates and regional dispersion was outlined. Using the regional Gross Value Added (GVA) data it is possible to conduct a crude test for this so-called Williamson hypothesis, by estimating the correlation coefficient between the standard deviation of the index of regional per capita GVA and national real per capita GVA growth. The correlation coefficient turns out to be -0.6, which is statistically significant at the 99 per cent level, which lends some support for the hypothesis. Thus, national growth has not lifted all regions in relative terms, despite the fact that growth rates in all regions exceed the EU average. If that hypothesis is correct then this period of negative correlation should be followed by one where there is a positive correlation and convergence.

Table 6.1: Trends in the Key Variables for Irish Regions

Region	GVA	GVA	Income	Income	Unemployment	Unemployment
	(State=100) 1999	(State=100) 2002	(State=100) 1999	(State=100) 2002	Rate 1999	Rate (2005)
Border	73.5	71.3	88.0	89.2	8.7	4.9
Midlands	62.6	63.4	86.4	90.9	6.5	4.0
West	78.9	71.4	89.1	90.3	5.1	3.7
Dublin	133.4	128.3	118.7	115.9	4.8	4.2
Mid-East	88.8	80.4	101.2	102.6	4.2	2.7
<i>Dublin + Mid-East</i>	121.8	115.4	114.2	112.3	4.6	3.8
Mid West	88.6	82.8	98.1	97.3	5.0	4.7
South East	79.9	89.4	87.3	89.5	8.4	5.6
South West	111.4	131.4	94.2	94.5	5.6	4.2
State	100	100	100	100	5.7	4.2

Source: Central Statistics Office, Regional Accounts (various issues) and CSO *Quarterly National Household Survey* (various issues).

While Gross Value Added (GVA) is a particularly useful variable in most countries, in Ireland one has to be more cautious in interpreting it. The high proportion of foreign firms in the Irish economy, which due to the relatively low corporation tax rates prefer to declare profits in Ireland rather than other countries, implies that GVA is artificially expanded. Evidence for this is found in the difference between GDP and GNP. Recently, GDP was about 20 per cent higher than GNP. The degree of these distortions differs between regions so that the analysis needs to be interpreted cautiously. It is nevertheless included here since per capita GDP is the key variable to determine EU Structural Funds eligibility. Given the drawback of the GVA measure it is also useful to consider direct personal income measures. A number of different income measures are available. Total per capita personal income is available in a consistent series since 1991 and this is the variable considered here.

The table shows that the relative differences are smaller for income compared to GVA. This reflects the fact that income is measured where the persons who earn it live while GVA is measured where it is produced. Thus, commuting flows imply that income flows out of the regions with the higher output. Another reason why the absolute differences are smaller is that the social welfare system and other subsidies (e.g. agricultural subsidies) are responsible for redistribution to the poorer regions. Overall, there appears to be convergence across regions regarding income.

Finally, the unemployment rate has dropped significantly in all regions between 1999 and 2005. Also noticeable is the fact that the dispersion of unemployment rates has decreased, so that there has been a convergence between regions in terms of unemployment.

Overall, this analysis suggests that regional disparities have not increased except for GVA, which may be significantly biased anyway. This suggests that policies including the NDP might have been effective at reducing disparities. A definite answer cannot be provided for this question until an appropriate regional economic model is available.

POPULATION

The demographic developments in Ireland have been outlined in Chapter 4. However, the spatial distribution of the population and trends thereof play an important role in determining overall investment needs and must therefore be considered. Table 6.2 shows the population in the NUTS 3 regions for selected years, and the share of each region in the total population in parenthesis. Overall, the population grew in all periods since 1986, but this growth was not even.²⁷ In particular, a population decline was recorded in the Border and Midlands regions for the period 1986 to 1996. All regions recorded strong population growth since 1996. However, the Border region continued to grow at below average rates while the Midlands region grew faster than the average. Notable is the below average population growth in Dublin and the South-West and to a lesser extent in the Mid-West. Thus, the regions with the largest urban centres appear not to have had low population growth. The CSO estimates for 2005 show a continuation in the strong growth of the population.

As a consequence of the differential population growth rates the share of the national population resident in the regions is also changing. The share of the Border, West, Mid-West and South-West has been declining steadily, while that of Dublin and the South-East has been relatively stable. On the other hand the Mid-East region and to a lesser extent the Midlands have increased their population share significantly.

This trend is closely related to the relationship between these two regions and Dublin, which appears to have strong impact on internal migration. In contrast to the past where Dublin had a net-inflow of population through internal migration this trend has changed to one where Dublin is losing population to the surrounding regions. As recorded in the *2002 Census*, Dublin suffered a net loss of 6,138 persons to the Mid-East over the period 2001/2002. The Mid-East in turn suffered a net loss to all other regions and particularly to the Midlands and South-East.

The changed internal migration patterns make regional population forecasts more uncertain as it is not clear if the changed pattern will be permanent or transitory. Consequently, the CSO produced a range of scenarios for their regional population projections with a 'medium' pattern, which implies that the recent changes are transitory being preferred (CSO, 2005). In Table 6.2 two sets of projections are shown which are derived using the *MTR* demographic projections for the *High Growth* scenario, which were outlined above, and the implied regional trends under the CSO 'medium' and the continued 'recent' trends projections. The two columns show that the assumptions about internal migration make a significant difference to the regional shares. In particular for Dublin the difference between the two projections is significant in that the

²⁷ For a more detailed description of the demographic trends at the regional level see Walsh (2006) and Morgenroth (2005).

recent trends projection suggests that the population in 2013 will be 76,000 lower than projected under the medium assumption. This difference drives the differentiation between the two projections for the other regions, which is distributed according to internal migration patterns. Thus, the Mid-East and the Midlands would experience a particularly substantial increase in their population. Particularly the recent trends projection suggests a strong spillover of growth from the Greater Dublin Area (GDA) to the Midlands. Of course this population spillover may be a result of housing market pressures in the GDA rather than economic development in the Midlands (see Morgenroth, 2002). If population growth is not accompanied by economic development then the population increase in the Midlands is likely to result in further commuting growth to Dublin. Such a development would undermine the aims of the NSS and would be inconsistent with the objective of promoting sustainable development.

Regardless of the assumption concerning regional distribution, the *MTE High Growth* scenario implies substantial population growth of almost half a million, which would put additional pressure on infrastructure. All regions would experience an increase in their population by at least 10 per cent.

Table 6.2: Regional Population for Selected Years

Region	1986	1996	2002	2005 (Estimate)	2013 Projection (Medium)	2013 Projection (Recent)
	410,899	407,295	432,534	455,400	506,824	519,719
Border	(11.6%)	(11.2%)	(11.0%)	(11.0%)	(10.8%)	(11.1%)
	207,994	205,542	225,363	242,900	272,634	289,431
Midlands	(5.9%)	(5.7%)	(5.8%)	(5.9%)	(5.8%)	(6.2%)
	348,328	352,353	380,297	406,000	462,282	471,717
West	(9.8%)	(9.7%)	(9.7%)	(9.8%)	(10.1%)	(10.1%)
	1,021,449	1,058,264	1,122,821	1,160,100	1,334,932	1,258,993
Dublin	(28.8%)	(29.2%)	(28.7%)	(28.1%)	(28.4%)	(26.9%)
	314,670	347,407	412,625	452,400	544,307	555,366
Mid-East	(8.9%)	(9.6%)	(10.5%)	(11.0%)	(12.8%)	(12.9%)
Greater Dublin	1,336,119	1,405,671	1,535,446	1,612,500	1,879,239	1,814,359
	(37.7%)	(38.8%)	(39.2%)	(39.0%)	(40.7%)	(38.8%)
	315,435	317,069	339,591	352,300	387,979	388,878
Mid-West	(8.9%)	(8.7%)	(8.7%)	(8.5%)	(8.1%)	(8.3%)
	384,972	391,517	423,616	451,900	500,352	516,681
South-East	(10.9%)	(10.8%)	(10.8%)	(10.9%)	(10.6%)	(11.0%)
	536,894	546,640	580,356	609,700	666,544	675,068
South-West	(15.2%)	(15.1%)	(14.8%)	(14.8%)	(13.9%)	(14.4%)
State	3,540,641	3,626,087	3,917,203	4,130,700	4,675,854	4,675,854

Source: CSO *Census of Population and Annual Population and Migration Estimates*, various issues. The projections for 2013 are own calculations based on the ESRI *Medium-Term Review* national projections for the *high-growth* scenario and the trends in regional shares implied by the CSO *Regional Population Projections* under the medium internal migration scenario.

URBANISATION AND POPULATION DENSITY

As was outlined above, agglomeration economies have been pervasive in the new economic geography literature, and the creation of critical mass of selected urban centres is one of the primary aims of the NSS. One way to measure agglomeration is to consider the degree of urbanisation. So far research has not identified the size, which an urban centre in Ireland needs to be before it can generate self-sustaining growth through agglomeration economies.

In 2002 there were just 34 urban centres with a population of 10,000 inhabitants or more. Of these 12 were in the Greater Dublin Region. Urbanisation measured by the proportion of the population that reside in these larger towns and cities is very unequally distributed between the regions.²⁸ While Dublin is almost completely urbanised, the Border, Midlands and West regions have a very low level of urbanisation at considerably less than 30 per cent of the population. Indeed the poor urban structure is evident in the fact that there are only four cities with a population in excess of 50,000. Urbanisation has increased in all regions except Dublin. Interestingly, the Midlands region increased its degree of urbanisation recently, which further supports the ‘ripple’ effect of the development of the Greater Dublin Region.

Overall, while there is some evidence of increasing urbanisation, the differences between the regions remain quite substantial. Given the link between urbanisation and growth, the aim of the NSS to support the development of critical mass, particularly in the selected gateways, needs to be supported.

Another important aspect of the size and distribution of the population is the population density. From a policy point of view the distinction between density and urbanisation is important since recent research has also shown that larger urban centres tend to be more environmentally sustainable than smaller ones (see Moles *et al.*, 2002), and it is considerably easier and cheaper to provide a particular service level for urban populations compared to rural populations. The latter applies to many public services. Many other services are also more expensive to provide to a dispersed population, including utilities such as telecommunications (see the lack of broadband roll-out in rural areas), energy or the postal service. A recent study by Büttner *et al.* (2004), on the costs of local services in Germany confirmed that a low population density can increase the cost of some services such as roads, energy, water supply and cultural affairs.²⁹ However, these cost differences are not reflected in differential charges. Rather these cost differences are hidden and implicitly subsidised. Thus, individual choice is not

²⁸ Using this measure, 48.2 per cent of the population across the country live in urban areas. This compares to 59.6 per cent when urbanisation is defined as the proportion of the population resident in towns and cities with a population in excess of 1,500.

²⁹ A cursory analysis for cost of providing water and sewerage services in Ireland appears to confirm these results.

based on information on the full costs of dispersal. Similarly, Government policy to sustain rural and peripheral communities does not appear to consider the wider costs of maintaining the dispersed pattern of population distribution, despite the fact that the broad principle of the *National Spatial Strategy* is to generate critical mass. Ultimately, the distribution of the population will be decided by public policies and individual choice. These choices should reflect the differential costs for different location.

Table 6.3 shows the population density for EU-15 countries. Ireland has the third lowest population density. A lower density is only recorded for Finland and Sweden. However, even though Sweden and Finland have a significantly lower population density than Ireland, their degree of urbanisation is not lower than that of Ireland. Indeed it is substantially higher in Sweden than in Ireland. In Sweden large parts of the country are essentially uninhabited which accounts for the low population density rather than a low degree of urbanisation. Thus, the cost of providing services holding all other factors constant is lower in Sweden than in Ireland despite the fact that Sweden has a lower population density.

Table 6.3: Population Density and Urbanisation for EU-15 Countries

Country	Population Density Persons Per Km ²	Urbanisation (%)
Netherlands	476.7	62
Belgium	338.6	97
United Kingdom	243.3	89
Germany	231	88
Italy	189.7	90
Luxembourg	172.5	91
Denmark	124.7	72
Portugal	112.8	53
France	109.7	76
Austria	96.4	54
Greece	83.5	60
Spain	81.6	76
Ireland	57.3	60
Sweden	21.8	84
Finland	17.1	62

Source: Eurostat, *New Cronos* Database, Population Reference Bureau, World Population Data Sheet.

Note: Population Density data is for 2002. Urbanisation is defined as the proportion of the population resident in towns with a population in excess of 2,000 inhabitants.

SUMMARY AND IMPLICATIONS OF THE DATA ANALYSIS

The analysis presented above suggests that over the period of the current NDP regional differences appear to have diminished suggesting that policies may have had a beneficial effect. However, it is not possible at this point to firmly determine the role of policy since the necessary evaluation infrastructure does not exist. We, therefore, recommend that some resources be devoted to building a

regional economic model. This will also require a wider range of data to be made available than is currently the case, which of course would benefit the wider research community.

There is a clear need for further research to uncover the underlying mechanisms which give rise to the differential performance of the regions. The available research suggests that urbanisation in itself is an important factor, which coupled with the path dependence outlined in Chapter 2 results in sustained differences between regions (e.g. Bradley and Morgenroth, 1999; Boyle, McCarthy and Walsh, 1998; O'Leary, 2001). Another factor is the differing educational attainment rates, which again lead to a path dependent process. There is a clear divergence between counties in relation to the proportion of the population that possess a third-level qualification (see Morgenroth, 2005). A key factor in the location of high-tech, high value added employment is the availability of skilled workers (see Chapter 2). Firms are more likely to locate in areas where there is an abundance of skilled labour. This in turn will attract more skilled workers thereby reinforcing the process.

Closely related to the divergence in educational attainment is the capacity of the regions to innovate. The recent gateways study (Fitzpatrick Associates, 2005c) shows that third-level based research capacity is heavily concentrated, particularly in Dublin and to a lesser extent in Cork, Limerick and Galway. The international literature on spillovers from university research discussed in Chapter 19 suggests that such spillovers are quite limited in distance, which implies that the bulk of the wider benefits accrue to the four metropolitan areas. However, Jordan and O'Leary (2005) suggest that in Ireland firms utilise a wider network for innovative activities. This may well be related to the high level of FDI in Ireland where the Irish operation of a foreign multinational will have close connections with their headquarters.

Another interesting finding is that for manufacturing at least a more diversified industrial structure appears to result in higher productivity compared to a specialised industrial structure (see Morgenroth, 2006). That analysis also shows that counties with a higher proportion of foreign owned plants have a higher productivity, which suggests that efforts should be made to increase the productivity of indigenous firms.

Population growth remains strong, and while all regions have recorded population growth, the growth rates have differed markedly across regions. Interestingly population growth has been slower in the more urbanised regions. This may reflect the lack of sufficient zoned land, higher development costs or simply the preferences of individuals. Whatever the reason for the slower growth in the more urbanised regions it suggests that critical mass may not be adequate. This is important in the context of the poor urban structure in Ireland with few urban centres of scale. Since economic development in advanced economies is urban driven the lack of a sufficient number of larger urban centres may have a negative impact on economic development going forward. In

addition the low urbanisation and low population density adds to the cost of providing public services and infrastructure. It also reduces the viability of public transport and particular fixed rail services.

Given the population trends and the persistent low level of urbanisation the implementation of the NSS is of considerable importance. The need to generate critical mass in the gateways and hubs is now as important as ever. However, the NSS needs to adapt to the dynamic changes that are occurring and should therefore be continually updated. Furthermore, a formal mechanism of monitoring the progress in implementing and achieving the goals of the NSS needs to be put in place.

6.4 Implementing the NSS

In this section we outline the spatial aspects of the investment priorities outlined in the later chapters. Before we turn to our recommendations we briefly review the recommendations of the recent study on investment priorities in the gateways (Fitzpatrick Associates, 2005a). While this study should form a useful input into the specific spatial targeting recommended here, given its limited scope which means that the basis for the recommendations contained in the gateways study are not outlined, it is of limited use for our purposes. There is some interesting general analysis, especially the analysis on R&D capacity, the recommendations for each gateway are unsupported by analysis, and are in some cases very general and do not include costings.

The gateways study made specific short-term recommendations for each gateway, which we summarise below:

Cork:

- Integrated Public Transport.
- Improved link to airport.
- Upgrade N28 to Ringaskiddy Port.
- North Ring Road.
- Improve amenities and urban fabric.
- Develop and strengthen cultural and recreational amenities.
- Facilities Development for R&D.
- Docklands regeneration.

Dublin:

- *Transport 21*.
- Integrated public transport.
- Consolidated metropolitan development.
- Resolution of water supply problems and capacity for waste water treatment.
- Social Amenities.
- Strengthening of the international status of third-level institutes.

- Improved quality of design of built environment.

Dundalk:

- Strengthening and modernising local economic and enterprise structure.
- Investment in local roads and water services.
- Develop and integrated public transport system.
- Community development.
- Investment in social housing.
- Provision of recreational and cultural amenities.
- Shared innovation strategy.

Galway:

- Strategic urban transport routes.
- Investment in sanitary infrastructure.
- Provision of social and community facilities.
- Shared innovation strategy.
- Protection of natural and built heritage facilities.

Letterkenny:

- Road investment to deal with congestion black-spots (A5/N14, A2/N13).
- Improved capacity in water services.
- Improved energy supply.
- Shared innovation strategy.

Limerick-Shannon:

- Phase II of the Southern ring road and N69.
- Improved public transport.
- Development of recreational facilities.
- Shared innovation strategy.
- Targeted urban renewal.
- Branding and marketing.
- Infrastructure delivery co-operation across local authorities.

Midlands Gateway:

- Strategic transport routes.
- Strengthening water, waste water and solid waste infrastructure.
- Significant investment in Athlone Institute of Technology.
- Strategic development plan.
- Needs to develop a shared identity.

Sligo:

- Strategic urban distribution routes.
- Regional sports and recreation facilities.

- Cultural entertainment quarter.
- Build up research and innovation capacity.
- Shared innovation strategy.
- Targeted urban renewal.

Waterford:

- Completion of the M9 and N25 by-pass.
- Enhancing port facilities.
- Investment in Waterford Institute of Technology.
- Shared innovation strategy.
- Development potential on the North-Quays.

Many of the specific actions identified in the gateways study would appear to have significant merit, and subject to their satisfying the necessary selection criteria they should be funded under the next NDP. In the following sections we outline the spatial aspects of our microeconomic chapters.

TRANSPORT INFRASTRUCTURE

Investments in transport infrastructure are among the most ‘spatial’ investments since apart from servicing a local area transport infrastructure also provides wider access. As was highlighted above, transport infrastructure is not only an important locational determinant for many firms but also a key driver of growth. Consequently, investments in infrastructure have a significant role in regional development. It should however also be pointed out that improved access is bi-directional. In some cases improved access may actually have a negative effect on local firms if they only supply the local market since it allows competitors to enter that market. That said given the geography of Ireland being relatively peripheral within Europe, areas that are peripheral within Ireland would benefit significantly from improved access.

With respect to national primary roads our recommendations support the approach taken in *Transport 21* to complete the National Primary route system to standards adequate for predicted traffic volumes, which in many cases should be to motorway standard. The completion of this investment will primarily aid the major gateways, but will also have a significant impact on areas that are proximate to these roads. Given that the bulk of freight transported in Ireland is transported on the road this investment should help businesses in most regions in their efforts to reach wider markets.

The primary roads network alone will not be able to promote the NSS. Rather, the national secondary roads and some key non-national roads will play at least as important a role, since they will provide connectivity between the gateways and hubs and provide access to these from the wider hinterlands. In this respect some of the prioritisation contained in *Transport 21* is puzzling, and consequently we recommend a modified prioritisation.

While the Ring of Kerry, West Cork Coastal and Clare Coastal routes serve an important role in the tourist industry in those areas,

other roads that were not prioritised within *Transport 21* will yield a higher return since they connect a large population and more urban centres. In particular we recommend that the N62 North-South route through the Midlands, from the N8 Dublin-Cork road at Horse and Jockey through Thurles-Templemore-Roscrea-Birr-Athlone, should be accorded a high priority in addition to some of the other routes chosen (e.g. N52 Dundalk-Mullingar-Tullamore-Birr-Nenagh, and N80 Tullamore-Portlaoise-Carlow-Enniscorthy). These routes cater for substantially higher traffic volumes than certain of the coastal routes, which have been selected. Overall, we recommend that a specific and comprehensive programme of National Secondary road improvements should be included in the next National Development Plan. In many cases, roads classified as Regional roads, and in some cases even as County roads, carry traffic volumes well in excess of the less busy National Primary and Secondary roads. A specific fund should be made available for investments in a limited number of strategic non-national routes. Alternatively, a review of road classification might allow these roads to attract funding as part of the national road network.

Rail transport has been increasing its 'market share' in certain areas, and appears to be preferred by commuters. Against this preference, the costs of providing a service both in capital and operating cost terms need to be considered. Our recommendations on both main-line and suburban/urban fixed rail investment is that careful analysis of individual projects needs to be carried out well in advance of planning such infrastructure. Where the project evaluations pass established criteria, including a comparison between alternative modes, investment should proceed. As the international evidence shows, for inter-urban routes rail investment is rarely the correct choice. This is especially the case in Ireland since the population density in many areas is low resulting in relatively low demand when judged against the total potential capacity and costs. The available evidence on the Western Rail Corridor is not convincing and we accord this project a relatively low priority.

There may be a need for expansion of urban public transport in all gateways. In this respect some fixed rail investment may be optimal. In the transport chapter we recommend that such investments are not only judged against alternative modes, but also that the system wide impact is taken into account. In relation to fixed rail investment in the Greater Dublin area, if accompanied with the appropriate spatial planning control, this can have a significant positive impact reducing congestion.

It is established Government policy that the principal commercial air and sea ports should no longer be recipients of State funding for capital works, and that they should be financed, as to both operating and capital costs, by charges to users. We endorse this approach, which internalises the costs and also provides market signals to guide investment. With respect to regional development it appears more important that access to the major airports Dublin, Shannon and Cork be improved than to improve the infrastructure in regional airports that have limited scope to expand routes to key

international hubs. Since air travel is particularly important for those individuals who require relatively speedy transport, access to major hubs has become increasingly important.

WASTE INFRASTRUCTURE

There is now a much-reduced role for central Government funding of waste management services, our recommendations here are limited. There is a level of momentum building up in the sector, in terms of increased diversion of waste from landfill, and the delivery of new infrastructure, and this should continue without the need for direct Government intervention.

It is important that the administratively imposed regional structures do not impact on investment decisions for major infrastructure such as landfills and incinerators, specifically the number and size of these facilities. These should be decided on economic grounds, taking into account environmental considerations. Considerable economies of scale exist in the delivery and operation of these facilities: fewer, larger landfills and incinerators will cost society less than more, smaller facilities.

WATER INFRASTRUCTURE

The regional need for water infrastructure is driven by the evolution of the population and economic activity. Of course, overall use of water could be reduced through the correct pricing of water and through leakage reduction. Allocating infrastructure rationally is greatly aided by the correct pricing of water, and in this respect involvement of developers is also important.

From a regional development perspective it is important to develop sufficient capacity to accommodate the population growth and growth in economic activity. The NSS seeks to increase the critical mass and thereby the population of the hubs and gateways. Consequently, for the gateways and hubs a limited 'strategic reserve' capacity in water supply and waste water treatment should be considered. This would ensure that capacity is available for new investment.

HOUSING

As with water, social and affordable housing needs are demand driven. However, as house price inflation has been particularly severe in the major urban areas, which also tend to contain concentrations of poor individuals, the need for investment in housing should be concentrated in those areas. This, however, should be subject to further detailed analysis of housing waiting lists and other relevant information.

Apart from the social and affordable housing, the housing needs of the wider population need to be catered for. This is not a function of the public sector. However, it is important that sufficient serviced land will be available especially in the hubs and gateways in order to ensure that critical mass is generated.

ENERGY

The regional development issue regarding energy is the capacity of the energy transmission network to supply all energy needs. In some parts of the country (e.g. Donegal and some parts of the West) the electricity transmission network has insufficient capacity in order to cater for significant additional demand. This could restrict the development potential of these areas. While direct public intervention is not warranted, it will be important to ensure that the planning process will not delay any improvements in the infrastructure.

TELECOMMUNICATIONS

The availability of broadband is argued to be important in ensuring future competitiveness. While one can argue with this view, it is important that firms in particular have access to modern telecommunications infrastructure, and in particular broadband. With the MAN's programme considerable progress has been made in rolling out broadband in many small towns. It is unlikely that significant unmet demand exists in the gateways and hubs. However, particularly in rural areas, the roll-out of broadband remains problematic. While rural areas have a very low broadband coverage, these are also the areas with the lowest PC ownership and therefore potential demand. In Northern Ireland there is 100 per cent broadband coverage but take-up has been poor. This suggests that a cautious approach to providing rural broadband should be followed.

HUMAN RESOURCES

Many of the interventions in the area of human resources are 'space neutral', that is they apply to all areas. However, particularly in the area of third level and early school leaving there is more regional differentiation. Early school leaving is a national problem, but a number of urban areas have more concentrated problems, which are more amenable to intervention.

As was highlighted above, a process of divergence in relation to third-level attainment rates across the regions has been ongoing. This is important for regional development since the availability of graduates has become more central to economic development than almost all other factors. While the spatial distribution of universities is uneven, creating new universities or converting the Institutes of Technology to universities is not warranted. This is supported by the high third-level participation rates among some countries, which do not have a university. Rather, the problem is with attracting the graduates back to their home areas. In this respect the circular relationship between the availability of highly-skilled workers and the demand for them. If an area does not have a high-skills workforce it is unlikely that a high-skills employer will locate there, thereby reducing the incentive for high-skills individuals to live in this area. This needs to be tackled through other measures that determine the quality of life and firm location.

RESEARCH AND DEVELOPMENT

The regional innovation strategies that were supported through the current NDP have not been a success. With the increased funding recommended in this study, new ways of ensuring that innovation takes place in all regions will need to be found. In this respect the Institutes of Technology will play an important role. However, it seems unrealistic to expect them to carry all the burden of innovation at the regional level. Thus, closer links between the Universities and the ITs and Universities and firms in all regions need to be fostered.

CHILDCARE

As with other investments, childcare is highly dependent on demand and thus the evolution of the population. As the hubs and gateways are targeted for growth, more resources are likely to be needed in those centres.

SPORTS AND ARTS

Sports and arts facilities play an important role in determining the quality of life of the population. As quality of life is important in attracting and retaining skilled workers these facilities play an important role in regional development.

NEW GATEWAYS AND HUBS MEASURE

While all these individual investments are important, their co-ordination is even more important. This will require effective planning at the local and regional level. Consequently, the NSS required regional planning guidelines (RPGs) to be drawn up. While the experience with these RPGs is still patchy there appears to be more take-up.

In order to incentivise the gateways and hubs further we propose that an integrated measure for gateways and hubs be established in the next NDP. This will fund large integrated projects on a competitive basis. While at the margin resources should be targeted at the gateways and hubs rather than other areas, incentivising the gateways and hubs and in particular those that are made up of more than one urban centre or more than one local authority would appear to help in fostering a greater emphasis on joint projects. The funds available through this measure should be additional to those available under other measures, which means that there should be an incentive for gateways and hubs to apply. The types of projects that should be supported under the measure should always incorporate either several different investment strands (e.g. the integration of different infrastructure) or several administrative units (e.g. several local authorities). This ensures that there is significant value added from the investment, which might not take place otherwise.

There are two ways in which a competitive nature to the measure can be achieved. First, funds in this measure could be allocated subject to very tight criteria so that the total budget is not spent

unless sufficient good applications are forthcoming. Alternatively, the measure could be set up in such a way that only some gateways and hubs are successful. While the latter has the disadvantage that not all projects, regardless how good they are, would be funded while the former has the disadvantage that there is always a danger that once funds are available, that they will be spent regardless of the quality of applications. The level of funding proposed below is indicative and clearly one may want to alter this in light of some pilot costings.

A major failure of the current NDP was not to include regional development selection criteria as part of the programme complements. As the discussion above indicates, almost all investments have a role to play in regional development. Going forward the NSS needs to be fully taken into account through explicit project selection criteria that take regional development into account.

6.5 Current Activity on Specific Urban, Rural and Regional Development Measures

As was indicated above, under the current NDP a number of measures were aimed specifically at rural development. The *Area Base Rural Development* initiative provided funding for a range of local activities including networking, the production of business plans, local crafts and tourism/agri-tourism. While this measure is useful its scope limits the likely impact on total employment. Furthermore, the cost of a job created under this measure was quite high.

The *Village and Town Renewal* measure suffered from poor progress but was nevertheless evaluated favourably as part of the *Mid-Term Evaluation*. This measure can play an important role in improving the built environment in urban areas of various size with should have a positive impact on the quality of life in these area. In this respect the protection and enhancement of the heritage needs to be an important objective, which will also help support a vibrant tourist sector. This aim was supported through the *Heritage Conservation* measure.

The *Western Development Fund* on the other hand was more specifically aimed at conventional enterprise support through the provision of loans and equity for SMEs and firm start-ups. Thus, this sub-measure is very similar to the micro-enterprise and equity sub-measures in the Productive Sector OPs, but with a specific spatial extent in that it relates only to the counties of the Western region as defined by the Western Development Commission Act. Given the fact that rurality is not just an issue affecting the selected western counties it is difficult to understand the limited spatial remit of this measure. Furthermore, as it is similar to other measures there appears to be a degree of duplication, indeed there is also a similar measure aimed at Gaeltacht areas. These concerns are particularly pressing as the unit costs of the measures differ significantly. The *Mid-Term Evaluation* of the current NDP pointed to the fact that the cost of creating a job through the Western Development Fund was

over six times higher than that of a job created through the micro-enterprise Selective Financial Intervention sub-measure.³⁰ In general it is not good practice to have proliferation of different schemes, which are essentially doing the same. Thus, all measures of financial support to small and start-up enterprises should be merged, but carry a bias towards rural areas.

The *Rural Development Fund* provided support for research, evaluation and pilot actions. As solutions to the problems of rurality need to be developed this measure appears to be useful. However, attention needs to be directed towards the outputs of the measure. Currently, the performance indicators are the number of consultancy reports produced and the number of recommendations adopted. There has to be a more direct link to policymaking and other measures. For example, if research funded under such a measure produces a finding that is relevant to another measure there should be a mechanism by which the findings can be incorporated.

RECOMMENDATION ON THE SPECIFIC MEASURES

Given the poor prospects of the primary sector on farm structural and fisheries measures should be downgraded but the general rural development measures should be maintained. This suggests that a general redirection of resources to a better-targeted rural development measure would be desirable. Better targeting not only refers to identifying target groups of individuals and firms but also spatial targeting. The experience from the *Mid-Term Evaluation* suggests that some measures would benefit from a significant review and re-design. The Area-based Rural Development Initiative suffered from the high costs of additional jobs created. In this respect it performed no better than the Western Development Fund, which we recommend should be merged with a number of other similar measures. It may well be the case that the existing performance indicators in this area are not appropriate.

Overall, our recommendations are to maintain expenditure in all specific regional development measures that were part of the current NDP as these make an important contribution.

Furthermore, as highlighted above, we propose that a new integrated infrastructure measure to support the NSS be established. This will ringfence some of the resource recommended for expenditure under the various infrastructure investment areas for a competitive fund for gateways and hubs.

³⁰ At the time of the *Mid-Term Evaluation* 122 new jobs had been created in the BMW region through the Western Development Fund at a cost of €27,352 per job, while a total of 3,637 jobs had been created under the Selective Financial Intervention measure at a unit cost of €4,431. According to the Department of Community, Rural and Gaeltacht Affairs, the unit cost to this point is €13,900.

Table 6.4: Urban, Rural and Regional Development

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Rural Development Fund	Same	5.5	5.5
Heritage Conservation (Historic Properties)	Same	19.0	19
Urban and Village Renewal (incl. Gaeltacht)	Same	21.5	21.5
Area Based Rural Development Initiative	Same	13.0	13
NSS integrated infrastructure measure	New	0	70
Total		59	129

The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

6.6 Summary and Re- commendations

The results of the latest academic literature on economic geography suggest that lagging regions may find themselves locked in a vicious circle of underdevelopment, which even with public intervention is likely to be difficult to break. The international experience shows, that small remote communities are often not viable without substantial public supports, since the economic basis on which they were founded has disappeared. It is important to re-emphasise that rural development is a much wider concept than agri-development. At a time where the primary sector continues to decline in importance not just nationally but also in almost all rural areas more attention needs to be focused on activities that are outside the primary sector. Already, the majority of farmers are working only part-time on their farms, and thereby the rural economic base is broadening.

The poor urban structure and low population density has limited the scope for development in some regions. This, coupled with the dominance of Dublin has also focused attention on the generation of critical mass in ‘counter poles’ to Dublin. This of course needs to recognise that Dublin is the only city of international size on the island.

Overall, focusing on critical mass, the central aspect of the NSS, is supported by the economic geography literature. Furthermore, critical mass development that concentrates the population in and around selected centres results in lower costs in public service provision and better services. Changing the recent development pattern from one of dispersal towards one of concentration will have significant environmental benefits through reduced long distance commuting.

It is against this background that the NSS was framed. Given the aims of supporting critical mass outside of Dublin, while not undermining Dublin and simultaneously supporting development outside the gateways and hubs means that the NSS balances a number of potentially competing aims. Achieving these aims requires thorough co-ordination of all Government policies, and especially investment policies. The NDP is perhaps the most

important tool to implement the NSS. In this respect there are a number of key actions that will be necessary:

- Investment in the gateways and hubs needs to be prioritised which requires the project selection criteria to explicitly incorporate the NSS. This is important for all aspects of the NDP not just a subset.
- The regional focus of the NDP has to move from the NUTS 2 level towards the NUTS 3 planning region level.
- A specific NSS measure should be introduced in the NDP.
- The investments under the NDP must be supported by strong planning, particularly in order to prevent further urban sprawl and in order to build up the critical mass.
- The evaluation of the regional aspects of the NDP and the NSS require the proper research infrastructure to be built up.
- Further research in the mechanisms driving the spatial patterns needs to be undertaken.

7. ENVIRONMENT

7.1 Introduction

Given the huge scope of economic activity covered by the NDP it will have a wide-ranging impact on the environment. The channels through which it will impact on different environmental media (water, air etc.) are many.

The most obvious and direct channels are where the investment has been driven directly by environmental needs. These types of investment include the investment to clean up emissions to water and to guarantee a safe and satisfactory water supply for households and business. In addition, while not a major call on public resources, the regulation and provision of facilities for dealing with solid waste are also of clear economic and environmental importance.

The second type of channel through which the NDP will impact on the environment is indirectly through the effects on economic activity of specific NDP measures undertaken for reasons other than their environmental impact. For example, the investment in public transport should allow a reduction in commuting by car and, hence, in greenhouse gas emissions and in congestion. These environmental benefits are a by-product of the investment.

The third and most indirect channel is where NDP measures affect the overall level of economic activity in the economy and where that economic activity itself has an indirect effect on the environment. For example, at the most aggregate level the NDP investment, by relieving constraints on economic growth, will contribute to a long-term higher level of output in the economy. *Ceteris Paribus* higher output will result in higher emissions of greenhouse gases. Under the *High Growth* scenario, described in Chapter 4, emissions of greenhouse gases in 2013 will be about 3 percentage points (relative to 1990) higher than today. However, much of this increase would happen even if there were no NDP investment.

7.2 Progress to Date

In the case of the current Economic and Social Infrastructure Operational Programme environmental principles have played a key role in the selection of the priorities. These include the Public Transport Priority, selected because it holds out the prospect of, among other things, reduced congestion and emissions and a better spatial distribution of habitation, though the balance with respect to roads is not spelt out. The Environmental Infrastructure Priority addresses environmental concerns including those of EU Directives (Urban Waste Water and Drinking Water), pollution of rivers and lakes and inadequate access to public waste water treatment facilities.

Major progress towards achieving full compliance with the directive will be made under the current NDP.

The aims of the Priority for Sustainable Energy include improved local air quality and reduction of pollutants, especially of CO₂ emissions, to levels agreed in the Kyoto Protocol on combating climate change. In the current NDP this measure is limited in nature, though still making a contribution to promoting energy efficiency. The alternative energy provision in the NDP was to some extent overtaken by events. Extensive deployment of wind energy is taking place driven largely by market forces rather than because of any state support under the NDP. In this case the fact that money has not been spent while the objective has been achieved represents a significant success.

Where the Roads Priority in the current NDP is concerned, environmental principles affect its manner of delivery so that the investment will ensure 'a high level of environmental protection'. Many of the projects in the Regional Operational Programmes are guided by environmental objectives, especially in the Local Infrastructure Priority, which includes waste management, habitat protection and heritage conservation. The Agriculture and Rural Development Priority includes support for farm waste management and animal carcass disposal. However, as discussed later it is questionable whether such support should be necessary to achieve the desirable environmental goals.

7.3 NDP 2007-2013

The underlying purposes of investment in water infrastructure are on the one hand the provision of clean and safe water and, on the other hand, the protection of public safety and water quality in water bodies. Economic and demographic growth, the implications of the Spatial Strategy, the need to meet national and EU standards, and the satisfaction of benefits from water-related activities and passive enjoyment on the part of tourism, are drivers of the 'where', 'how' and 'how much' investment is advised. It goes without saying that the achievement of efficiency in the investment's specification, delivery and subsequent operation, or getting value for money, is a key requirement.

While there will still be some work to be done in the next NDP to achieve full compliance with the Urban Waste Water Directive, the progress achieved to date has been maximised as all the larger projects have been completed or are nearing completion. The result is a major improvement in the waters surrounding the island of Ireland. Where progress is still required is in the quality of water supply and in reducing emissions to the rivers and lakes of Ireland from human activity, including agriculture.

The next plan will be framed in particular by the standards and procedures specified for drinking water and in the Water Framework Directive. Population growth of 13 per cent by 2013 and 28 per cent by 2020 (according to the high growth scenarios) point to extra demand for water services as well as opportunities for installing water-using equipment and procedures for efficient water

consumption. In addition to population growth, projected lower occupancy of dwellings also raises consumption.

The issue of global warming may be a long term one but its possible impacts should also be considered. Water availability for increased abstraction in the eastern and south-eastern regions is becoming tight and there are associated implications for ground water use, the possibility of low-flow situations and potential problems for dilution of water-borne effluent. As a consequence water services will be more costly to deliver and efficiency becomes all the more important. In so far as the existence of water infrastructure acts as a 'facilitator' for future population and growth, the positioning of such infrastructure has long-term effects. Given significant economies of scale, enjoyed by waste water treatment plants in particular, careful consideration of positioning at hubs and gateways is called for.

Because of the absence of domestic water charges the consumption of water by the domestic sector, which constitutes approximately half of all consumption, is insulated from the costs it imposes on the system, not to mention future potential environmental costs. This situation goes against the spirit of the Water Framework Directive and it means that careful users ultimately pay through their taxes for the wasteful use of others. Analysis of the issue is called for as it could see excess capacity being provided as well as water-saving technology ultimately not receiving the support it deserves (because of the failure to acknowledge the true economic cost of water use). A serious and sensible look at charging is required.

In keeping with the underlying purposes of investment in water services outlined above, the indicators need to be carefully formulated to look at the results of specific investments. Water quality downstream of plant needs to be measured before and after investment to show whether the investment policy achieves its aim. Such indicators would also constitute parameters for the cost-benefit analyses. Cost-benefit analyses should become increasingly important under the Water Framework Directive, which is more flexible than the Urban Waste Water Treatment Directive by being relatively more focused on objectives rather than on means and has the potential for greater efficiency. More attention should also be paid to the potential benefits of leakage reduction.

While not a major factor in expenditure under the NDP, the problem of minimising the generation of solid waste and of disposing of it in an environmentally satisfactory manner has featured in the current NDP and should be a feature of the next NDP. This is a regulatory issue as the large investment to be made should be undertaken on a purely commercial basis and the cost should be paid by those who generate the waste – businesses and households. Significant progress has been made in implementing the polluter pays principle in this sphere and this is having a significant impact in reducing the volume of waste generated by households (Scott, Watson and Gorby, 2006).

Going forward the regulatory regime needs to ensure that the cost of the investment to be undertaken in waste disposal is minimised and that the new infrastructure is used as efficiently as possible. Rather than encouraging the development of many different waste disposal facilities the aim should be to reap the economies of scale that technology allows (Barrett and Lawlor, 1995). This will also be important to ensure that the necessary environmental regulation of the waste disposal facilities can be undertaken on an ongoing basis in a cost and environmentally effective manner.

Another measure under the NDP directly affecting the environment is the investment in promoting energy efficiency. These measures are designed to encourage more efficient use of scarce energy resources and also to minimise the resulting emissions of harmful gases, especially greenhouse gases.

The impact of the transport investment is difficult to determine without having details of the public transport programme that is warranted on cost benefit grounds. However, as provided for in Chapter 12, there is likely to be a major increase in investment in this area of the economy over the course of the next NDP. To some extent the provision of such infrastructure will, through normal market forces, result in some increase in urban densities, some reduction in car-based commuting and a move towards more sustainable living.

If the investment in urban public transport is to produce its full economic benefits, as discussed in Chapter 12, it will need supporting measures to be implemented. These will include road pricing and physical planning guidelines designed to move Dublin towards a more sustainable model of living.

If the investment is to produce a reasonable economic return to society it will be important that the physical planning process changes to promote much denser development around the new public infrastructure network. This, in turn, will produce an environment that is more sustainable in terms of lifestyle. With higher utilisation of public transport and, as a result, less commuting by car, emissions of greenhouse gases will be reduced in the long-term. In addition, it will reduce the problems of congestion. It will also produce more efficient use of scarce land resources. Finally, because of economies of scale in the provision of other infrastructure such as water, waste water and waste disposal, it may produce additional economic savings and environmental benefits.

It will be important that if and when a comprehensive study is done on the proposed public transport network for Dublin the environmental effects are also examined. Even if a value is not put on these benefits some account needs to be taken of them in deciding on the prioritisation of public transport projects.

The proposal to implement appropriate road pricing in the long term would have important environmental benefits as well as producing much more efficient use of costly transport infrastructure. Even without the internalisation of the cost of greenhouse gas emissions, the effect of such a regime would be to

reduce commuting and unnecessary journeys. In reducing congestion it will also reduce emissions per commuter journey even where undertaken by car. In promoting a more sustainable lifestyle based around increased utilisation of public transport it would enhance further the environmental benefits already identified above.

Large investment is likely to materialise in the next NDP and potential technologies and spatial choices range from the environmentally sensitive to the environmentally insensitive kind. The opportunity to incentivise choices so that they are mindful of environmental costs should be exploited wherever appropriate by the application of the polluter pays principle.

The recent housing policy framework entitled *Building Sustainable Communities*³¹ emphasises a number of key policy directions for the medium term, including the building of active and successful communities, continuing improvements in the quality of houses and neighbourhoods as well as introducing measures to modernise the private rented sector. If implemented as part of the social housing programme it would also have environmental benefits.

The direct effects of a number of key measures in the NDP on emissions of greenhouse gases will be beneficial. In particular the investment in public transport and in sustainable energy can be expected to mitigate the increase in emissions that would otherwise occur. However, by facilitating more rapid growth in the economy, resulting in the level of GNP being almost 2 per cent higher than would otherwise be the case in 2020 (Chapter 5) the NDP will have an offsetting indirect effect of increasing emissions of greenhouse gases. For 2020 the analysis in Chapter 5 would suggest that greenhouse gas emissions would be around 3.25 per cent higher than would be the case with no NDP. However, this estimate takes no account of the benefits, mentioned above, which are likely to arise from individual measures such as investment in public transport.

³¹ *Housing Policy Framework – Building Sustainable Communities*, Department of the Environment, Heritage and Local Government, December 2005.

8. LISBON STRATEGY

The Lisbon Strategy was drawn up at the EU European Council held in Lisbon March 2000. It is the EU response to the challenges of accommodating the impact of globalisation and enlargement and has the overarching aim of making the EU ...*the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*. Since the EU Commission has only limited policy levers to achieve this goal the key responsibility to pursue the Lisbon Strategy rests with the Member States.

The Strategy identified the low employment rates especially among woman and older persons, high structural unemployment and the under-developed service sector as particular weaknesses. Furthermore, it pointed to the need for a shift towards a knowledge driven economy which is to be achieved through investments in R&D and the information society. The development of the information society is projected to provide a strong engine for growth. Importantly, the Lisbon Strategy also recognised the need for modernisation of the European social model.

Progress on achieving the Lisbon Strategy has been slow, and consequently it was re-launched in 2005. Noting that the EU had diverged in terms of economic performance from the main competitors, the EU Commission asserted that achieving the aims of the Strategy were more important than before. Overall, the aims of the re-launched Strategy are to "...deliver stronger, lasting growth and creating more and better jobs". Specifically, the Lisbon Strategy is to be implemented through the *National Reform Programme (NRP)*, which brings together the wide variety of policies and initiatives under the ten key policy areas that were identified in the re-launched Lisbon Strategy:

- Extend and deepen internal market.
- Open and competitive markets inside and outside.
- Improve European and national regulation.
- Expand and improve European infrastructure.
- Increase and improve investment in R&D.
- Facilitate innovation, the uptake of ICT and the sustainable use of resources.
- Contribute to a strong European industrial base.
- Attract more people into employment and modernise social protection systems.
- Improve the adaptability of workers ad enterprises and the flexibility of labour markets.

- Increase investment in human capital through better education and skills.

Given the focus on employment, the Lisbon Strategy supersedes the *European Employment Strategy*, which was devised in 1997/98 in the context of high unemployment in Europe and focused on interventions to tackle unemployment and social exclusion. A further development is the preparation of the National Strategic Reference Framework (NSRF), which is required by the EU commission in relation to cohesion policy. The NSRF is to link the various national policies to the EU Cohesion goals.

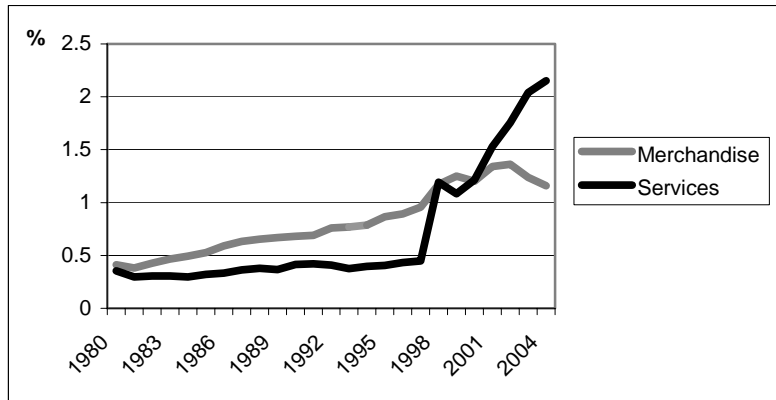
RECENT DEVELOPMENTS

If one considers the key aim of the Lisbon Strategy is to enhance competitiveness of the EU, it is useful to consider the contribution that Ireland is making towards this objective. Given that export shares are a measure of competitiveness it is straightforward to analyse the evolution of Ireland's competitiveness using data from the United Nations on Irish exports as a share of total world trade. As services exports are becoming an increasing share of total exports it is also important to consider both merchandise and services shares, which are both shown in Figure 8.1. The Irish share in world merchandise trade increased steadily until 2002 and declined since then. This suggests that with respect to merchandise trade Ireland has lost competitiveness. Services exports as a proportion of world services trade grew very slowly until 1997 but have increased rapidly since then. This structural break may reflect a change in classification so this graph has to be interpreted cautiously.³² Nevertheless, the recent growth has been very significant, and while there was a small dip in the share in 2000, this growth has continued, suggesting that Ireland remains competitive with regard to services trade. Overall, the annual average real growth of services exports from Ireland was 27.5 per cent. With the exception of transport (4.8 per cent), tourism (2.9 per cent) and royalties (-8.3 per cent) all sub-sectors grew at a very high rate over the period 1998 to 2004. For example, there has been strong annual average real growth in insurance (40.1 per cent), financial services (42.2 per cent), computer services (36.1 per cent) and business services (40 per cent).³³

³² The International Financial Services Centre (IFSC) which could also be thought to contribute to the structural break was set up in 1987 so is unlikely to be the source of the break.

³³ These numbers are derived from the balance of payments statistics using the GDP deflator to convert the current series into a constant price series.

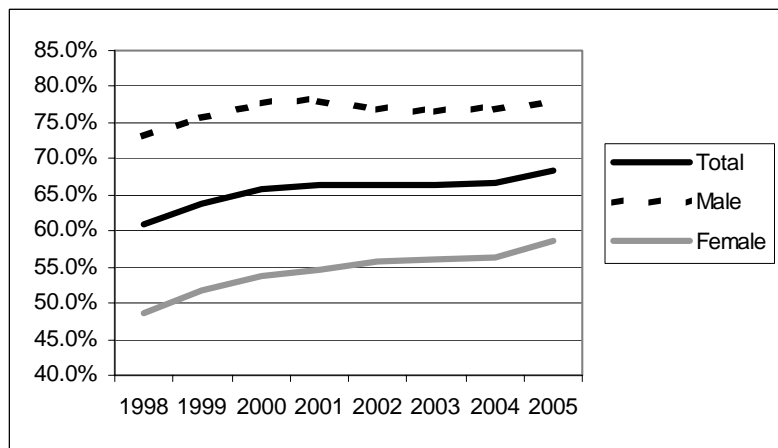
Figure 8.1: Irish Merchandise and Services Export Shares in Total World Trade



Source: United Nations Trade Statistics (www.un.org).

A key aim of the Lisbon Strategy is to increase the employment rate, that is the proportion of the population aged between 15 and 64 years that is working. A particular focus is on the employment rates of females and older workers. In this respect EU targets have been set. The overall employment rate targets are 67 per cent by 2005 and 70 per cent by 2010, while for females the more modest targets at 57 per cent by 2005 and 60 per cent by 2010 reflects the lower labour force participation. Also important is that there is some convergence between the male and female employment rates.

Figure 8.2: Employment Rates (Numbers Employed Divided by the Population Aged 15-64 Years)

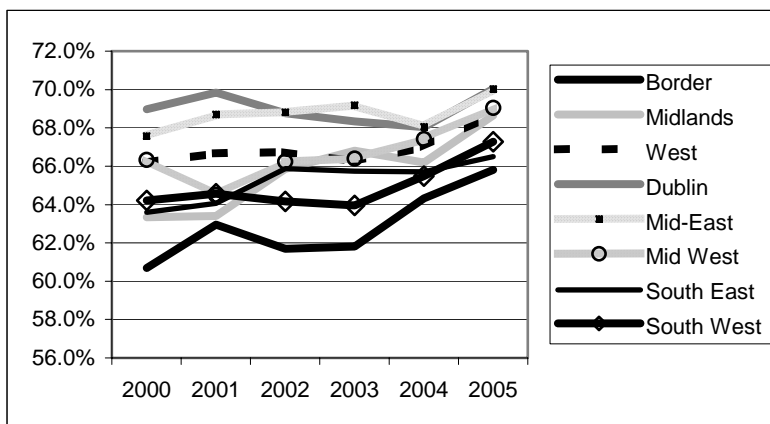


Source: Own calculations using CSO *Quarterly National Household Survey* and *Population and Migration Estimates*, various issues.

There is considerable heterogeneity between the regions in terms of the employment rate, which is shown in Figure 8.3. Again a pattern of convergence between regions is evident which is to a

large extent driven by increases in the female labour force participation.

Figure 8.3: Employment Rate by Region



Source: Own calculations using CSO *Quarterly National Household Survey* and *Population and Migration Estimates*, various issues.

ROLE OF THE NEXT NDP

The next NDP will build on what has been achieved so far in order to consolidate and improve competitiveness and thereby contribute to the achievement of the Lisbon Strategy. By enhancing the productive capacity of the economy, and especially by addressing key constraints, the next NDP can increase sustainable economic and employment growth. All investments recommended in this study address the key policy areas of the Lisbon Strategy. Exceptions are: extension and deepening of the internal market, fostering competitive markets and improving European and national regulation. However, they are not irrelevant to this study in that they set an important context. For example, the expansion and deepening of the internal market is likely to have a stimulatory effect and allows Ireland to benefit since it will open new markets. In this respect developments in freeing up services trade are likely to be important. Ireland is already highly competitive in traded services and lower barriers to services trade are likely to benefit Ireland more than other countries. Similarly, the degree of competition has an important impact not only on the general price level but particularly on sectors related to the investment priorities. In this respect increased international competition for construction projects might reduce the capacity constraint of the sector and is likely to result in more modest inflation. As part of the accompanying measures this report proposes a number of recommendations on regulation for example in the telecommunications area.

This report accords the highest priority to addressing infrastructure bottlenecks and, therefore, recommends substantial further investment in infrastructure particularly in the areas of transport, water services and housing. Investments in other areas such as waste, energy and telecommunications will largely be put in

place through own resources of the service providers, be they state owned companies or private enterprises. Not using public resources in these areas supports competitiveness for two reasons. First, the private sector, due to the profit motive has the incentive to seek out the most productive investments. Given the incentives for the public sector it is much less likely to choose the best investments in areas where the private sector is strong. Second, since higher taxes reduce growth through their impact on competitiveness, limiting the total public investment to those areas of highest priority supports growth.

The recommendations on R&D are to increase resources devoted to this area substantially. Building on investments to date, the aim of our recommendations is to achieve a step change in the level of R&D investment in Ireland over the period of the NDP 2007-2013. Our recommendations envisage substantial increases in public investment in both higher education R&D and support measures for private sector R&D activity. This increased investment in R&D will facilitate innovation and contribute to a strong European industrial base. Of course the focus of the Lisbon Strategy on the industrial base is somewhat misplaced since it appears to undervalue the role of traded services in driving growth.

Furthermore, this report recommends increased spending on education and training, which will increase the stock of human capital and, therefore, is likely to raise productivity. This will not only facilitate the increase in R&D required but will also address educational failure, which is associated with poor labour market outcomes. Therefore, the investment in education is likely to result in improved labour market participation and indeed lower unemployment.

9. NATIONAL ANTI- POVERTY STRATEGY AND INCLUSION STRATEGY (NAP/INCLUSION)

9.1 Introduction

The ten year National Anti-Poverty strategy (NAP) was launched in 1997 to help achieve the objective of eliminating poverty in Ireland. This was revised and further developed in the NAP *Building an Inclusive Society: Review of the National Anti-Poverty Strategy* (2002). The *Lisbon Strategy*, which is outlined above, also refers to social cohesion goals and required Member States to produce Action Plans against Poverty and Social Exclusion (NAP/inclusion). Two NAP/inclusion plans, 2001-2003 and 2003-2005 have already been completed. The second NAP/inclusion plan was recently reviewed and the Office for Social Inclusion, which was set up to co-ordinate the Anti-Poverty and Social Inclusion policy, has produced a report on the consultation for the next NAP/inclusion for the period 2006-2009.

The overall goal of the NAP/inclusion process is to “...reduce substantially and ideally eliminate poverty in Ireland and to build a socially inclusive society”, where poverty is defined in the following way:

People are living in poverty if their income and resources (material, cultural and social) are so inadequate as to preclude them from having a standard of living, which is regarded as acceptable by Irish society generally. As a result of inadequate income and resources, people may be excluded and marginalised from participating in activities, which are considered the norm for other people in society.

The overall goal of the strategy is to be achieved through more specific objectives. These key objectives of NAP/inclusion are to:

- Sustain economic growth and create more and better jobs;
- Increasing of income support in real terms for those who need it and employment participation for those who are able;
- Improve access to and providing higher quality public services;
- Address the specific needs of groups at high risk of poverty and tackling the causes of inter-generational poverty;

- Supporting disadvantaged communities.

In addition to this general target NAP also addresses poverty issues within a number of key themes and defines targets within each of these themes:

- Income Adequacy.
- Employment & Unemployment.
- Educational Disadvantage.
- Health.
- Housing and Accommodation.
- Rural Disadvantage.
- Urban Poverty.

These themes reflect the wide range of factors leading to poverty and exclusion that are often interrelated. In relation to poverty the NAP/inclusion was to reduce the number of individuals who are living in consistent poverty below 2 per cent and to eliminate consistent poverty. A person lives in consistent poverty if they are a member of a household that falls below 60 per cent of the mean household income and lacks basic necessities.³⁴ Clearly, income redistribution measures can contribute significantly to alleviating consistent poverty and in this respect social welfare payments, pensions, and disability benefit have been increased at a rate that significantly exceeds the rate of inflation. The tax burden has also been reduced for the low paid and child benefit has been increased. The recently announced *National Childcare Strategy* further supports households with young children. Apart from the direct income supports social and affordable housing plays an important aspect of tackling poverty. This is particularly important in an environment of a booming housing market which impacts on affordability both in the owner-occupier market and the rental market.

Redistribution in itself does little to deal with the root causes of poverty. Consequently, other measures to reduce poverty are needed. For example, removing obstacles to employment will be important going forward since despite the substantial reduction in unemployment over the last decade the number of long-term unemployed has remained constant for a number of years. In this respect tackling educational disadvantage continues to be of high importance, especially as low educational attainment tends to lead to poor labour market outcomes. Furthermore, special attention needs to be paid to particularly vulnerable groups including:

- children, women,
- older people,
- travellers,
- people with disabilities,
- migrants and members of ethnic minority groups.

³⁴ Household income is usually equalised to take account of differing household composition.

9.2 Recent Developments

In order to better set the context against which the various investment priorities should be considered it is useful to briefly review some poverty and social inclusion trends.

Poverty and deprivation can be measured in many ways. Poverty cannot simply be measured in terms of income since many low-income individuals do not have a particularly low living standard. Thus, poverty measures must incorporate all factors that determine living standards. Consistent measures of poverty have been developed through extensive research at the ESRI and they have both been used to monitor progress on NAP/inclusion and to identify targets. Persons suffer consistent poverty if they have a low income and score on other non-monetary deprivation indicators.

Whelan, Nolan and Maître (2006) show that, while living standards and levels of deprivations have improved over the period between 1994 and 2001, the numbers falling below relative income poverty lines has increased. In general the decreased dependence on social welfare payments has improved the situation for children and likewise older people have benefited from rising relative incomes. However, the relative poverty rates among the ill and disabled increased sharply. On average, lone parents have become less dependent on welfare payments but this does not seem to have resulted in lower poverty rates. Thus the study highlights that there are a range of groups, which are subject to differing poverty trends.

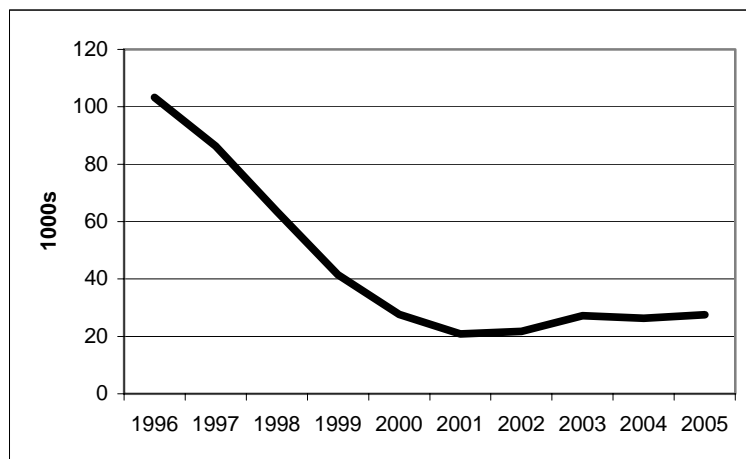
Most recently Whelan, Nolan and Maître (2006) reviewed deprivation and consistent poverty measures using more up to date data. Since the most recent data used for poverty measurement were collected in a new survey which differs in a number of respects from the previous surveys, they reconfigure the non-income deprivation measure by including 11 indicators rather than 9 indicators which are then combined with income thresholds of 60 per cent and 70 per cent of median income to generate consistent poverty measures. They find that certain groups are most at risk of living in poverty. These include lone parent households, households with large numbers of children, individuals with low educational attainment, the unemployed, the ill and disabled. Unfortunately, the measures based on the new survey are not directly comparable to measures calculated using the previous survey so identifying trends is not straightforward.

As was highlighted above, employment status is a significant determinant of poverty. Since many individuals in transitory unemployment will not suffer from poverty it is particularly important to consider the level of long-term unemployment.

Figure 9.1 shows the number of individuals classified as long-term unemployed over the period 1996 to 2005. The graph clearly shows the rapid decline in the number of long-term unemployed individuals until 2001. Since then the number of long-term unemployed has increased slightly. Even though the increase is not substantial, it is clear that the level has hit a floor. Clearly, individuals can exit the long-term unemployment status by entering

employment or by leaving the labour force through retirement or illness and disability. The remaining long-term unemployed appear to be more persistently out of employment suggesting that more significant interventions will be required to integrate them into employment.

Figure 9.1: Number of Long-term Unemployed



Source: CSO *Quarterly National Household Survey*.

A number of different groups may suffer from inequalities and discrimination. These include females, the disabled, travellers and ethnic minorities. In this section we briefly review some of the recent developments and research results for Ireland.

Starting with gender inequality, research suggests that tackling pay gaps is an important element in promoting greater female participation as women's participation is particularly responsive to increases in pay (Doris, 2001; Callan *et al.*, 2003). Research conducted as part of the *Mid-Term Evaluation* of the NDP (see Fitz Gerald, McCarty, Morgenroth and O'Connell, 2003) shows that in 1987 the ratio of women's mean hourly wage to men's mean hourly wage was 80.1, representing a gap of 20 per cent. This gap declined slowly to 15 per cent in 1997. However, between 1997 and 2000 there was very little change so the mean pay gap still stood at 15 per cent.

The results for 2000 show that the female/male wage gap is narrowest among those in professional occupations, where women earn 91 per cent of male hourly wages on average and among clerical workers where the ratio is 87 per cent. The widest gaps are observed in both high and low status occupations. Women managers and senior officials earn only 72 per cent of male managers' earnings on average, representing a gap of 28 per cent. In sales and service occupations the gap reaches 32 per cent, while in elementary occupations the gap is 25 per cent.

Decomposing these results to account for different levels of experience showed that time out of the work place accounts for an increasing proportion of the persistent pay gap between men and

women. This suggests that interventions, which facilitate employment continuity and reduce the penalties attached to time out of the work force are extremely important. Within the first category, the childcare commitments within the NDP are central. The availability of affordable childcare is an important element in women's decisions to stay in the labour market when they have young children and on the length of time they stay out of the labour market.

A recent study by Russell, Smyth and O'Connell (2005) further analysed the gender pay differentials among graduates. They found no gender wage gap among graduates three years after graduation across the entire labour market. However, a gap of 8.2 per cent was found for graduates entering the private sector. Of course, if gender wage gaps develop due to time out of employment by women then measuring the gap three years after graduation may not be appropriate.

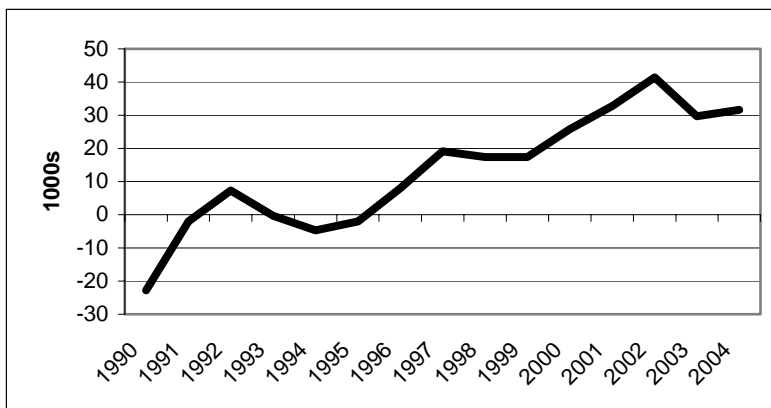
Apart from the provision of childcare, which was identified as a possible intervention to reduce the gender pay gap, flexible work arrangements may also contribute to greater equality by allowing individuals who would otherwise not be active in the labour market access to employment.

The flexible arrangements considered by Russell, Smyth and O'Connell (2005), include part-time working, flexible hours, job sharing and home working. Apart from the latter these arrangements proved particularly attractive to females, which suggests that flexibility would be expected to particularly improve gender equality. The findings of the study point to very different impacts of the various flexible work arrangements. While part-time working reduces stress, it is also associated with lower hourly earnings suggesting that this arrangement is typically offered at lower levels in an organisation and could result in a larger gender pay gap. In contrast, the higher-level workers are more likely to avail of flexible working time arrangements, which result in higher autonomy and reduced work pressures but do not reduce stress. Similarly, employees that work from home tend to have higher work pressures and stress but also tend to have higher earnings.

While Ireland has a long history of emigration, over the last decade Ireland has experienced substantial immigration flows. Since these immigration flows differ from the previous positive net-migration flow during the 1970s when many Irish emigrants returned, in that the current flow is substantially driven by non-Irish individuals, Ireland now has significantly larger ethnic minorities. Importantly, the average educational attainment of immigrants is higher than that of the Irish population, so that this inflow adds substantially to the supply of skilled labour. However, as Barrett, Bergin and Duffy (2006) show, immigrants suffer an 'occupation gap' in that on average the nature of their employment does not reflect their level of education. This gap could be due to a number of factors. These include language barriers, qualification recognition and lack of integration into social networks. Importantly, the occupation gap has an economic cost in that the 'underemployment'

constitutes a waste of resources, particularly in a tight labour market. If immigrants that arrived in Ireland between 1993 and 2003 had found employment commensurate with their qualifications, GNP would have increased by approximately 0.5 per cent.

Figure 9.2: Net-Migration 1990-2004



Source: Central Statistics Office.

As was highlighted above, those with long-term illnesses and disabilities are particularly at risk of poverty. This may be due to inability to participate in the labour market and therefore reliance on income supports or discrimination. Data published by the Central Statistics Office (see Table 9.1) shows that the number of persons aged between 15 and 64 years who suffer long-term illness or disability is increasing not just in absolute terms but also as a proportion of the total (from 10.3 per cent to 10.9 per cent). Furthermore, the proportion of those with a disability or long-term illness who are in employment has decreased. This decrease has not resulted in higher unemployment rates but in higher inactivity rates.

Table 9.1: Persons Aged 15 to 64 Years Classified by Whether They Have Long-Term Medical Problems or Disability by Employment Status

Year	With Health Problems Or Disability		No Health Problems or Disability		Health Status Not Stated		Total	
	2002	2004	2002	2004	2002	2004	2002	2004
Total Persons (1,000s)	274.2	298.3	2,239.7	2,419.3	139.9	24.6	2,653.8	2,742.2
In employment (1,000s)	109.9	110.8	1,534.9	1,621.5	83.2	16.5	1,728	1,748.8
Unemployed (1,000s)	7.5	9.2	66.4	81	2.9	0.4	76.8	90.6
Not active (1,000s)	156.8	178.3	638.4	716.8	53.8	7.8	849	902.9
	%	%	%	%	%	%	%	%
In employment	40	37	69	67	59	67	65	64
Unemployed	3	3	3	3	2	2	3	3
Not active	57	60	29	30	38	32	32	33

Source: CSO Quarterly National Household Survey, Disability Update Q1 2004.

9.3 NAP/ Inclusion and the NDP

Gannon and Nolan (2004) consider social inclusion issues for the disabled. *Inter alia* they found that even accounting for age and gender differences, the educational attainment of the disabled is significantly lower. Labour force participation is also significantly lower particularly for individuals with more severe disabilities, which may reflect ability or discrimination, which discourages individuals from participating in the labour market. Interestingly, apart from the lower participation rate no pay gaps were found, suggesting that there is no systematic discrimination within the workplace.

While the next NAP/inclusion, which is being prepared in parallel to the NDP, will be a central strategy of the Government to deal with social cohesion over the medium term, given the wide remit of the next NDP and the longer period over which it will be in operation, this must also reflect the NAP/inclusion goals.

The economic rationale for the high priority of equality and social inclusion may not be obvious. Nevertheless, an economic case can be made for the inclusion of the NAP/inclusion principles in the next NDP. If particular groups are excluded from any aspect of public and economic life their potential will be wasted. By actions designed to ensure equality of opportunity and genuine inclusiveness these resources can be utilised. Of course, equality of opportunity does not mean that everyone will avail of these opportunities.

Given the strong economic performance Ireland has had an easier task than many other countries in achieving the employment target. However, fast growth may not lift all boats and indeed could result in widening income dispersion. In this respect those that are not economically active are particularly at risk. Thus, policies that remove obstacles to employment for those currently not active but able is a particularly high priority. Tackling these obstacles by necessity must address a range of obstacles, including discrimination leading to low activity rates among the disabled and the gender wage gap. Fast growth has resulted in pressures, particularly in the housing market, which could result in higher poverty rates as individuals find it harder to secure affordable accommodation.

SUMMARY OF INVESTMENT PRIORITIES

Given the very complex and multifaceted nature of poverty and exclusion, quite a number of the investment areas considered in this report impact on poverty and exclusion. In particular, investments in housing, human resources and health play an important role in achieving the NAP/inclusion goals. However, other investments For example, on rural development also help in reducing exclusion. It is, therefore, useful to summarise the contribution that the proposed investments will make.

The most important investment areas which impact on equality and social inclusion are:

- Housing.
- Human Resources.

- Health.
- Childcare.

Furthermore, investments in the areas of transport, community development and rural development also make important contributions to equality and social inclusion.

HOUSING

Substantial investment in the areas of social and affordable housing has already been made as part of the current NDP. On the basis of the analysis in this study, it is estimated that the demand for housing units will remain at a high level up to 2011. Given the affordability problems especially for key vulnerable groups, social and affordable housing will, therefore, continue to play an important role. While the five broad measures, which comprise the Housing Priority make sense in that they are broadly characterised by tenure, the schemes under each measure could be streamlined more effectively. There is an urgent need to rationalise the existing schemes and supports and their eligibility criteria in order to deliver a more streamlined set of housing policy interventions with clear objectives, targets and output levels. This should make the schemes more accessible to the target groups while at the same time improving efficiency.

We recommend that a more balanced mix of tenures, including more affordable housing and more use of schemes using the private rented sector, such as the Rental Accommodation Scheme be pursued. The spend on social rented accommodation by the voluntary housing sector should be maintained, given its focus on providing rented accommodation for key groups with special housing needs, such as the elderly, the disabled and the homeless.

HUMAN RESOURCES

At both primary and secondary levels, a major priority remains the needs of those children who are currently being failed by the system. Their difficulties are multi-faceted and while the outcome is educational failure and or drop-out, the answers to the problem are not to be found within the educational system alone. It will be important to integrate measures to address educational disadvantage with other measures to counter poverty and social exclusion. Within the education system, there is also a strong rationale for the expansion of pre-school and early childhood education for disadvantaged groups. At second level, a key objective should be the 20 per cent of school leavers who leave without having completed the Leaving Certificate. In both sectors, also, it will become essential to devote more resources to meeting the needs of pupils with physical and learning disabilities. Diversity through immigration is to be welcomed, but will require additional resources to ensure that the 'New Irish' children are successfully integrated into Irish society, into the educational system, and, eventually, the labour market.

Measures to assist two groups in particular should be prioritised: early school leavers experiencing difficulties in accessing

employment and the long-term unemployed. In relation to both priority target groups, the decline in numbers should allow more intensive interventions. Recent years have seen significant increases in participation in higher education, and the most recent evidence suggests that the increased participation levels have been associated with a reduction of some of the most glaring socio-economic inequalities in access.

HEALTH

The healthcare system benefits the whole population. However, particular aspects of health expenditure especially in the non-acute care area have a significant impact on equality and social inclusion, through supports for groups that are especially vulnerable to poverty. The non-acute care measure aims to provide facilities for a range of different groups, including the disabled, elderly, the mentally ill, at risk children, and the wider community. The non-acute/continuing care measure is of considerable importance from a social inclusion and equality point of view. We, therefore, recommend that investment in this area be increased, despite the relatively slow progress under the current NDP.

CHILDCARE

Provision of childcare has a number of beneficial impacts in terms of equality and social inclusion. It supports equality by facilitating the participation of woman in the labour force and it supports child development, particularly for disadvantaged children and, therefore, improves their life chances. This is particularly important in that it helps children overcome the developmental handicaps often associated with poverty and it can enable parents to develop skills through participation in education and training courses or to enhance their incomes through paid employment.

While it is difficult to predict the likely level of demand for centre-based childcare, and the degree to which non-grant aided private sector will persist or develop alongside that provided under the EOCP and NCIP combined, the 50,000 additional places which the NCIP is designed to provide would seem to be a reasonable level of provision for new State-supported childcare places.

For the period 2010-2013, the focus would need to be broadened to take account of the need to improve and expand early childhood education, investment in early education targeted at the disadvantaged is included in the education section but is predominantly current costs.

The increased emphasis on quality, early education, staff training and retention and the likely need for continued staffing subsidies to meet social inclusion objectives all suggest that the ratio of current supports to capital supports should be maintained.

OTHER AREAS

In relation to transport the recommendations regarding public transport are important for social inclusion since public transport is the predominant mechanised form of transport for poorer people. *The Mid-Term Evaluation* found no concrete examples of how services to disadvantaged communities have been improved. The exception relates to the pilot Rural Transport Initiative where social and community groups reported that the initiative is proving successful in providing those in rural areas with access to vital services. Some of the rural development measures mentioned above are targeted particularly at the unemployed and, therefore, make a contribution to reducing poverty. In general the wider investment proposed in this study will impact on poverty and social inclusion by supporting sustainable employment growth.

CURRENT ACTIVITY ON EQUALITY AND SOCIAL INCLUSION

The above section has summarised some of the main investment areas that will make a contribution to achieving the NAP/inclusion aims. However, these investment areas leave some important gaps in relation to inclusion measures for specific vulnerable groups. These were covered in the current NDP through a number of measures which were evaluated as part of the *Mid-Term Evaluation*. It is therefore useful to review these measures and identify investment priorities going forward.

The activity of the current NDP to tackle equality and social inclusion issues is through a range of measures. For example, the *Equality* measure is aimed specifically at initiatives to tackle barriers to equal participation of woman in the workplace. While this is clearly a useful activity it is too narrow in the sense that it focuses merely on equality for woman and not other groups such as the disabled. *Family Support* and *Community Development* are aimed at enabling disadvantaged communities to participate in local development, training and employment. There is a focus on information dissemination and education. A particularly useful aspect relates to the enhanced programme of support offered to individuals with complex needs, which tend to be the most persistently excluded.

The Youth Services measure provides support for youth information services and facilities for young people particularly in communities affected by high rates of drug use. The latter is clearly a useful activity as it is likely to reduce the rate of drug abuse and aids the integration of young people in such communities. However, the Youth Services Grant scheme is not specifically aimed at disadvantaged youth.

RECOMMENDATIONS

One key recommendation concerning these measures relates to targeting. In many cases the aim is to address issues in deprived communities. These need to be targeted efficiently. The experience from the current NDP is that spatial targeting has in some cases not taken place, while for some measures the targeting has been good.

Often individuals who are socially excluded face a complex mix of issues that prolong their exclusion. Tackling these multiple problems requires interventions from a range of agencies. This should be facilitated through co-ordinated assessment and referral to the appropriate agency. The fact that the number of long-term unemployed has remained constant may be due to a failure to co-ordinate the appropriate interventions for this group. Reintegrating them, as far as is possible into the labour market is likely to carry a high return.

The equality measure currently only refers to gender equality. Clearly other groups also suffer from discrimination and inequality. These include travellers, the disabled and ethnic minorities. Therefore, apart from continuing with the existing measures it appears opportune to introduce a new measure to ensure better integration of the migrant community in Ireland. Ireland has seen unprecedented immigration flows not just of refugees but mainly from other EU countries. There is evidence that immigrants often possess high qualifications that, however, are not reflected in the type of job they find. This may be due to language barriers or problems with the recognition of qualifications. Clearly, overcoming such barriers would allow immigrants to make a larger contribution to the Irish economy by increasing the supply of skilled labour. Furthermore, as immigration continues, steps need to be taken to prevent marginalised ghettos from forming, which will hamper subsequent integration efforts. In this respect it would be useful to consider the experience of other countries that receive substantial immigration flows.

Diversity management is an ongoing process of ensuring reasonable accommodation of diversity in Ireland and to quote the NPAR "...this means taking account of the practical implications of cultural diversity in the design and implementation of policies, programmes and organisational practices to ensure an inclusive society." This is achieved through a whole system approach i.e. mainstreaming, benchmarking, targeting and engagement so as to manage the active and positive participation of all groups in society and supporting general acceptance of the changes resulting from increased diversity. International diversity is seen as an economically advantageous strategy. As a country, a diverse, tolerant and vibrant society in particular is likely to play an important role in attracting further talented and creative individuals.

Table 9.2: Financial Recommendation

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Equality	Increase (expanded measure)	3.9	8
Crime Prevention	Same	12.7	12.7
Youth Service	Reduce	51.72	45
Drugs Initiative/Young People Facilities and Services Fund	Same	40.0	40
Community Development & Family Resources	Same	92.5	92.5
Total		200.82	198.2

10. NORTH-SOUTH

The National Development Plan (NDP) for Ireland is being drawn up in the context where Northern Ireland has already published its *Investment Strategy for Northern Ireland 2005/2015*. This gives significant information on the infrastructural investment likely to take place North of the border. This information is important in drawing up the NDP because of the extent to which the economic futures of the two jurisdictions are intertwined. In particular, the economic future of the North-West of Ireland will be heavily dependent on the economic future of the city of Derry/Londonderry over the coming decade.

In considering the priorities for the next NDP it is important to consider what infrastructural investment in Northern Ireland would support development south of the border and how the current *Investment Strategy for Northern Ireland (ISNI)* reflects these needs. The converse of this is consideration of what investment under the NDP could support economic and social development north of the border.

The ISNI reflects rather different priorities for physical infrastructural development in Northern Ireland compared to the planned envelope for the NDP out to 2010 reflected in the numbers published in *Budget 2006*. There is much greater attention given to health, education and housing whereas in the NDP transport is the overriding priority. To some extent the allocations represent different endowments of infrastructure for historical reasons and consequently, different needs. However, it probably also represents differences in priorities.

Table 10.1: Allocation of Investment, Per Cent of Total

	Republic	North
Transport	38.1	15.7
Health	7.6	18.2
Education	8.8	26.1
Public Administration	12.3	7.1
Productive Sector	7.4	2.6
Agriculture	2.9	2.5
Housing	7.6	12.7
Environment	15.2	15.1

Table 10.2 shows the actual annual allocations in euro per head. This illustrates the fact that the investment effort in the NDP is much greater than in the ISNI. The NDP allocations amount to around 80 per cent more than the total allocations in the ISNI. The allocation for transport in the NDP is over four times that in the ISNI. The ISNI is much more heavily weighted in favour of social infrastructure, broadly defined.

In the case of education the ISNI allocations underpin a strategy for significant investment in second-level education. This probably represents a need for a “catch up” following on the Costello report for the North. In the case of environment the proposed investment in the North is front ended loaded and reflects a need to ensure compliance with the EU urban waste water directive. For the Republic this compliance has been largely achieved through very substantial allocations over the last fifteen years in previous NDPs.

Even with the need to catch up in the North in social infrastructure (especially in education) it is slightly surprising that in the North the actual allocations per head for health and education are so much higher than for the Republic in absolute terms. Also, the fact that the allocation for social housing in absolute terms is similar in the North to that in the Republic, in spite of the much greater pressure on the housing stock in the Republic, may represent different priorities as well as differences in the ability of the building sector to deliver the necessary infrastructure at reasonable cost.

Table 10.2: Allocation Per Head Per Year, € 2005 Prices

	Republic	North
Transport	981	225
Health	195	261
Education	226	375
Public Administration	317	102
Productive Sector	191	37
Agriculture	74	36
Housing	196	182
Environment	392	217
Total	2,573	1,436

From the point of view of the Republic a major priority is the development of Derry and its hinterland, including Donegal. The decision in the North to upgrade the Derry-Belfast road is probably the most important measure that can be undertaken to enhance Derry’s growth prospects, and hence those of Donegal. In addition, it would benefit that region if the Dublin-Derry road were upgraded. Plans are in train in the NDP for enhancement of that road in the Republic but it would be beneficial if resources were available to bring forward work on the road within the North.

Generally the plans for road infrastructure in the Republic (under the NRA) and in the North are well integrated. The fact that the resources available in the North for investment are much more limited than in the Republic will result in a somewhat slower implementation of the co-ordinated road plans North of the border than in the Republic.

For both Northern Ireland and the Republic the rapid implementation of plans to enhance the electricity transmission infrastructure on this island is very important. This investment will not require taxpayers money from either the North or the Republic, being financed by electricity consumers in both jurisdictions. The

need for this investment is driven by purely commercial concerns. Fitz Gerald (2004) and Fitz Gerald *et al.* (2005), has shown that an all-island electricity market will benefit both economies. These studies also showed that the realisation of the benefits of this market (due to begin on 1 July 2007), would require this investment in transmission to double the existing link between the North and the Republic.

The obstacle to this investment is not finance. Rather it is the possibility of significant planning delays in one or other or both jurisdictions. Within the Republic it will be important that the planning system is changed so as to ensure that the kind of delays which have slowed investment in transmission in the past do not delay this important investment project. The need for speed does not mean that the normal opportunities for consultation to influence the precise route of the infrastructure should be bypassed. Rather it means that this consultation, including any appeals, should be conducted efficiently.

The energy needs of this island may also require additional investment in a second East-West electricity interconnector to Britain. This would in all likelihood be built from the Republic to Britain. However, the benefits of such enhanced interconnection would flow to consumers in the North, just as consumers in the Republic are already benefiting from the interconnector to Scotland already in place in the North. Once again the cost of any such enhanced interconnection will be carried by consumers, not taxpayers and the obstacles to accomplishing any needed investment will lie more in the planning system.

One of the biggest planned investment projects in Northern Ireland is a new hospital in the South-West of Northern Ireland. Such an investment should have implications for the provision of medical services in border areas of the Republic. Depending on the location of the new facility it could theoretically be possible for such a facility to provide services for some of the neighbouring counties of Monaghan, Cavan, Leitrim, Sligo and Donegal. The possibility of an integrated plan for the provision of key health service facilities in the border regions of the Republic and the North should be examined. Already the Altnagelvin hospital in Derry provides services to the people of Donegal. However, the administrative complexity of implementing a more integrated health service on this island may prove a major obstacle to getting efficient utilisation of valuable new infrastructure in the health sector.

The plans in Northern Ireland by ILEX for the development of Derry could, if successful, provide significant benefits to Donegal. The successful and sustainable development of that part of the Border region of the Republic will not be possible without significant growth in Derry and its hinterland. The plans for that part of the BMW region of the Republic should be integrated with the plans for Derry's development. As part of this integration some additional investment will be needed to enhance transport infrastructure centred on Derry. It should also make better use of the health and education infrastructure in the region. This enhanced

co-operation might involve enhanced links between the Magee campus in Derry and Letterkenny.

While the provision of health services in the North may be more successful than in the Republic, in the area of third-level education there are likely to be opportunities for infrastructure in the Republic to provide greater services in the North. As indicated above, enhanced co-operation between Magee and Letterkenny IT could prove valuable to the greater Derry hinterland. Generally there is a skills shortage in the Derry area (see the ILEX report) as well as in Donegal, where educational participation rates have tended to be low in the past. Similarly Dundalk IT, should exploit further its hinterland North of the border to provide services in the Newry region.

11. ACCOMPANYING MEASURES

The provision of public investment goods should be met in the most efficient and cost effective way. This requires consideration of the usage of these infrastructures, and thus of consideration of access charges. Determining the optimal level of provision needs to be undertaken in the context of an explicit pricing policy framework. Pricing policy also helps to optimise the substantial endowment of existing public infrastructure. There are other accompanying measures, which also need to be put in place along with investments. The list of desirable accompanying policy components includes:

- Correct pricing.
- Timely delivery.
- Integration with land-use planning.
- Regulation.
- Resource allocation and management.
- Project Selection Criteria, efficient management.

11.1 Pricing

The road network in particular is free at the point of use, excepting only a small number of point tolls and the fuel tax which, while a user charge, is only tenuously related to economic or social costs of road use. There are other and substantial taxes on motoring, but they merely raise revenue and are not related to road use or to the deterrence of social cost imposition. This means that the congestion externality is not properly charged for, and hence that, especially in cities, road space is underpriced. The amount of congestion generated is accordingly in excess of the social optimum, as is the attendant discharge of environmental emissions.

In virtually all economically advanced countries, the policy response has been to subsidise public transport, which results in a situation where *all* modes of vehicular urban transport are too cheap, especially at peak. The result is extensive peak-time congestion, and public demands for capacity expansion to meet peak demand.

Even in the absence of externalities, it is not economically rational to expand capacity to eliminate peak congestion, especially where peak usage is inadequately priced. To do so liberates currently suppressed demand, and can make the peak sharper, as the peak-spreading effect of current congestion is diluted. Since peak users are not faced with the full economic and social costs they impose,

peak demand is not a real indication of the level of activity that should optimally be catered for.

The landfill levy is an important economic instrument to internalise the environmental costs of landfills. It may also be appropriate to introduce an incineration levy when such facilities become operational, though this should be flagged well in advance. However, we would question whether it is appropriate that the levy should be the same throughout the country and for all facilities.

In theory, the levy should reflect the marginal external cost generated by the operation of the facility in question, taking into account the standard of construction, whether there is energy recovery, and the environmental characteristics of the surroundings (e.g. proximity of water bodies and human populations). It may be that some facilities should have a lower levy while others should have a higher levy.

Absence of metered water-charging of households means that consumption of water is higher than it should be. Metered consumption per day in England and Wales is under 140 litres per head (OFWAT, 2005). In Ireland it is likely to be 170 litres per head per day (Fitzpatrick, 2005a). Whether or not it would be economic to introduce metered charging is something that can be assessed, using a standard appraisal that takes account of financial and economic values (EC, 2001). This exercise should be undertaken as a priority and the results made publicly available for informed discussion. The emergence of water supply constraints in parts of the country makes this a priority issue.

Failure to charge domestic water use could see excess capacity being provided and development of water-saving technology not receiving the support it deserves. In the absence of a programme to introduce charging other incremental measures could be brought in, such as metered charging of holiday homes (Fitzpatrick Associates, 2005a).

If the appropriate price signals reflecting the cost of emitting greenhouse gases were provided by fiscal instruments there might be no need for even limited State intervention. However, as reflected in Fitz Gerald (2004), the new EU emissions trading scheme (ETS) is flawed as it discriminates against renewables by providing an indirect capital subsidy to fossil fuel electricity generators. The entire system of energy taxation requires to be re-assessed in the light of carbon-emission objectives.

11.2 Speedy Delivery

The delays encountered in planning and delivering major infrastructure in Ireland are abnormal by the standards of our EU neighbours. This has affected all aspects of infrastructure, including roads, public transport, telecommunications and energy. In the case of major public infrastructural investment currently being undertaken the number of stages that had to be gone through in implementing a particular project contributed to serious backlogs. For the future it will be important that the recently published *Strategic Infrastructure Bill* brings about a much more streamlined

process. In addition, all projects to be implemented over the next decade should go through the planning process as soon as possible so that projects are ready to be implemented as and when it is appropriate. We welcome recent Government moves towards introducing streamlined planning processes for the delivery of essential infrastructure such as landfill and incinerators, as well as the possibility of “community gain” to compensate surrounding communities.

Even when the planning process itself has been fully streamlined there is still a potential problem arising from the frequent recourse to the courts resulting in significant delays on major projects. It would be desirable that wherever possible, rather than delaying projects, the courts would provide for financial compensation where the complainant establishes a case, and the legal viability of this option might be explored. At present the cost to society at large of the delay due to failure to complete vital projects is never considered by the courts. Because of the impossibility of so doing, the large number of substantial losers arising from delays, in some cases society as a whole, are never compensated, even when the complaint is deemed to be unfounded. While the benefits to society from new infrastructural projects are normally assessed as part of a cost-benefit study these benefits, if foregone through delays, cannot be restored through the judicial process.

Another way to reduce delays in the provision of infrastructure is to standardise the design of facilities, so that the time required for the design stage of a project is minimised and an application through the planning system can be progressed. In the area of design for roads the NRA has produced a design manual, while the Department of Education has also moved towards standardised design. Such an approach may also lead to efficiency gains elsewhere.

11.3 Integrated Planning

Our recommendations on allocation of funding take particular account of the NSS. However, there remains a major problem in the Dublin area where the city spreads out over at least seven different counties. Unless urgent action is taken to implement the guidelines so as to achieve a dense city along public transport corridors, there will be little prospect of implementing a fully efficient public transport system. An example of such a failure was the decision not to zone for high density around the DART extensions to Malahide and Greystones. In the absence of higher density this investment will not prove to have been justified. There is a need to ensure that there is an adequate supply of zoned and serviced land for residential development in development plans in order to provide flexibility and choice and to restrain land price inflation. This will be a key factor in driving down the rate of house price inflation over the medium term, particularly in those parts of the country where restrictive zoning has contributed to housing affordability problems.

Policymakers need to be aware of the linkages between housing, land-use, transportation and environmental policies. The market for

building land is highly regulated, and the highly restrictive zoning policy has forced development out into the more distant hinterlands of our cities. As a result the spatial pattern of house building, which has emerged has encouraged long distance commuting, which has adverse implications for the environment in general and our emissions in particular. This gives rise to longer-term difficulties for the provision of public transport and also reduces quality of life.

The provision of housing needs to be integrated with the provision of other infrastructure, not just public transport, but also water, sewage, social infrastructure and other amenities.

A number of fixed rail projects were announced as part of *Transport 21*. For such projects to be economically viable it is essential that they are supported by land use planning decisions that ensure high residential and commercial densities.

Likewise, if the NSS is to be successful it will require the build up of critical mass in the gateways and hubs, which means that urban sprawl into the wider hinterland of the larger urban centres needs to be avoided. International research shows that there is a positive relationship between the density of production activities and productivity. Thus, high commercial densities are also important.

The need for new waste management infrastructure is ongoing, given population and economic growth, and in some parts of the country it is critical due to limited remaining capacity in existing facilities. New provision is, however, bedevilled by planning difficulties, driven in large part by local public concern and opposition. While proposed facilities must go through a full and proper planning process, streamlining of the system would be welcome.

Waste management facilities will never be popular with local communities, and actual or perceived environmental and health impacts may lead to a loss of amenity that is reflected in property prices. The question of compensation for this, at a household or community level, needs to be explicitly addressed. We welcome recent Government moves towards introducing streamlined planning processes for the delivery of essential infrastructure such as landfill and incinerators, as well as the possibility of “community gain” to compensate surrounding communities.

11.4 Regulation

Waste: Environmental regulation of the waste management sector is essential, and is the responsibility of Local Authorities as well as the EPA and its Office of Environmental Enforcement. There may also need to be explicit economic regulation, in order to fully capture the benefits of competition.

Landfills and incinerators are subject to significant economies of scale, so large facilities are more efficient than small ones. Left to its own devices, the industry will be inclined towards providing a small number of large facilities, with lower overall societal cost. However, this could lead to regional monopolies or oligopolies, where operators could potentially abuse dominant market positions. It may prove difficult to maintain more than one viable waste collection

service, particularly in smaller towns or rural areas, with the possibility again of local monopolies arising.³⁵

Where Local Authorities continue to be the only supplier of services in an area, there is a requirement to ensure that pricing reflects efficient levels of operation. Currently, Local Authorities act as suppliers, planning authorities and environmental regulators in the waste management industry. This means they are potentially conflicted in dealings with private operators, which could distort competition. With each Local Authority acting as regulator, there is scope for inconsistency geographically and temporally. A single regulatory structure applicable throughout the State would help encourage private participation in the market.

An economic regulator could also review whether economies of scale are being fully exploited in the delivery and operation of waste management facilities, in view of the regional approach being taken to waste management in the State (see below).

We understand the Department of the Environment, Heritage and Local Government plans to initiate a public consultation process on the need for a waste regulator in the course of 2006, and we would recommend a full Regulatory Impact Analysis be undertaken before deciding whether to appoint one. Should a waste industry regulator be appointed, incorporating the role into one of the existing economic regulatory bodies (e.g. the energy regulator) would be worth considering in order to minimise costs and tap into a ready-made bank of expertise.

Closely related to the regulatory issues is the commercialisation of the sector in that this can generate competition. Much progress has been made in commercialising the waste management sector over the last decade. However, *Indecon 2005*³⁶ demonstrates that full cost recovery is still not being achieved in Local Authority provided services. Full commercialisation implies that operators seek to recover not only their costs but also earn a return on their investment (whether they succeed is up to the market). Private operators automatically seek this, but it is also appropriate that the Local Authorities do so in order to provide a level playing field, as well as generating a return for the taxpayers' investment.

It is important that the administratively imposed regional structures do not impact on investment decisions for major infrastructure such as landfills and incinerators, specifically the number and size of these facilities. These should be decided on economic grounds, taking into account environmental implications. Considerable economies of scale exist in the delivery and operation of these facilities: fewer, larger landfills and incinerators will cost society less than a larger number of smaller facilities. Not to take

³⁵ See recent Competition Authority pronouncement (Decision COM/108/02, 30th August 2005). This indicated a preference for competitive tendering for collection services over regulation. Competitive tendering and economic regulation are not mutually exclusive, however.

³⁶ *Indecon (2005)* indicates a cost recovery rate of roughly 80 per cent in 2004.

this on board will impose considerable excess costs on society. The Department of the Environment, Heritage and Local Government's recent guidance to the effect that movement of waste across regional boundaries is not contrary to the proximity principle is welcome in this regard.

Telecommunications: The interrelated low supply and demand for broadband can potentially be resolved through the market. However, the State still has an important regulatory role and there must be concern that regulatory problems have slowed the deployment of new technology. The regulatory powers of Comreg and the Department of Communications, Marine and Natural Resources may need strengthening to deal with the industry, in particular in dealing with the dominant incumbent fixed-line operator, Eircom. The current model of regulation is designed to deal with a situation where the incumbent faces effective competition through technical change giving rise to competing technologies. However, new technologies do not appear to be providing such competition effectively and the telephone wire (or optical fibre) connection to individual homes and businesses remains a key in providing broadband services.

11.5 Resource Allocation Model

For many investment areas inadequate information was available to make firm recommendations. These include health, water and waste water. This points to the need to develop resource allocation models for all key infrastructure areas. In relation to road transport the Road Needs Study in 1998 set an important precedent in this respect.

Given the progress in the roads area an update of this study is likely to be useful, not in determining where new roads will need to be built but in order to schedule the maintenance of the improved system. This study has also made a contribution through the development of an initial, if somewhat crude, acute hospital bed needs projection model that incorporates the future dynamics of the population. In general, a useful starting point towards more efficient allocation of resources would be to thoroughly review capital stock adequacy in all infrastructure areas, beginning with an inventory audit.

Implementing a proper resource allocation model will prevent excess investment where supply could exceed demand and thus prevent resources from being wasted. For example, investment in arts infrastructure needs to be wary of the trap of encouraging the supply side of arts provision to the detriment of encouragement of the demand side (customers), thereby creating excess supply of art provision in relation to demand and unwittingly depressing artists' incomes.

Oversupply can also be minimised by ensuring that once facilities are provided the correct incentives exist to maximise usage and thereby benefit. User feedback should be facilitated. In the case of

11.6 Project Selection Efficient Management

arts and perhaps also sports facilities a centralised regular reliable source of information on future events is required.

The recommendations contained in this report are necessarily focused on the general priorities rather than specific project. The degree to which the return accrues to the investment in the next NDP is not only related to setting the correct broad priorities but also to the precise project selection. Thus, even in investment areas that are likely to yield a high return individual projects may yield no return and such projects clearly should not be selected. Consequently, proper project selection criteria need to be implemented.

In its *Guidelines* the Department of Finance lays out the requirements for appraising investment proposals (Department of Finance, 2005; CSF Evaluation Unit, 1999). These state that projects over €50 million should have a Cost-Benefit Analysis (CBA) carried out. More recently the Minister for Finance has announced a threshold of €30 million. A CBA is also stated to be appropriate for innovative projects costing above €5 million, which involve complex or specialised issues.

Water: Fulfilling the requirements of the Water Framework Directive, which has the objective of good water status by 2015, will require investment and it is up to Ireland to ensure that these deliver value for money. It is difficult to specify good investments without sound appraisal. A priority is to analyse the total costs and benefits of full metered charging, water abstraction, water conservation and waste water infrastructure.

Investment appraisals and cost benefit analyses face a well-flagged impediment, which is still inadequately addressed. This is the absence of parameters to be included in analyses, often relating to the benefits of the project. They include not only the valuations of the benefits, many of which are environmental in nature, but also the basic information on which to apply the parameters, such as the numbers of users of environmental benefits (e.g. statistics on leisure pursuits, including numbers of persons and days spent fishing and so forth).

By contrast, analysts in England and Wales have access to a body of information on valuations and on leisure pursuits. These parameters are collected, prepared and updated by the Environment Agency specifically with a view to aiding appraisal of water investments.

Social Inclusion: In order to fully reflect the goals on equality and social inclusion at programme level the project selection criteria need to reflect this horizontal principles for all measures. The *MTE* found that in practice, equality and social inclusion were not reflected in the selection criteria for many measures. Of course, in many cases the investment cannot reflect equality and social

inclusion and, therefore, the horizontal principle does not apply for these measures.

Even if the principle is reflected in the selection criteria these may not be reflected in a meaningful way or not applied thoroughly. In the current NDP incorporation of social inclusion and equality was confined to a statement that projects must comply with horizontal impacts and only in a minority was there a more detailed description of how this criterion is assessed e.g. using a deprivation index score for the area.

Subsequent reporting on progress regarding equality and social inclusion was often vague and poorly supported. Where indicators relating to social inclusion exist this is usually because a disadvantaged/vulnerable group are the sole targets of the measure. For example, some of the EHRDOP measures are confined to the long-term unemployed, lone parents or early school leavers, therefore indicators that relate to the participants, address social inclusion by definition. Indicators that assess the impact of more general programmes on the disadvantaged are extremely rare. There has been scant assessment, for example, of attendance at cultural events by people with limited mobility, despite improvements to accessibility of the venues *per se*.

Overall, while many measures say that social inclusion is incorporated into project selection criteria, there is little evidence on how this is followed through, which makes it difficult to identify the impact or whether alternative approaches would have yielded better results. This conclusion not only refers to some of the measures which are unlikely to have a large impact on equality and social inclusion but also to those areas where social inclusion is central.

Considerable work has been undertaken by the Combat Poverty Agency (CPA) to develop social inclusion indicators for the Regional OPs (Harvey, 2002a; Harvey, 2003; CPA, 2002). This work provides a very useful model of how these issues can be incorporated into both mainstream and targeted programmes. Given the experience of the MTE it is recommended that the approach developed by the CPA should be applied in the next NDP.

In a number of areas we highlight the duplication of effort, which clearly is not efficient. For example, in the housing area a multitude of measures aimed at providing social and affordable housing exist. Likewise in the arts a multitude of bodies are involved in arts support. The new committee called the *Arts and Education Committee*, drawn from the Department of Arts, Sports and Tourism and the Department of Education and Science has been established to help children to develop their “creativity and imagination as best as they can” (Minister J. O’Donoghue, 21st of October 2005). This initiative has the potential to promote co-ordination of the various arts services and concentrate on those areas where arts education is most under-resourced, and its findings should be considered.

12. TRANSPORT INFRASTRUCTURE

12.1 Introduction

In the current NDP the single biggest area of infrastructural expenditure is investment in transport. Overall, the decision to make the transport area the highest priority under the current NDP was supported by the *Mid-Term Evaluation* (Fitz Gerald *et al.*, 2003), which identified substantial returns to road infrastructure (see the discussion in Chapter 2). The high return suggested in the MTE derives from the fact that while Ireland has an extensive road network, the quality and capacity of that network lag substantially behind other developed countries.

Transport services are vital not just for the movement of goods but also for the movement of people. The manner by which adequate transport services can be provided is closely related to geographic factors, the nature of economic activity and the settlement patterns of the population. Given economic trends, population growth and changes in land use, as well as the heightened importance of sustainability issues, investment in transport infrastructure will continue to be of highest importance for the next NDP, albeit with a changed composition. In this Chapter we outline our recommendation for transport investment considering the latest trends, lessons from the current NDP and the *Transport 21* investment plan published by the Government.

12.2 Recent Transport Trends

The decision on transport priorities for the next NDP has to take cognisance of the latest and possible future trends in the demand for transport. Some key indicators are outlined in this section.

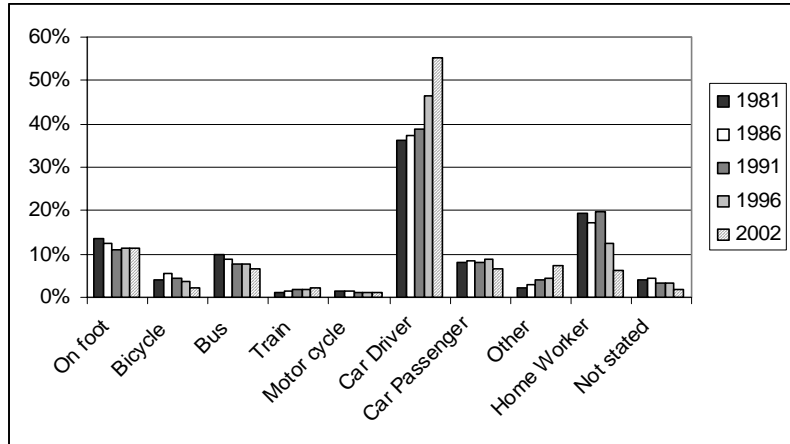
PERSONAL TRANSPORT

Trends in the mode of transportation used for commuting are important since they indicate the degree to which commuting patterns are environmentally sustainable and the types of infrastructure that have seen the greatest increase in demand.

Figure 12.1 shows the trends in the proportion of workers using various transport modes. The most striking trend relates to the increase in the proportion of individuals driving to work, which now stands at just over 55 per cent. The reduction in the proportion working from or at home is largely due to the decline in full time farmer numbers. With regard to public transport modes it is interesting to note that while bus transport has continually lost market share, train transport has increased its market share. Since

trains serve a smaller population than bus services, this increase in the aggregate market share is likely to be due to a substantial increase in market share in those localities served by trains.

Figure 12.1: Persons at Work Aged 15 Years and Over Classified by Means of Travel to Work



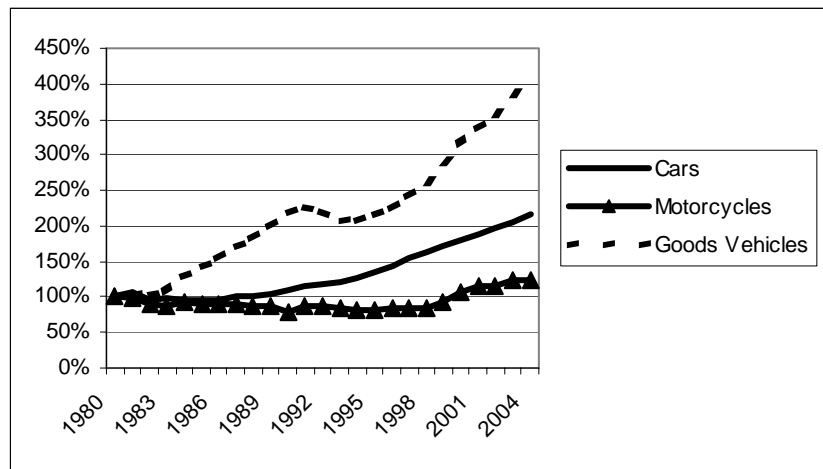
Source: CSO *Census of Population 2002*, Volume 9, Table 1.

As Figure 12.1 refers to proportions it does not indicate the very substantial increase in the number of commuters, which increased by 24 per cent between 1996 and 2002. Furthermore, the figure only refers to workers, and thus ignores travel to schools, colleges, shops, recreation etc. The Census does contain information on travel to school and college but not other sources of personal travel demand. The total number of pupils and students has decreased somewhat over time. However, the car based travel has grown even more substantially for this group than for workers in that in 2002, 36 per cent of those in education travelled as a car passenger while that proportion was just 26 per cent in 1996. In absolute terms the number of individuals travelling to educational institutes by car has increased by 71,000 between 1996 and 2002.

Overall, the analysis of trends in the mode of transport shows a decline in the proportion of individuals using sustainable modes such as walking, cycling and public transport. For workers this proportion has declined from 29 per cent in 1981 to 21 per cent in 2002, while for travel to school, college or university the proportion using sustainable modes has declined even more dramatically from 74 per cent to 57 per cent over the same period.

The increase in car based commuting is closely related to car ownership. As Figure 12.2 shows, the total number of cars under licence has increased very dramatically following a slight dip in the early 1990s. Overall car numbers have increased by 400 per cent. In contrast motorcycle numbers have increased only slightly while goods vehicles saw a substantial increase, which however was only half that for cars.

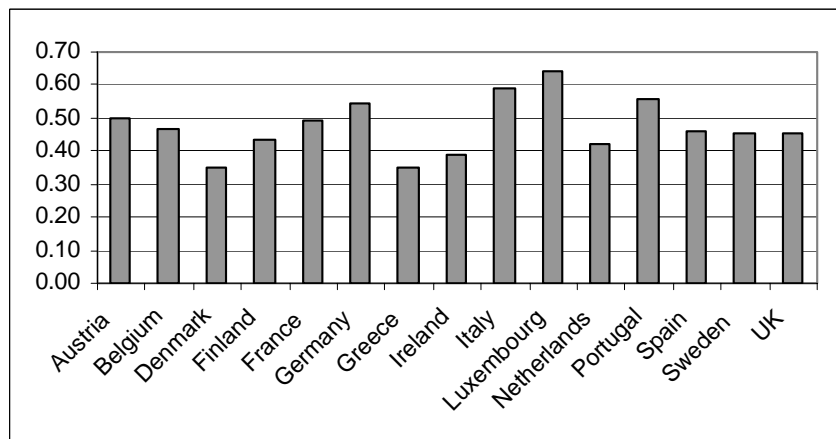
Figure 12.2: Total Personal Vehicles Registered, Relative to 1980



Source: Department of the Environment, Heritage and Local Government. *Irish Bulletin of Vehicle and Driver Statistics*, 2004.

Road congestion around the major urban centres in Ireland has been increasing substantially over recent years. This is at least in part driven by the growth in car numbers. In order to gauge the likely future trend in car ownership it is useful to compare Irish car ownership rates with other EU countries. As Figure 12.3 shows, the car ownership rate in Ireland, at 0.39 cars per person, is below the EU-15 average of just short of 0.5 cars per person. Since car ownership is positively related to income, and Ireland has converged to the EU average income it is reasonable to expect that Ireland will in due course also converge to the EU average. At current growth rates, of around 0.01 cars per person, this would take approximately 11 years. However, given that income convergence has already been achieved, car ownership may converge faster, which will speed up the increased pressure on the infrastructure.

Figure 12.3: International Comparison of Cars per Capita



Source: Own Calculations using data from Eurostat, *New Cronos Database*.

The relationship between traffic volumes and congestion is highly non-linear. Small reductions in traffic volume, once a system reaches capacity, induce sharp improvements in journey time. Thus, in busy cities with peak-time congestion, peak pricing only needs to deter a small proportion of road users in order to have a worthwhile impact in reducing the economic, social and environmental costs of congestion, and this is confirmed by studies of charging schemes in a number of cities including London.

It is sometimes assumed that the majority, or even all, of the morning peak volumes (the morning peak tends to be bigger, because more concentrated, than the evening peak) should be accommodated, since the trips are presumably work-related and accordingly seen as 'essential'. This assumption should be treated with caution. Table 12.1 shows the volumes crossing Dublin's canal cordon in 2002, the year of the last Census.

Table 12.1: Numbers Crossing Dublin's Canal Cordon, Morning Peak 2002

	Bus	Rail	Motor Vehicle*	Walk	Cycle	Total
Number	65,483	25,339	83,364	16,603	4,675	195,464
as %	33.5	13.0	42.7	8.5	2.4	100.0

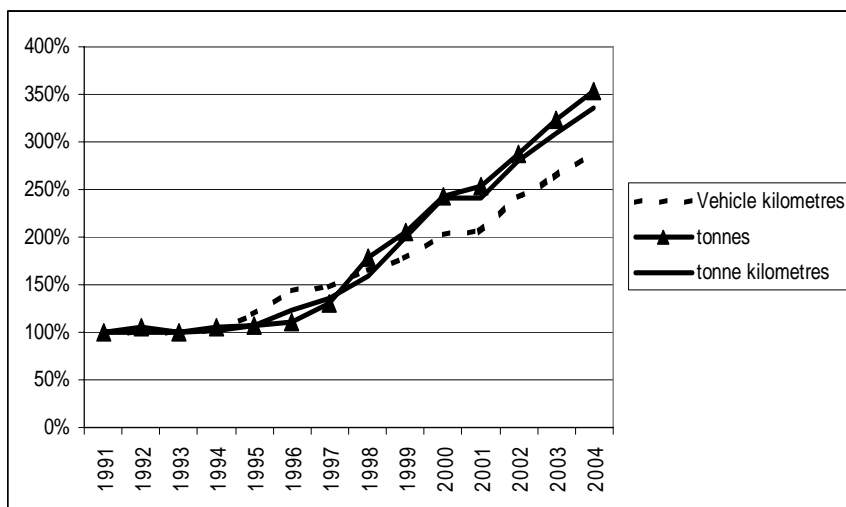
Source: Dublin City Council.

*Includes taxi, commercial vehicle, motor cycle.

According to the *2002 Census*, there were 135,439 people employed in the area inside the canals in 2002, of whom 15,619 also lived inside the canals. Thus, assuming all peak traffic is work related, about 120,000 people out of the total of 195,464 entering in the morning peak would have been going to work. There is of course some through traffic which both enters and leaves the canal cordon during the morning peak, and some non-work trips might also be deemed 'essential'. But as many as 75,000 of cordon-crossers may not have been going to work in 2002, and it may be rather extreme to assume that there is some imperative about catering for every single trip currently made in the morning peak, when road users are not faced with any charge designed to reflect the social costs imposed.

GOODS TRANSPORT

While the movement of individuals is an important function of the transport system, the movement of goods is equally important in a country that still maintains a high share of production activities. As Figure 12.4 shows, freight transport has increased substantially, which is of course not surprising since the growth in the economy will have led to an increase in the output of goods. Interestingly, while the tonnage transported and tonne kilometres have increased by about 350 per cent, as was shown above, the number of vehicles has increased by just 200 per cent over a longer period. This implies that the vehicles are utilised more extensively and/or that the capacity of the vehicles has increased.

Figure 12.4: Road Freight Indicators (1991=100 Per Cent)

Source: CSO Road Freight Transport Survey, various issues.

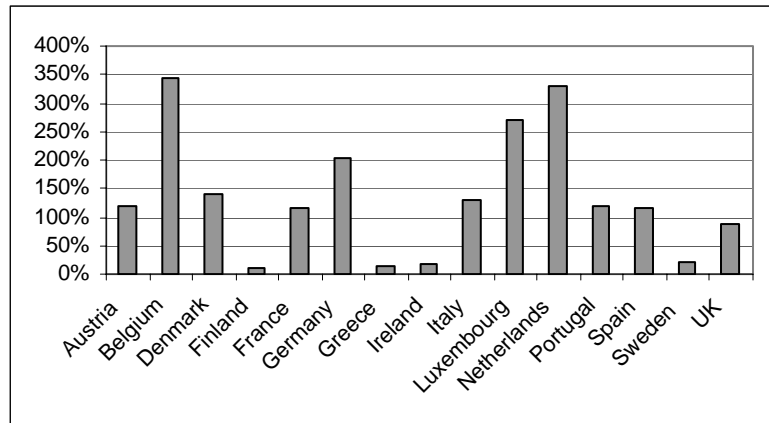
It is also useful to consider the use for which the commercial transport is put. Almost 30 per cent of tonne kilometres are accounted for by Crude and Manufactured Minerals, which includes building materials. This suggests that the high level of activity in the building and construction sector, part of which aims at reducing congestion through the building of increased capacity, is in itself contributing substantially to congestion. It is likely that during the course of the next decade there will be a substantial reduction in this traffic as the building and construction sector adjusts to a more normal level of activity (see Chapter 4.) Other sectors that account for substantial proportions of tonne kilometres are agricultural products (11 per cent) and foodstuffs (21 per cent).

INFRASTRUCTURE STOCK COMPARISONS

The measurement and international comparison of infrastructure stocks is difficult due to data limitations particularly regarding quality measures. While Ireland has a road density that is close to the EU average, the largest proportion of Irish roads are of relatively low capacity and quality. This is undoubtedly related to the low population density and scattered distribution of the population compared to other EU countries, which requires a relatively high roads density to service the population. If one compares the motorway density, then Ireland, with 16.5 per cent of the EU average, is well behind the rest of the EU-15 (see Figure 12.5). That figure also shows substantial heterogeneity across European countries with regard to motorway density with, Belgium, Netherlands, Luxembourg and Germany having the highest densities and Finland, Greece, Ireland and Sweden possessing a low motorway density. The low motorway density in the Scandinavian countries is related to the low population density in those countries.

In the case of Greece, the relatively low per capita GDP and the topography of that country are likely to be the reason for the short length of the motorway network relative to the land area.³⁷ Thus, Ireland is an outlier in this comparison.

Figure 12.5: Index of Motorway Density (Kilometres of Motorway Per Square Kilometre of Area, EU-15=100), 2003



Source: Own Calculations using data from Eurostat, *New Cronos* Database. The Motorway stocks for Denmark, Germany, Portugal and Spain are for 2002, while those for Greece, Italy and the Netherlands are for 1992, 1999, and 2000 respectively.

Of course roads are not the only transport infrastructure and it is, therefore, also important to consider other types of infrastructure. Using Eurostat data the density of the rail network can also be compared across EU countries (see Figure 12.6). Again the comparison is facilitated by using an index relative to the average of the countries in the sample. Again Ireland lags substantially behind with 33 per cent of the average.

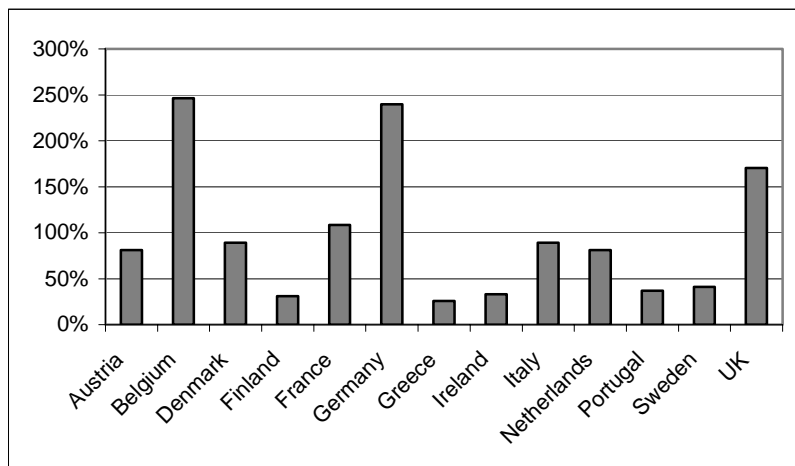
While a number of countries possess a rail network that is close to average, Belgium, Germany and to a slightly lesser extent the UK have networks that are far in excess to the average. The presence of rail infrastructure is usually a historical legacy with substantial initial investment having taken place in the 19th century, with subsequent investment to maintain and upgrade the system rather than to expand the systems. It is therefore not surprising that the total length of network is declining in many countries. For example, the network in the UK is now only half the length of that in 1946.

Importantly, while a positive relationship between roads and per capita GDP holds in most countries, the same cannot be observed for railways. For the UK the correlation over time between GDP per capita and length of railway network is -0.7, which is statistically significant. This is important in the choice of infrastructure

³⁷ Islands and mountains make up a substantial proportion of the land area of Greece.

investment since roads tend to yield a higher return than railways at least for inter-urban connections (see Affuso *et al.*, 2003)

Figure 12.6: Index of Railway Density (Kilometres or Railway Lines Per Square Kilometre of Area, Sample Mean = 100), 2003



Source: Own Calculations using data from Eurostat, *New Cronos* Database. Note that the mean, which is 100 per cent is calculated for only the countries in the figure which is equivalent to EU-15 minus Luxembourg and Spain. All data refers to 2003 except for Austria, Belgium, Germany and Portugal where the data refer to 2002, Denmark 1998 and Ireland and the Netherlands where the data is for 2001.

FUTURE TRENDS

As was already indicated above, given that car ownership rates are well behind the EU average while income has exceeded the EU average, and given the positive relationship between income and car ownership, the likely trend is for rising ownership at perhaps even an increasing rate. The National Roads Authority (NRA) commissioned a study to project future traffic on national roads (Transport Research Laboratory, 2002) which is further outlined in NRA (2003). This study also utilises the relationship between income and car ownership and, using unchanged usage patterns, it predicts that compared to 2002 total traffic by cars and light goods vehicles on all roads will have increased by 31 per cent by 2013. This increase is projected to fall disproportionately on national primary and secondary roads where traffic will increase by 44 and 36 per cent respectively. Heavy goods vehicle traffic is projected to increase by 30 per cent with an increase of 43 per cent for national primary routes and 37 per cent for national secondary routes. Continuing beyond the horizon of the next NDP traffic is forecast to increase further.

Of course the assumption of unchanged usage patterns may be questioned and indeed if alternative transport modes become more attractive then traffic may not increase by as much. In this respect the appropriate pricing mechanism for transport services is important.

An important lesson from transport economics is that where only the private costs of congestion are the rationing device, road users have inadequate incentives to avoid the peak. The costs imposed by the marginal user on others are external costs, a true externality, and the failure to reflect these in the incentive structure means that traffic at peak exceeds the social optimum. This does not mean that the optimal level of peak congestion is zero, but it does mean that users face inadequate incentives to avoid the peak under current arrangements.

When traffic grows and peak-time capacity is fixed, road users can avoid the peak on a congested route, and the charges that might be imposed for peak usage, in three ways:

- they can spread their trips to other times;
- they can use other routes, or
- they can use other modes, or just make fewer trips.

These processes also work in reverse. When road capacity is increased, without any change to the pricing regime, as is happening currently on the N7 Naas Road outside Dublin, the new capacity will reduce the incentive for peak spreading, will attract back traffic diverted to other routes, and will attract extra trip-making and diversion from other modes. Anthony Downs, in two widely cited books on the subject, calls this ‘triple-convergence’ (see Downs 1992, and Downs, 2004).

There is an unusual consensus in the economics literature that if no charge is made to reflect the capacity constraints at peak, or any incremental external costs of congestion, but rather policy seeks to accommodate whatever unconstrained peak demand emerges, that this will result in waste. The same is true in other industries where flat pricing, ignoring demand fluctuations, is employed. In such a situation excess capacity is built at substantial capital cost, which is infrequently used. Such infrequently used transport facilities should ideally offer capacity below the unconstrained peak demand, with appropriate incentive structures to ration peak capacity (see For example, Button, 2004).

SUMMARY

Overall, this study highlights the need for extra road capacity to cater for this increased demand. However, this should be accompanied by adequate congestion pricing which will shift some of the transport demand towards more sustainable modes. The rise in unsustainable transport patterns serves to emphasise the need to develop sustainable (dense) cities served by good public transport if the current environmental problems are not to further deteriorate.

Substantial resources have been devoted to transport projects under the current NDP. Most of the expenditure is covered under the economic and social infrastructure operational programme (ESIOP), but some expenditure also took place under the regional operational programmes for the Border, Midlands and Western

(BMW) region and the Southern and Eastern region (S&E). As Table 12.2 shows by the end of 2004 almost €10 billion was invested in transport projects as part of the current NDP. Of this just over 52 per cent was accounted for by national roads, 26 per cent by public transport and a further 21 per cent by non-national roads. These are also the investment areas where financial expenditure has run substantially ahead of target. The other two areas namely seaports and regional airports have experienced slow financial progress.

Table 12.2: Financial Progress on Transport Measures, 2000-2004

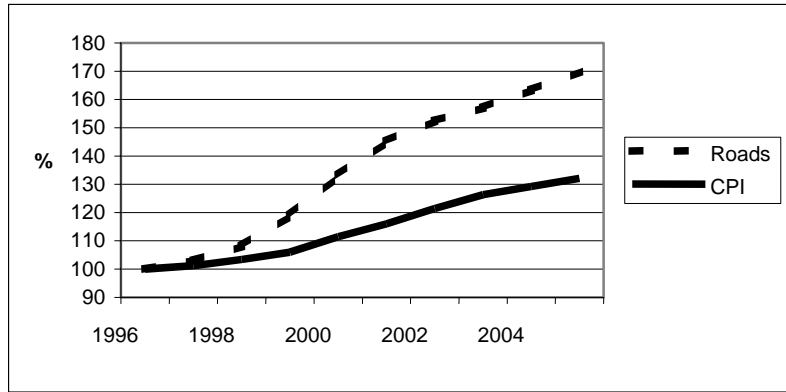
	Expenditure Billion	Expenditure % of Planned %
National Roads	5,199.5	117.2
Public Transport	2,565.2	103.4
Non-national Roads	2,097.1	117
Regional Airports	9.2	59
Seaports	51.9	30
Total	9,922.9	112

While financial progress has been significant in the three major measures under the current NDP, this need not be a good measure of physical progress. The progress reports on the ESIOP and the Regional OP's show varied physical progress. While among the five major inter-urban national primary routes physical progress was ahead of schedule (116 per cent) at the end of 2004, progress was slower than planned on the M50 and the Dublin Port Tunnel (84 per cent and 35 per cent respectively). Indeed the latter is now well behind the original schedule. Of course, these numbers ignore the fact that a substantial number of projects are under way which are not counted into physical progress as these projects have not been completed. As there are many indicators for the physical progress of public transport projects it is difficult to assess the precise degree of progress. In terms of the physical output indicators the progress appears to be on or close to target. However, in some of the outcome indicators progress has been slow. For example, while the number of buses in the Dublin Bus fleet has increased from 987 to 1,064 over the period 2000 to 2004 (86 per cent of the 2006 target), the total number of passengers carried by Dublin Bus annually increased from 140 million to just under 150 million (79 per cent of the 2006 target) (see Indecon, 2005).

Furthermore, it is important to consider the unit costs of investments, since physical progress has been slower than financial progress suggesting substantial inflation. In this respect the *Mid-Term Evaluation* considered the unit costs of the measures under the Regional OP's, which showed substantially higher unit costs compared to that initially planned for the non-national roads measure. In this respect the relatively fast rate of inflation for civil engineering projects is particularly relevant, as is shown in Figure 12.7, where the deflator for roads construction is compared with the

consumer price index. While consumer prices have risen by just over 30 per cent between 1996 and 2005, over the same period the price of roads construction has increased by almost 70 per cent.

Figure 12.7: Road Price Deflator and Consumer Price Index, (1996=100)



Source: CPI is the EU harmonised *Consumer Price Index* published by the CSO, the Roads deflator is taken from DKM/ DoEHLG.

12.4 Lessons from the Current NDP

Following on the 1994-1999 NDP, the current NDP planned major investment, in particular to advance the national primary roads infrastructure as well as a number of key public transport projects. While physical progress has not been as rapid as had been hoped and the cost has been very much higher than anticipated, none the less significant progress has been made. Progress on the roads programme may not have reduced delays and congestion in and around Dublin. However, without the programme things would be much worse. Outside of the major urban areas, and especially Dublin, there has been a significant improvement in journey times.

The experience of the current NDP has shown up a number of problems in execution. Some of these problems have already been addressed. For example, it is clear that some of the contracts used to commission certain new road investment were defective (e.g. problems with the N11). However, the broader problem of higher than expected inflation holds lessons for the next NDP, lessons that have been discussed in detail in Chapter 5. While some action within the roads programme could have been undertaken to reduce the problem of inflation in the cost of the infrastructure built over the last seven years, these problems were not solely, or possibly even largely due to the way the NDP was executed. As discussed in the *Mid-Term Evaluation* of the current NDP and also in Chapter 5 these problems are a symptom of the underlying success of the economy. The rapid growth of the economy, combined with the expanded NDP, resulted in a dramatic increase in the demand for the output of the building and construction sector. With supply constraints in the sector and the economy generally the inevitable consequence of the rapid growth in demand was higher inflation. To have dealt with this problem would have required a different approach to

macroeconomic policy. For the next NDP it will be important that plans for this key component of infrastructural investment take account of the capacity of the economy to deliver.

It will also be essential that the intention in the next NDP to implement a huge increase in investment, especially investment in public transport, is firmly based on a proper cost-benefit analysis of all the proposed new projects. The roads programme has so far largely been underpinned by a systematic analysis of road needs using clearly defined criteria.

Given the huge amount of resources to be committed to this aspect of the next NDP it is essential that all projects, including public transport projects, are subject to such a transparent and systematic analysis. Given the high opportunity cost of resources devoted to buying the output of the building and construction sector, any commitment of funds in the next NDP to projects which fail normal cost-benefit criteria will have a high cost for society over the coming decade.

Some specific lessons also emerged from the *Mid-Term Evaluation* (Fitz Gerald *et al.*, 2003). With regard to national roads, while at the margin there have been some departures from what would have been suggested by cost-benefit analysis, the bulk of the investment undertaken was predicted by the methodology *ex ante* to be of significant economic value. The results so far would suggest that these expectations have been realised in practise. In the area of public transport the MTE suggested that no further investment on rail safety and mainline track renewal should be carried out without proper economic cost-benefit analysis. This reflects the generally poor return to inter-urban rail investment highlighted above. The MTE also urged that inter-urban bus routes be increasingly liberalised. While urban bus investment was found to yield good returns, this return was not maximised due to the failure to introduce integrated ticketing as promised. Importantly, three years on integrated ticketing which has been common practice in most EU countries for decades is still not implemented. With regard to urban rail projects the MTE highlighted serious cost and delay problems with LUAS. These arose from changes in the original specification. Once a final specification was agreed and a contract signed, the delivery of the LUAS ran largely to plan. The MTE also pointed to the need to improve the use of the suburban rail capital stock through frequency improvement and the imposition of appropriate physical planning guidelines on urban areas (Dublin) was highlighted. These findings remain relevant in deciding on investment priorities going forward.

12.5 The Proposals in *Transport 21*

The Government launched, on November 1st, 2005, a 10-year transportation investment programme called *Transport 21*. This includes an extensive range of projects for the road network, the inter-urban rail network and for rail projects in cities, principally in the Greater Dublin Area, as well as provisions for both Dublin and provincial bus development. The total capital cost of the plan has

been estimated by the Department of Transport at just over €34 billion for the years 2006 to 2015 inclusive. Their projected breakdown is as follows.

Table 12.3: Breakdown of *Transport 21* Capital Spending to 2015 in €Million

	€million
National Roads	16,513
PPP Toll Roads	2,000
Heavy Rail	6,036
Luas/Metro	7,390
Buses Dublin	529
Buses Provinces	241
Regional Airports	100
Other	1,480
Overall Total	34,289

Source: Department of Transport.

Notes: These figures include an element of VAT, which is not strictly an economic cost. The figure for ‘Other including Unallocated’ includes some items, such as ticketing and traffic management projects, which may be capable of allocation among the categories shown. An additional €130 million was allocated for the Rural Transport Initiative in conjunction with *Transport 21* to give a grand total of €34.4 billion.

The biggest single item, accounting for just under one-half of the overall total, is the continuing investment in the National Primary and Secondary road networks. A total of €11.5 billion has been proposed for fixed-line (heavy rail, Luas and Metro) investments in the Greater Dublin Area, including improvements to facilities and new lines in the surrounding counties. A further €1.9 billion is to be spent on provincial rail (including provincial cities). Bus services in Dublin receive an allocation of €529 million while those outside Dublin will attract €241 million under the programme as envisaged. Of the total to be devoted nationally to public transport, over 90 per cent is to be spent on heavy and light rail projects.

The overall phasing of the programme sees a gradual build-up of spending to a peak in 2012 at roughly double the 2007 level, followed by a sharp decline to 2015.

While the Government has indicated its commitment to the various components of *Transport 21*, all Government capital projects costing €30 million or more must be subjected to a cost-benefit appraisal in accordance with guidelines issued by the Department of Finance in February 2005. Business cases have been prepared for some, but not all, of the components of *Transport 21*. In his speech at the launch of *Transport 21*, the Minister for Finance, Mr. Brian Cowen TD, stated:

All projects in the framework will be appraised and implemented in line with my Department’s Capital Appraisal Guidelines and the additional Value for Money initiatives as set out in my recent speech.

The substantial PPP element of over €6 billion in non-Exchequer capital funds will be mobilised through annual availability payments from the Exchequer, and their availability is thus not dependent on private sector assessment of the revenue/cost balance involved with the various projects.

We comment below on certain aspects of the investment appraisal process, which has to be undertaken in connection with the components of *Transport 21*.

The principal components of *Transport 21* are:

- The completion of the National Primary road network, mainly to motorway or dual carriageway standard.
- Substantial further upgrading, mainly as undivided roads, of targeted sections of the National secondary network.
- A Metro/Luas.
- A further substantial programme of investment in mainline rail.
- A more heavily rail-based approach to public transport provision in Dublin is proposed. This includes new suburban rail lines notably to Navan and Swords via Dublin Airport as well as radial lines and a Western orbital line, new stations including a new centre city station, new city centre underground sections, electrification of existing suburban lines, and extensive further light rail (Luas) and Metro lines.
- New suburban rail lines are also proposed outside Dublin, including the Midleton-Cork project and the construction of a Western Rail Corridor involving a new line, which would serve *inter alia* as a Galway suburban line, on the alignment Athenry to Claremorris. No line or station closures or withdrawals of service in the provincial rail system are envisaged.

12.6 Detailed Priorities for the Next Plan

The transport trends discussion above highlights the urgent need to make improvements in the transport infrastructure. This is further supported by the significant economic return particularly to roads infrastructure, but also by concerns about the environmental impact of the current traffic patterns. Balanced against this urgent need to invest in transport infrastructure is the potential capacity of the construction industry. This was addressed earlier in this report, and has implications for the feasibility of putting in place an ambitious investment programme without resulting in further inflation in civil engineering projects and the resulting poor value for money. The capacity of the building and construction sector is, therefore, a factor in assessing the scale of investment, which can be undertaken in the various economic sectors, including the transportation infrastructure. In some cases the inflationary stimulus of a project may be such that it will influence the cost benefit calculations so as to render the project not economically viable. In such cases the project should be delayed. Consequently, thorough evaluation of the individual projects making up the transport programme will be important. All projects must be appraised in accordance with the February 2005 Department of Finance

guidelines, and those over €30 million must be subject to a formal cost-benefit appraisal.

The long-run goals of policy in relation to transport infrastructure, whether provided directly by organs of the State or through private investment, ought to be to:

- Ensure that optimum use is made of infrastructures, not just of new facilities constructed as part of the programme but also of the extensive networks of existing infrastructure assets and vehicles. Due attention should be paid to environmental objectives, particularly the minimisation of harmful emissions. Optimum use in this context requires close attention to congestion and to the incentives for users, through the structure of taxes and charges, to reduce congestion-creating behaviour.
- Ensure that, given the system of user charging, the best choices are made regarding transport investment.

In deciding on specific investment priorities it needs to be borne in mind that the current pattern of transport usage is known to be sub-optimal, since the structure of taxes and charges does not incentivise the user to minimise congestion and other externalities. In particular, there is a reliance on congestion itself, rather than on user charges, to ration limited capacity at peak (see Kain (1999) and the discussion in Appendix 1).

The biggest problem in undertaking a prioritisation of the planned investment in public transport, especially in the Dublin area, is the absence of any systematic approach and framework for analysis. The task of prioritisation is made even more complex by the fact that the studies of individual projects that have been undertaken have been prepared by different authors, for different organisations, using differing assumptions.

While in the analysis of the roads programme there is a framework that takes into account the system wide effects of individual investment projects, this has not been the case for the development of the current plans for public transport. The availability of a suitable methodology in the case of roads facilitates a proper cost-benefit analysis. However, in the area of urban public transport, while the Dublin Transportation Office produced *A Platform for Change* in 2001 it was never subjected to a full cost-benefit analysis. Since then substantial changes have been made to the outline plans in that report. For example, in the RPA *Dublin Metro Project Revised Proposal* and in the Iarnród Éireann *Greater Dublin Integrated Rail Network Business Case*, 2004. These studies were carried out independently by the different responsible authorities. They do not appear to have analysed how the different elements of the transport network they were considering would interact with each of the other proposed modifications.

The experience of the Luas project shows the dangers inherent in making piecemeal changes in plans without undertaking a full assessment of the network-wide effects of these changes. As of today there is no comprehensive cost-benefit analysis using a

consistent model of all the latest proposals contained in *Transport 21*. In addition, where an analysis has been undertaken of individual elements it is not clear whether they have used a consistent approach. As discussed in Appendix 2 a counterfactual which should be examined in any analysis is not just a “do nothing” strategy but also a strategy involving greater reliance on buses. The proposed network also needs to be analysed in the context of possible scenarios on road pricing.

There is a serious danger that the piecemeal design and analysis may see the huge investment failing to reap potential system wide benefits from the very expensive investment. For example, the availability and location of interchange points between the different transport modes will be crucial in determining the success of the system in meeting the complex transport needs of the city of Dublin. For example, while an interchange station may be uneconomic when a single metro line is examined on its own, the situation may be different if the system wide effects are taken into account.

The studies that have been undertaken to date are also superimposed on a stylised picture of what Dublin will look like in the future. However, even without active planning by the relevant local authorities, the market will drive the city to optimise its development around whatever transport infrastructure is put in place.³⁸ In addition, as discussed in Appendix 2 of this chapter, the local authorities have the power to substantially influence the future pattern of physical development in the Greater Dublin Area, accelerating the market driven process. Given the extent of the development that will take place over the next twenty years, the city itself must be seen as being “flexible”. Should the planning authorities decide to do so, it is open to them to plan for a dense city optimised around public transport. Such a city would produce a very different cost-benefit ratio than one where a *laissez-faire* approach is adopted.

Thus the proposed transport network for Dublin should be examined against the backdrop of a range of different stylised pictures of the future city. Such an analysis can also identify how the costs and benefits from the very large investment can be maximised by suitable planning guidelines.

AIRPORTS AND COMMERCIAL SEAPORTS

It is established Government policy that the principal commercial air and sea ports should no longer be recipients of State funding for capital works, and that they should be financed, as to both operating and capital costs, by charges to users. We endorse this approach, which internalises the costs and also provides market signals to guide investment.

³⁸ It is clear that the success of the Green Luas line is having a very significant effect on development along its alignment.

The Government is embarked on a strategy, which will split the former Aer Rianta into three distinct entities operating Dublin, Cork and Shannon airports. This mirrors the position, which already obtains in the commercial seaport sector, where the main ports are State-owned but distinct. These measures are designed to maximise the degree of competition between sea and airports, and to ensure that their finances are transparent. Any moves toward consolidation in the commercial seaport sector in Ireland (including Northern Ireland) should be subject to review by the competition authorities.

We are aware that there are pressures from time to time for new regional airports around the country. Every region of Ireland is now served by a national or regional airport, and the Government, through the Department of Transport, subsidises regional air services, and thus indirectly the regional airports, to the tune of approximately €15 million per annum. Capital grants continue to be available to them also.

We recommend that any pressures, which may emerge for new regional airports should be resisted. Moreover it is important that Government should subject requests for capital subvention from existing regional airports to the same project appraisal procedures as are applicable to other transport projects.

MAINLINE RAIL INVESTMENT

In its transport policy statement *Transport 21*, the Government has listed a range of mainline rail improvements, additional to the significant spending on track, stations, rolling stock and signalling already undertaken or under way.

We understand from the Department of Transport that, while a business case analysis has been prepared for certain of the mainline rail projects, some others have yet to be subjected to economic appraisal as required by the Department of Finance guidelines.

It is important that the most cost-effective public transport technology is chosen for each route. Bus-based alternatives are available in all cases, and will often offer higher frequency than train-based schemes for the same overall volume, better ability to penetrate target markets, as well as lower capital and operating costs. It should be a requirement that appraisals of public transport investments be technology-neutral, assessing bus against rail options, with due allowance for the strengths and weaknesses of the two technologies. The practice, as in the Booz-Allen-Hamilton Strategic Rail Review, of comparing rail projects only with other (Do-Minimum or Do-Nothing) rail alternatives runs the risk of overlooking superior bus-only projects, should such exist.

For example, on short suburban routes such as Midleton to Cork, a fleet of approximately five buses will deliver the same daily capacity as a DMU twin-set, at a modest penalty in terms of speed and with a considerable superiority in terms of frequency. This is not to argue that the bus-only option is self-evidently superior, but only that it should be explicitly included in the analysis. If rail is indeed the superior public transport technology in Cork or

elsewhere, the cost-benefit appraisal will confirm that this is the case.

We recommend that, in the evaluation of all fixed-line public transport investments, whether mainline or urban/suburban, a bus-only alternative be included as a matter of routine in the range of options considered.

URBAN AND SUBURBAN RAIL PROJECTS

The proposals for Dublin involve a decisive preference for fixed-line as against bus-based technology, although it is expected that bus will remain the principal public transport mode in the city. In view of the well-documented tendency to date of both population and employment to sprawl away from the traditional city core with consequent suburb-to-suburb, as distinct from radial commuting, the traffic potential for the lines proposed is critical. As discussed in Chapter 11, the success of any such investment will depend on complementary changes in the approach to physical planning. The total anticipated capital cost of the Dublin fixed-line system, at €11.5 billion, makes this by far the largest single project ever proposed in Ireland. We consider that the economic appraisal process for this project and its components represents an enormous challenge, and we discuss how this task might best be approached in Appendix 2.

Suburban rail construction is also proposed for Midleton to Cork and Claremorris to Athenry and Galway. In both cases, the economic analysis will need to contrast the rail proposals with bus-based alternatives. We note that no economic appraisal of the project was commissioned by the Expert Working Group on the Western Rail Corridor,³⁹ whose terms of reference included consideration of “The costs and benefits of the proposal and options for its phasing, should such a strategy be adopted”.

The Expert Group’s report contains capital cost estimates, with the Ennis to Claremorris section put at €168 million. But there is no quantification of operating costs, traffic, nor of overall project benefits. We understand that Iarnród Éireann is carrying out a full cost-benefit appraisal of this project.

NATIONAL PRIMARY ROADS

We are in agreement with the priority accorded in *Transport 21* to the completion of the National Primary route system to standards adequate for predicted traffic volumes. We reiterate the concerns expressed in the *Mid-Term Review* of the 2000-2006 National Development Plan that care should be taken to ensure that road design be matched to potential traffic volume in a manner designed to eliminate risks of excess provision of capacity or level-of-service.

³⁹ *Expert Working Group on the Western Rail Corridor Report* (2005).

The National Roads Authority operates a formal cost-benefit appraisal system for all major projects, including the analysis of prioritisation issues within the programme.

NATIONAL SECONDARY ROADS

The National Secondary routes, numbered N51 and upwards in the road classification scheme, serve mainly non-radial routes around the country, with traffic volumes distributed across a wide range. This network consists almost entirely of undivided two-lane roads of varying quality. There have been extensive improvements on certain routes but there are also numerous unimproved sections. Some sections show traffic volumes below 2,000 vehicles per day, but others reach 10,000 and above.

The National Secondary network is a critical component in the overall road infrastructure, and is particularly important in serving and connecting the smaller market towns to one another and to the bigger centres served by the National Primary network. It will play an important role in developing the *National Spatial Strategy*. We recommend that a specific and comprehensive programme of National Secondary road improvements should be included in the next National Development Plan, together with the analysis underlying project selection and prioritisation. This should take account of the needs of the *National Spatial Strategy*.

We note from the documentation accompanying *Transport 21* that certain National Secondaries have been identified as priorities for improvement. These are:

- N52 Dundalk-Mullingar-Tullamore-Birr-Nenagh
- N80 Tullamore-Portlaoise-Carlow-Enniscorthy
- N61 Athlone-Roscommon-Boyle
- N56 Donegal-Letterkenny coastal route
- N59 Mayo-Galway coastal route
- N67 Clare coastal route
- N69 Limerick-Tralee and N86 Tralee-Dingle
- N70 Ring of Kerry
- N71 West Cork coastal.

The decision process leading to these choices has not been detailed in the *Transport 21* documentation, and we would note that certain routes not included (such as the N62 North-South route through the Midlands, from the N8 Dublin-Cork road at Horse and Jockey through Thurles-Templemore-Roscrea-Birr-Athlone) cater for substantially higher traffic volumes than certain of the coastal routes which have been selected. These routes would also have a more significant regional development impact in that they link the gateways and hubs more effectively and reduce the radial nature of the roads network which can be a constraint for traffic between certain points. Under *Transport 21* the predominant focus of

investment on national secondaries is on surface renewal. In some cases a substantial return may result from realignment or by-pass projects and such projects should also be considered. In general, while a reasonable surface quality is desirable on the coastal roads identified as part of *Transport 21* in order to support the considerable role of these roads for the tourism industry in the economically weak remote regions, it is questionable to schedule investment in these roads ahead of roads such as those highlighted above, where investment is likely to result in substantially higher returns. In this context the investment priorities for National Secondaries should be informed by a review of investment on the Secondary Network.

NON-NATIONAL ROADS

The National Primary and National secondary networks are the responsibility of the National Roads Authority, which reports to the Department of Transport. Many roads classified as R (Regional) roads, and some classified as Local roads carry substantial volumes of traffic, particularly in the East of the country. These roads are the responsibility of the local authorities, and are financed through block grant and also through certain centrally formulated programmes, all administered by the Department of the Environment, Heritage and Local Government. Expenditure on non-national roads under all headings is currently running at approximately €500 million per annum.

In the context of a review of road classification or otherwise, we recommend that consideration be given to the transfer to the Department of Transport of the responsibility for non-national roads, or at least of the busier non-national routes. This would better facilitate the co-ordination of investment across the whole roads network. We appreciate that there are financing issues, since regional and local roads are only partially Exchequer financed.

Finally, should the Government opt at some future point for a pay-as-you-drive system of road user charging nationally, something we believe it is now opportune to consider, this would have implications for the national route systems, and a review of the *Road Needs Study* (1998) would be desirable in that context.

PROVISION OF BUS-STATIONS AND INTERMODAL STATIONS

Provincial long-distance bus services, including those operated by private companies as well as by the CIE Expressway unit, carry passenger numbers comparable to the numbers carried by mainline rail. Further liberalisation of the market is contemplated, and the end-to-end journey times are beginning to benefit as major road schemes are completed. There has been only limited investment in bus station facilities in many towns and cities. We believe that a national review of bus and intermodal station (bus/rail) opportunities, including proper provision of taxi ranks at all major termini, would be worthwhile. A seamless transport system is

promoted by intermodality, and the taxi service is a key supplementary complement to the long-distance bus or rail offering.

SUMMARY RECOMMENDATIONS

As discussed in Chapter 4, the economy is unlikely to be able to deliver all of the required infrastructure over the course of the next NDP. As the largest component of this expenditure is the planned investment in transport infrastructure the timing and prioritisation of this programme will need adjustment. As outlined in Chapter 5, this may involve the postponement of individual projects until after 2013 to better align the investment programme with the economy's ability to deliver.

We have seen in the current NDP that ramping up investment very fast, especially at a time when the economy is growing rapidly, can cause serious difficulties. There is first the problem of effective project management, discussed elsewhere in this report. Where investment takes place incrementally there is greater opportunity to learn from experience. As discussed later, it is important that the lessons of the projects already completed, both successes and failures, be absorbed before embarking on even larger future projects.

However, even if the project management lessons are fully learned there will still be the problem of capacity constraints in the building and construction sector. As a result, even if all the projects envisaged as part of *Transport 21* pass the required cost-benefit hurdle, some of them will have to be postponed until after 2013. This is likely to be more efficient than undertaking the same range of projects simultaneously but over an extended time scale.

As shown in Table 12.4, what we recommend is that priority be given first to completing the major elements of the upgrading of the national primary road system. Considerable progress has already been made and many of the key elements of the system can be completed within the time scale of the next NDP. Of their nature such projects tend to produce the biggest benefits when they are completed. Prior to completion, the opening of individual stretches of motorway may just shift congestion on to the next town or village. However, the completion of the final link in a key route is likely to produce the biggest reduction in congestion while eliminating the serious costs imposed on the last towns or villages to suffer the congestion.

The indicative recommendation in Table 12.4 would see the level of activity in investment in road infrastructure showing a limited increase compared to the current high level of activity. This should be sufficient to bring to completion most of the high profile road projects within the course of the next NDP.

Table 12.4: Recommendations on Transport Investment €million, Average Annual Expenditure

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
National Roads	Increase	1,356	1,580
Public Transport	Increase	491.5	1,162
Non-National Roads	Increase	556	632
Regional Airports	Reduce	10.5	0
Seaports	Reduce	0.1	0
Total		2,414.1	3,374

Note: The 2006 allocation refers to that specified in the NDP, which is not equivalent to the MACIF, where the total capital expenditure for 2006 is €2,555 million.

As discussed above and in Appendix 2, in the case of the public transport investment it is not possible to establish an appropriate prioritisation pending the completion of the cost-benefit analysis on all the proposed projects. It is important that this analysis be done in a consistent manner to allow this prioritisation to take place. Also, because of the possible network benefits from public transport infrastructure, the prioritisation of the different projects may not be straightforward. Any possible interdependency will need to be properly analysed before arriving at a final decision on the appropriate level of investment and its proper prioritisation.

On the assumption that sufficient projects will pass the cost-benefit analysis hurdle we recommend a substantial increase in investment in public transport, more than doubling the expenditure planned for 2006. Even assuming that the public transport projects all warrant investment, such a large increase in expenditure will pose serious management problems. It will be important that the very substantial increase in activity in this sector is managed in a way that ensures appropriate value for money.

The proposed total annual investment (at 2006 prices) in transport of €2,900 million a year will represent a very big increase in activity compared to the current already high level. None the less it will be substantially below that envisaged in the multi-annual capital investment framework published in *Budget 2006*. That framework would have called for a near doubling in the level of investment in transport to around €3,700 million a year at 2006 prices. In the light of the analysis in Chapter 5, it must be concluded that the economy would not be able to deliver such a level of investment over the course of the next NDP without huge inflationary pressures. The only way that such a level of investment could be achieved would be if serious measures were taken to reduce private sector demand for building and construction.

Finally, a number of problems in the planning and development of the transport network for Dublin have arisen from the multiplicity of different authorities involved. For example, there have been problems in achieving co-ordination between the bus service and the new Luas system. The lack of co-ordination apparent in the planning process itself is discussed above.

For the future it would appear that it would be better if all of the relevant assets of the Dublin transport network were transferred to a single holding company. This should include both the rail network and the bus network. That single company would then be able to co-ordinate all services, including ticketing, without having to engage in negotiations with many independent entities. It would be open to that holding company, and probably appropriate, to contract out the provision of many of the services to suitable public or private operators.⁴⁰ This has already been the approach with Luas. However, in all cases the company should preserve the identity of the network and it should retain the ability to plan an evolving system over the next twenty years. Entering into long-term contracts that gave away the company's right to plan the system could defeat the purpose of such a reform.⁴¹

⁴⁰ For mainline rail an appropriate agreement could be made to lease assets or license the use of assets owned by the Dublin authority to Iarnród Éireann.

⁴¹ For example, see the problems with the Westlink bridge.

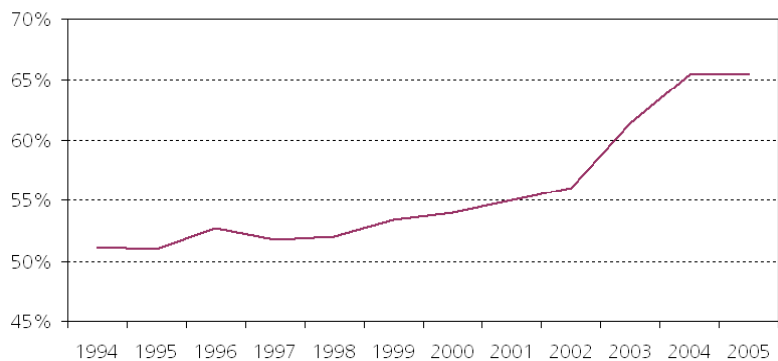
13. HOUSING

13.1 Introduction

Over the past decade housing has become a key sector of the economy. The gross value of housing output (new and repair and maintenance) was just over €20 billion in 2005, which is equivalent to 15.2 per cent of GNP, compared with 7 per cent in 1994. The economy is now very dependent on the housing sector. A strong housing market has a positive impact on the economy, not only through its direct contribution to GDP via new residential construction and home related purchases, but also through enabling homeowners to extract equity from their homes to finance current consumption. Housing also influences activity and employment in the construction, financial and other business services sectors of the economy.

Residential construction is estimated to account for around 65 per cent of total construction output as against 51 per cent in 1994 (Figure 13.1). As a result the building and construction sector, measured in gross value added terms, represents around 18 per cent of GDP compared with an average of just over 11 per cent across 19 Western and Central European countries.

Figure 13.1: Residential Construction Share of Total Construction Output (%): 1994-2005e



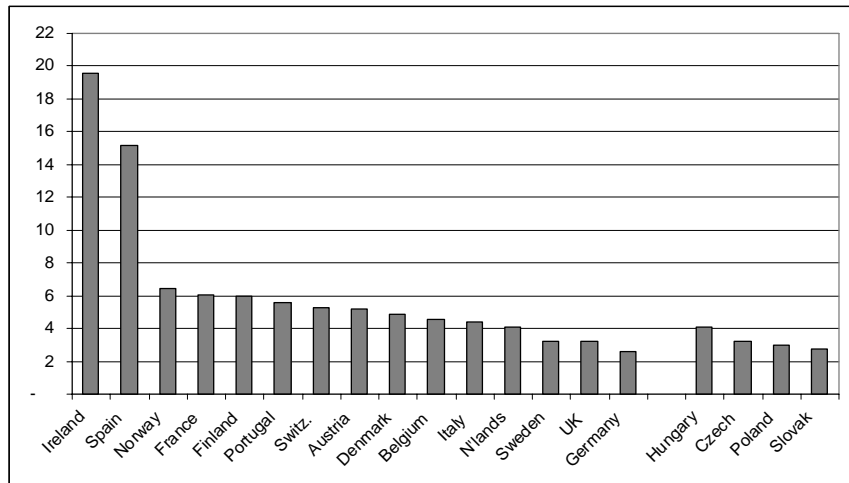
Source: DoEHLG, DKM.

Since 2002 the residential share of total construction output has increased considerably. In the absence of any breakdown of the employment numbers between the individual sub-sectors of construction, we suspect that the strong employment growth in the sector can be attributed to the strong growth in residential

construction activity. If so, the economy is now very vulnerable to any slowdown in residential construction.

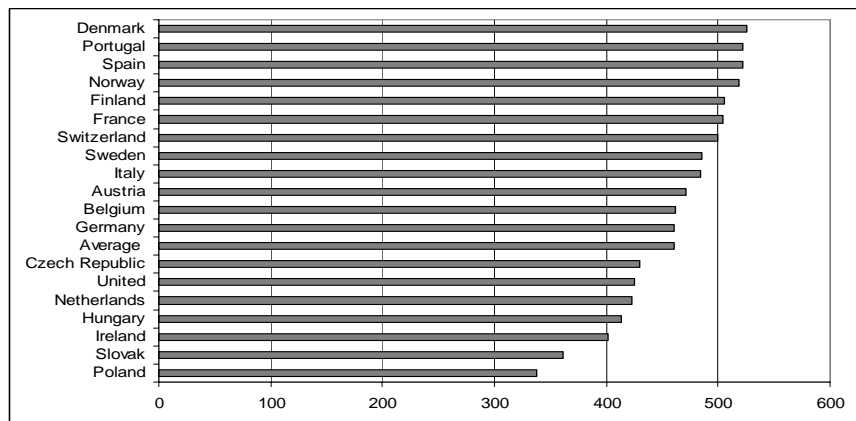
Ireland's exceptional rate of housebuilding, at almost 20 units per 1,000 of the population in 2005, compares with an average of around 5 units per 1,000 of the population across Western Europe and only 3 units in the UK (see Figure 13.2). Despite Ireland's exceptional rate of housebuilding, its stock level is still behind Western Europe: approximately 400 dwellings per 1,000 of the population in the Republic compared with an average across Western Europe of 476 dwellings per 1,000 of the population (see Figure 13.3).

Figure 13.2: Housing Unit Completions Per 1,000 of Population, 2005



Source: Euroconstruct.

Figure 13.3: Housing Stock per 1,000 of Population, 2005



Source: Euroconstruct.

HOUSING DEMAND

This *High Growth* forecast in the most recent *Medium-Term Review* suggests that the factors underpinning the housing market are expected to remain positive in the medium term. Economic growth is expected to continue, along with employment and income growth. Demographic trends will also support the housing market. For example, net immigration is forecast to average around 34,000 per annum between 2002 and 2012. Furthermore, a large proportion of the Irish population, nearly 31 per cent, is aged between 25 and 44 years. Although there is evidence from *Census 2002* of a marginal decline in the home-ownership rate, probably due to the recent period of high price growth, Ireland has one of the highest home-ownership rates at around 80 per cent, substantially above the EU average of approximately 60 per cent.

The demand for housing can be broken down into five main sources:

- population change,
- rising headship,
- migration,
- second dwellings,
- replacement of obsolescent stock.

Demographic factors are a key driver of the housing market, accounting for an annual average of 26,800 units to housing demand between 1997 and 2002. The main component of this, the natural increase in population, is estimated to have contributed an average of 20,000 units per annum over the period. This component is expected to continue to make a positive contribution to housing demand over the forecast period.

Possibly reflecting the rapid rate of house price inflation the change in headship between 1997 and 2002 made a very low contribution to housing demand.⁴² Indeed, the continuing low headship rates by international standards, at a time when incomes in the Irish economy increased substantially, suggests that there may be “pent-up” demand for housing from aspiring homeowners.

Having had for many years a net outflow of people from the country the economy now faces a substantial net inflow. A large proportion of immigrants are in the key household formation age groups between 25 and 44 years old. Having made no contribution to housing demand between 1991 and 1996 migration contributed an annual average of 6,000 units between 1997 and 2002. The continued net inflow over the remainder of the forecast period is expected to account for an annual average of 12,300 housing units between 2007 and 2011.

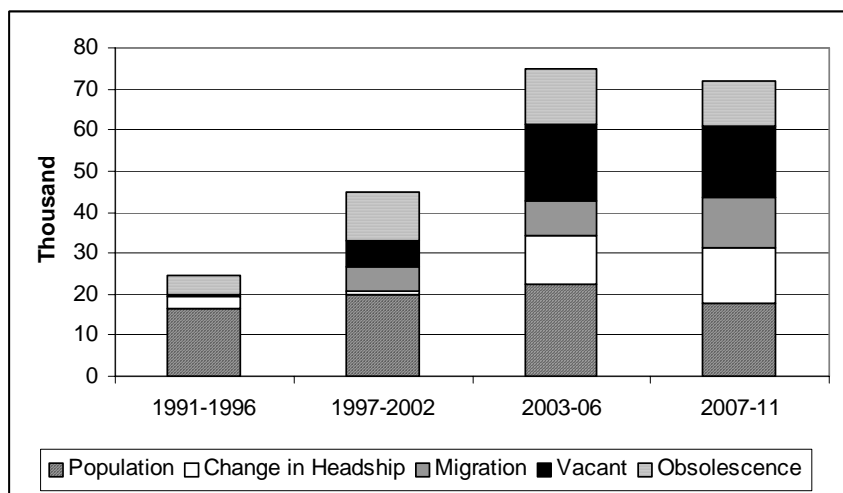
⁴² The demographic forecasts have assumed that Irish headship rates rise from current levels to reach UK levels by 2021. This implies that the average number of adults (persons aged 20 years or over) per household in Ireland will fall from 2.2 in 2000 to 2.0 by 2010 and eventually to 1.8 by 2020.

Fitz Gerald (2005) suggests that one of the key drivers of the demand for housing in recent years has been the demand for second dwellings. Higher wealth, a result of the economic boom, has increased the demand for second dwellings or holiday homes, which now account for a significant proportion of new dwellings. Census data indicates that the number of second or vacant dwelling reached over 170,000 by 2002. The period 1997-2002 saw second dwellings contribute an annual average of 6,400 units to the overall demand for dwellings. This component is expected to make a major contribution to the demand for housing over the period, estimated at an annual average of 18,800 units between 2003 and 2006, before declining marginally to an annual average of 17,200 between 2007 and 2011.

Fitz Gerald (2005) also derives an estimate of the depreciation rate for housing. This estimate is used to forecast the number of dwellings demanded to account for obsolescent stock, averaging 13,400 units per annum between 2003 and 2006, and 11,100 units per annum between 2007 and 2011.

On the basis of these figures it is estimated that the demand for housing units averaged 44,800 units per annum between 1997 and 2002 (see Figure 13.4). The current period has seen much higher demand, averaging 74,800 dwellings on an annual basis. With economic growth expected to continue, as well as income and employment growth and a net inflow of people into the country the demand for housing is forecast at an average of 71,900 units between 2007 and 2011.

Figure 13.4: Decomposition of Housing Demand, Thousands, Annual Averages, High Growth Scenario



Given the macroeconomic forecasts presented above (Chapter 4) it is worth considering the implications of the Irish economy moving to the *low growth* scenario for housing demand. This indicates that in the latter half of the NDP, post 2011, that the demand for housing would average around 61,000 units per annum between

2011 and 2015. Of course, in the event of a sudden negative economic shock to the Irish economy housing demand could be lower.

HOUSING AS AN INFRASTRUCTURE CONSTRAINT

The state of the housing market may now constitute a major constraint for the Irish economy (Duffy, Fitz Gerald and Kearney, 2005). Traditionally, Ireland has had an infinitely elastic labour supply curve due to an extremely open labour market, with migration ensuring an elastic labour supply and a weak Phillips Curve effect. One of the results of the boom in the late 1990s was that the Irish economy effectively reached full employment and growth in output outpaced capacity. House prices rose sharply, so the decision to migrate to Ireland was now influenced, not only by relative employment opportunities and relative wages, but also by the rapid rise in house prices. This resulted in labour supply becoming even more inelastic. Since many immigrants are in the household formation age group, and tend to be highly skilled, the boom in house prices in Ireland could reduce the attractiveness of Ireland for potential immigrants. This would, in turn, reduce potential labour supply in the medium term and act as a brake on medium-term growth in output and employment.

Simulation results indicate that the housing constraint significantly reduces the medium-term growth potential of the economy and shifts the balance of labour market growth from employment to wages, with a consequent deterioration in competitiveness. The welfare effects differ for different groups, with unambiguous gains for current homeowners while immigrants, first time buyers and those with lower labour market skills are the net losers.

THE QUALITY OF THE HOUSING STOCK

The simple stock estimates give little information about the quality of the housing stock, which in turn could have a major bearing on investment needs since the quality of the stock will determine the rate of obsolescence. *The National Survey of Housing Quality* (NSHQ) in 2001-2002 obtained detailed information from a representative sample of over 40,000 householders on characteristics and problems of the dwelling, and on the household members (Watson and Williams, 2003).

The report examines the overall condition of the dwelling under a number of broad headings. The household and dwelling characteristics, which emerged as being most strongly related to housing quality were dwelling age, tenure and location. One finding, which has emerged clearly from the survey is that, across most measures of housing quality, Local Authority renters are in a less favourable position than other tenures. Two exceptions worth noting are direct housing costs and recent repairs and upgrades to the dwelling. Because of the differential rents system operated by Local Authorities, whereby rent levels are related to household

13.2 Outline of Existing Policies

income, and because Local Authority renters tend to have low incomes, Local Authority rents are low. The second respect in which Local Authority renters are not at a disadvantage is in terms of repairs and upgrades to the dwelling in recent years. In this respect Local Authority renters fare at least as well as the other tenures.

The overall objective of Irish housing policy is to “...enable every household to have available an affordable dwelling of good quality, suited to its needs in a good environment and as far as possible at the tenure of its choice”.⁴³

The general thrust of housing policy is that those who can afford to house themselves from their own financial resources should provide for their housing needs, whether through home ownership or private rented accommodation (the private housing market), and that a range of targeted supports should be available to others having regard to the nature of their need (through the public housing system).

The policy is based on a multi-stranded approach, involving various interventions and supports in the private and public housing markets. The private housing market enjoys some indirect State support in the form of measures such as mortgage interest relief, but without any direct State involvement in the actual provision, beyond the planning process and the provision of local authority services such as roads and water.

The vast majority of housing services, for which the Department of the Environment, Heritage and Local Government (DoEHLG) has responsibility, are delivered through the local authorities, and the various interventions and supports can be summarised under five headings, which comprise the Housing Priority under the current NDP:

- Local Authority Housing.
- Voluntary Housing Support Schemes.
- Improving Access to Affordable Housing.
- Housing Stock Improvements.
- Accommodation for Groups with Special Needs.

Over the past decade policy has been focused on increasing the overall supply of housing and improving access to home ownership for those persons who have been unable to provide their own housing needs in the private market. Measures in this regard have included stamp duty concessions and improvements in mortgage interest relief (MIR).

Although the vast majority of the financial resources allocated to housing are spent on the provision of local authority and social housing, since 2000 with the passing of the new Planning and Development Act, the focus has shifted to affordable housing initiatives aimed at improving affordability and access to home

⁴³ See www.environ.ie.

ownership. Within this, there has also been a focus on the first-time buyer.

The diversification in the nature of social and affordable housing provision since 2000 has resulted in a new ‘third-tier’ of the market, *Affordable Housing*, in addition to the two tiers, which traditionally formed the core of the Irish housing system – the State supported *Social Housing* system and the private housing market. This third category consists of those who will not qualify for social housing, and are typically people in employment, but whose financial resources are deemed inadequate to get on the owner-occupation ladder as a result of escalating house prices over the last decade.

The creation of this third category is a significant change in the approach to housing policy, and involves a major expansion of the State’s role in the housing market. There is substantial non-Exchequer funding provided in the form of loans from the Housing Finance Agency to the local authorities for house purchase, improvement and mortgages under the various affordable housing schemes. In 2005 a number of lending institutions started to offer mortgage finance for affordable housing applicants, thereby potentially reducing the demands on the Housing Finance Agency. Other institutions are expected to follow.

In addition Part V (of the Planning and Development Acts) involves a new approach to the provision of social housing. Local authorities can now source some of their requirement for new social housing through a compulsory acquisition at cost, of a portion of private house building output, in addition to their own construction programmes for new social housing units.⁴⁴

While the five headings under which social and affordable housing supports can be summarised are those that make up the Housing Priority in the Economic and Social Infrastructure Operational Programme (ESIOP) in the current NDP, other schemes not included in the ESIOP also deal with housing needs. The asylum seekers accommodation scheme provided for in the NDP, which is funded out of current expenditure from the Department of Justice, Equality and Law Reform, is included as Measure 6.

We understand that the DoEHLG plan to issue a new policy statement for housing during 2006. A summary of the key elements of that statement were outlined in a framework document published at the end of 2005.⁴⁵ This document contained a number of agreed principles for the development of housing policy in regard to reforming the social housing sector, supporting an effective private housing market and accelerating the supply of affordable housing. We refer to elements of this framework throughout this chapter.

⁴⁴ The various schemes and interventions, which are targeted at a broad range of housing needs that are not met by market provision are set out in Appendix 3.

⁴⁵ *Housing Policy Framework – Building Sustainable Communities*, Department of the Environment, Heritage and Local Government, December 2005.

13.3 Progress since 2000

In 2005 a record number of almost 81,000 new housing units were completed, compared with just fewer than 50,000 in 2000. Of those approximately 92 per cent, were provided by the private sector. Based on completions data, a total of 606,000 units have been added to the housing stock over the period 1994-2005. Taking an estimated stock level of 1.64 million at the end of 2005, this implies that 37 per cent of the housing stock has been built over the last twelve years and almost one-quarter since 2000.

The public sector contribution, in terms of new build, is predominantly delivered through the local authority-housing programme although the voluntary housing sector also provides social housing, which is funded by significant financial assistance from central Government under the Capital Assistance and Capital Loan and Subsidy schemes.

Table 13.1: House Completions by Sector 2000-2005

	Total Private	Total Public	Local Authority	Voluntary Sector	Total	% Private %	% Public %
2000	46,657	3,155	2,204	951	49,812	94	6
2001	47,727	4,875	3,622	1,253	52,602	91	9
2002	51,932	5,763	4,403	1,360	57,695	90	10
2003	62,686	6,133	4,516	1,617	68,819	91	9
2004	71,808	5,146	3,539	1,607	76,954	93	7
2005	75,398	5,559	4,209	1,350	80,957	93	7

Source: *Annual Housing Bulletins*, Department of the Environment, Heritage and Local Government.

The housing needs of approximately 13,000 households were met by the total investment in housing in 2005 (see Table 13.2), with investment undertaken by local authorities each year, including the construction and acquisition of new units, accounting for the majority of those households. Based on the latest assessment of housing need, which reported a total of 43,684 households in need at end March 2005, the annual investment under the local-authority housing programme accommodates approximately 1 in 4 households on the social housing lists each year. Further details on the breakdown of the figures in Table 13.2 are provided in Appendix 3.

Table 13.2: Physical Indicators of Progress 2000-2005

	2000	2001	2002	2003	2004	2005e	Cumulative 2000-2005
Total Social Rented Provision	7,288	9,574	9,919	10,738	9,880	10,292	57,691
Affordable Housing	1,369	2,015	2,802	2,839	2,265	2,756	14,046
Total Social and Affordable Provision	8,657	11,589	12,721	13,577	12,145	13,048	71,737
Sales under Tenant Purchase Scheme	1,844	1,411	1,195	1,567	1,652	1,738	9,407
Number of Sites Sold	98	188	141	112	87	124	750
Groups with Special Housing Needs:							
Traveller Specific Units Provided	176	187	214	228	193	na	
Traveller Families removed from roadside	114	76	78	151	187	na	

(1) Including social housing units acquired under Part V.

(2) Houses available for rent from existing stock.

Figures for other acquisitions and regeneration in 2005 are DKM estimates.

The focus, since 2000 on a range of affordable housing initiatives has resulted in the needs of almost 72,000 households being met over the period 2000-2005. The level of acquisitions under Part V schemes has been slow to take off due to the fact that many of the units provided in recent years were on foot of planning permissions, which predated the Planning and Development Act, 2000 and thus were not subject to Part V. With continued high activity in the sector the number of units delivered under Part V is expected to increase from 2006 onwards.

There are other schemes included in Table 13.2 such as the tenant purchase scheme, the provision of low cost sites and the schemes providing accommodation for travellers. Some 9,400 local authority houses were sold to tenants by local authorities over the last six years. While the transfer price applied is the current market value less discounts, determined by the years of tenancy, the transactions price recorded can be substantially below the market price.

Furthermore, other schemes that do not generate additional housing units, such as the remedial works scheme for houses of existing tenants and schemes for the homeless are not included in Table 13.2. Progress on homelessness has been independently reviewed, resulting in a number of recommendations designed to move the existing strategies and action plans forward effectively.⁴⁶ These are covered later under the discussion on Special Needs.

Capital expenditure on housing is the second largest element of the Public Capital Programme (PCP) after transport, accounting for 18 per cent (€1.55 billion⁴⁷) of the total PCP for 2005 or 18 per cent on average over the period since 2000. The annual average nominal increase in the capital investment over the last five years has been 12 per cent per annum. By the end of 2006, the total capital investment in housing will be €10.5 billion since 2000 compared with €3 billion over the previous seven-year period.

The capital investment under each measure is set out in Table 13.3. There is also current expenditure of approximately €164 million in 2005,⁴⁸ which includes a €74 million provision for asylum seekers accommodation from the Department of Justice, Equality and Law Reform.⁴⁹

⁴⁶ *Review of the Implementation of the Government's Integrated and Preventative Homeless Strategies*, a report prepared by Fitzpatrick Associates Economic Consultants for the Minister for Housing and Urban Renewal, February 2006.

⁴⁷ The 2005 estimated outturn of €1.55 billion for investment in housing, according to the 2006 PCP compares with the 2005 provision of €1.89 billion in the 2005 PCP.

⁴⁸ *Source*: Revised Estimates for Public Service, Department of Finance, 2006.

⁴⁹ Appendix 3 provides background on the schemes within each measure and a detailed breakdown of the investment under each measure.

Table 13.3: Public Capital Investment in Housing Priority (*)

Million Euro	2000	2001	2002	2003	2004	2005	2006e	Average Annual % Change
	(2006 PCP)							%
Measure:								
1. Local Authority Housing	420	671	792	695	704	805	875	+13.9
2. Voluntary Housing	100	145	179	213	185	168	246	+11.0
3. Improving Access to Affordable Housing	186	247	361	495	347	291	508	+9.4
4. Housing Stock Improvements	153	210	256	272	253	243	281	+9.8
5. Groups with Special Needs	15	24	27	29	36	37	47	+19.9
Total Capital Investment in Housing	874	1,296	1,614	1,704	1,524	1,546	1,957	+12.1
<i>of which investment in Local Authority & Social Housing</i>	621	972	1,178	1,130	1,118	1,214	1,409	+14.3

(*) Based on grouping the PCP measures into the five broad measures which make up the Housing Priority.

Source: Public Capital Programme, 2006 Department of Finance.

In addition to the capital provisions in the PCP there is current expenditure including the housing expenditure incurred under the Supplementary Welfare Allowances Scheme and grants to homeless agencies. There are other costs to the Exchequer as a result of tax reliefs, including the area based tax incentive schemes, which are due to terminate in July 2006, and other tax reliefs in the form of mortgage interest relief for owner occupiers and registered landlord as well as reliefs for private tenants.

The rent and mortgage interest supplements comprise a significant proportion of the total cost of the Supplementary Welfare Allowance Scheme (SWAS). The costs for the SWAS are borne in full by the Department of Social and Family Affairs. Rent supplement assists eligible persons with the cost of private rented accommodation while mortgage interest supplement assist eligible persons with their mortgage interest payments. The most recent *Assessment of Social Housing Needs* reported that 13,778 or 31.5 per cent of those on the waiting lists are in receipt of the SWA rent supplement scheme. The numbers in receipt of rent and mortgage interest supplements have increased from 46,914 in 2000 to 60,176 in 2005,⁵⁰ an increase of 28 per cent. Expenditure over the same period increased from €157 million to €370 million.

⁵⁰ 2005 figure excludes around 33,000 persons transferred under the Rental Accommodation Scheme (RAS) to the Department of the Environment, Heritage and Local Government.

Table 13.4: Total Public Expenditure on Housing

	2000-2005	2005	2006e
Measure:	€m.	€m.	€m.
1. Provision of Local Authority Housing	4,087	805	875
2. Voluntary Housing	991	168	246
3. Improving Access to Affordable Housing	1,926	291	508
4. Housing Stock Improvements	1,386	243	281
5. Groups with Special Needs	168	37	47
Total PCP Housing Investment	8,559	1,546	1,957
Current Expenditure (1)			
Measure 1 – Local Authority Housing (RAS) (2)		1	19
Measure 2 – Voluntary Sector		28	35
Measure 3 – Affordable Housing (3)		6	11
Measure 5 – Grants to Homeless Agencies/Travellers		50	56
Other Current Expenditure (4)		5	4
Total Current Expenditure		90	125
Measure 6 - Asylum Seekers (5)		84	74
Supplementary Welfare Allowance - Housing			
– Rent Supplement		370	
– Mortgage Interest Supplement		6	
Tax Relief – Mortgage Interest		279	
Tax Relief – Rented Residential (6)		26	
Tax Relief – Private Tenancies		na	
Other Tax Reliefs (7)	1,014		
– Rural Renewal	277		
– Urban Renewal	636		
– Town Renewal	71		
– Living over the Shop	30		

- (1) The detailed breakdown of the total current expenditure for 2005 (€ 90 million) and 2006 (€125 million) is taken from the Revised Estimates for the Public Service 2006.
- (2) This €19 million in 2006 is for the new Rental Accommodation Scheme (RAS) transferred from the Department of Social and Family Affairs.
- (3) Expenditure here includes €5 million towards the shared ownership subsidy, €2 million for the AHP and €3.7 million in 2006 for private rented sector support.
- (4) Other current expenditure includes grants for Housing Research and expenditure under the Housing Management Initiative and for the Local Drugs Task Force.
- (5) There is a separate provision for Asylum Seekers in the 2006 NDP estimates which was not part of the original classification in the Housing Priority in the NDP 2000-2006. It is designated here as Measure 6.
- (6) 2002 figure.
- (7) Figures for other tax reliefs are estimates of the NPV of the tax foregone up to July 2006 associated with residential developments under each scheme, as estimated by Goodbody Economic Consultants in their Report entitled *Review of Area Based Tax Incentive Renewal Schemes*, November 2005 (Table 8.1).

New arrangements were put in place in July 2004 for the provision of housing for long-term rent supplement recipients though the sourcing by local authorities of accommodation from the private rented market or through other social housing measures. For the purposes of the scheme long-term recipients are defined, as those in receipt of SWA for a period greater than 18 months, which is estimated cover in the region of 33,000 persons. Under the new

scheme, known as the Rental Accommodation Scheme (RAS) long-term rent supplement recipients, are to have their housing needs catered for by local authorities. Following a pilot scheme across eight local authorities during 2004, all local authorities were due to implement the scheme this year.

This new arrangement effectively transfers the rent supplement budget to local authorities in the hope that better quality accommodation and better value can be obtained. The funding for RAS is to be met from savings on the SWA rent supplement budget. The 2006 spending estimates transferred €19 million from the Department of Social and Family Affairs to the DoEHLG for funding the new scheme. The key benefit of the transfer is expected to be that local authorities will secure better value in the sourcing of accommodation through the use of long-term contracts with landlords than under the rent supplement scheme. There will be an extra cost for the DoEHLG as it will pay an administration fee to the local authorities for administering the scheme.

The mortgage interest supplement scheme (MISS) is a form of assistance for those unable to meet their full mortgage interest repayments. Approximately 3,220 persons were in receipt of mortgage interest supplement at the end of 2005 at a cost of €6.34 million.

There is another issue, which may have cost implications for the DoEHLG. As managers of the social housing stock, the impact of the provisions of the EU Directive on the Energy Performance of Buildings, which became European law in January 2003, has yet to be quantified. The Directive was to be transposed into national law and brought into operation by EU Member States by 4 January 2006. The most important provision of the Directive is that an energy performance certificate is to be provided at the point of sale or rental of a building, or on completion of a new building. It is acknowledged that the central heating programme is making some inroads in this regard.

The housing market is a market for accommodation, which encompasses different types of tenure. Consequently, it is important that the market provides a mix of tenure choices. Most new initiatives since the late 1990s have focused on owner occupation at the expense of the rented sector. In order to meet demand efficiently the housing market needs to offer a range of tenure choices right across the tenure spectrum. The 2004 legislation on the rented sector will help address this imbalance and the recent statement in the *Housing Policy Framework* on the promotion of affordable rented housing is welcome in this regard.

13.4 Housing Priorities for the Next NDP

The fact that house prices have increased to such a high level over the last decade is a clear indication of the excess demand or lack of sufficient supply in the housing sector. As a consequence, workers in the first-time buyer segment on traditionally good incomes, who would have been in a position to purchase property in semi-

detached estates in the private housing market twenty to thirty years ago, are today priced out of the market.

There are a number of reasons for this including restrictive zoning policies of some local authorities. For a housing market to function efficiently it is a prerequisite that sufficient quantities of zoned and serviced land are provided for in Development Plans. Increased resources have been made available to planning authorities in recent years, which have resulted in a considerable rise in the number of planning permissions over the last two years. Much progress has been made with the planning system, resulting in some 18,000 completions in Dublin, for example, compared with 9,400 in 2000. However, the resulting pattern of development has not been the most desirable in terms of sustainability and has adversely affected travel patterns and the quality of life.

The housing sector in particular has been identified in Chapter 5 as one of the principal risks going forward for the Irish economy in the event of any major shock which could adversely impact on confidence in the housing market and more generally across the economy. With residential construction now accounting for 65 per cent of overall construction output, it is important that there is no further stimulus provided by the State, which would add to the size of the building and construction sector. Thus, it would seem wise to plan forward on the basis that any measures that can reduce demand should be considered. This can be achieved by removing all incentives that are fuelling the boom in the private and public sectors and by ensuring that the future level of State investment in housing is efficient and delivers value for money. No schemes should exist which would jeopardise the likelihood of achieving a soft landing over the medium term.

In this regard the termination of the majority of property and area based tax reliefs, subject to certain transitional arrangements, as announced in the *2006 Budget* is welcomed.⁵¹ This will assist in reducing demand from the private sector, notwithstanding reports that investor demand is rising again this year.⁵²

The net present value of the tax foregone in respect of residential development under the various renewal schemes up to July 2006 was estimated at €1 billion (Goodbody Economic Consultants, 2005). However, developments completed up to July 2006 will give rise to claims for tax relief for a considerable future period. Other reliefs remain for owner-occupiers and investors, through mortgage interest relief, estimated at €200 million in 2005, and reliefs for residential tenants.

On the basis of the figures presented above it is estimated that the demand for housing units will remain at a high level up to 2011.

⁵¹ Tax reliefs for nursing homes, childcare facilities, private hospitals and park and ride facilities were retained.

⁵² In an analysis of properties sold through Sherry FitzGerald during Quarter 1 2006 investors accounted for 40 per cent of all sales compared with 30 per cent in the same period of 2005.

In the current three year period, 2003-2006, housing demand is estimated to average 74,800 dwellings per annum. With economic growth expected to continue, as well as income and employment growth and continued net inward migration, the demand for housing is forecast to average 71,900 units per annum between 2007 and 2011. Thus with demand estimated at 440,000 dwellings⁵³ over the period 2006-2011, the stock of dwellings is expected to break the 2 million mark by 2011, provided all of this demand is accommodated.

If the above demand is to be accommodated without any adverse impact on house prices, it is essential that sufficient land is zoned in Development Plans to provide for the supply of dwellings in the right location. The implications of an inefficient zoning process, which does not provide sufficient quantities of zoned land for residential development over the long term, can put undue pressure on the environment.

Against that background and in the light of progress since 2000, there are a number of priorities for housing in the next NDP, which are outlined below. Overall our recommendations are for a somewhat reduced level of funding for this area going forward. This recommendation is a direct consequence of the current state of the market with excess demand leading to strong house price inflation. If pressure in the housing market could be reduced through appropriate fiscal measures or if there is a general downturn in this market our recommendation is to increase investment above the level recommended below.

RATIONALISATION OF EXISTING SCHEMES

From the analysis carried out to ascertain physical and financial progress, it is clear that there exists a wide range of schemes, a number of which overlap with each other. There are also different eligibility and allocation criteria. The direct relationships between actual interventions and their impact in terms of physical indicators can be difficult to quantify. The existing system is far too complex and needs to be simplified.

While the five broad measures, which comprise the Housing Priority in the current NDP make sense in that they are broadly characterised by tenure, the schemes under each measure could be streamlined more effectively. The schemes can be classified into three categories.

1. Schemes assisting *owner occupation*

- Shared ownership.
- Affordable housing.
- Mortgage allowance scheme.
- Tenant Purchase Scheme.

⁵³ Based on 80,000 in 2006 and an average of 71,900 over the five years 2007 to 2011 inclusive.

- Loans provided for house purchase.
- Mortgage interest supplement scheme under SWA.

2. Schemes focusing on the *rented sector*

- Local authority and social housing for rent.
- Part V.
- Rental Accommodation Scheme.
- Rented accommodation for persons with special needs.

3. *Housing quality* measures on the basis that they do not result in an increase in the housing stock but do generate an improvement in its quality.

Given that there are no less than six schemes addressing owner occupation and four schemes addressing the rented sector, there is an urgent need to consider which of these measures most effectively delivers on the housing policy priorities. This would involve rationalising the existing schemes and supports and their eligibility criteria in order to deliver a more streamlined set of housing policy interventions with clear objectives, targets and output levels. This review should also consider whether responsibility for the mortgage interest supplement payment scheme should be transferred to the DoEHLG and provided by local authorities as part of, and integrated into, overall housing policy.

REDUCED LEVEL OF CAPITAL EXPENDITURE – VALUE FOR MONEY

As was highlighted above, there is a need to constrain the level of capital expenditure within the overall capital envelope. Given the need for constraint, it is important to focus on the quality and quantity of the investment to ensure that it delivers value for money.

The value for money issue is relevant when the cost of constructing new units is compared with the cost of releasing existing units in the stock at below market price. Under the current tenant purchase scheme the maximum discount that applies is 30 per cent to the market valuation price as determined by the local authority, which may not be the true market value. A further capital subsidy is paid to the tenant purchaser of the order of €3,800.⁵⁴

Approximately 19 per cent of the sales in 2005 were sold at below €140,000, a further 52 per cent were sold at between €140,000 and €185,000. With the average house price across the State equivalent to around €270,000 in 2005, the disposal prices appear substantially below the market value, implying a cost to the State.

⁵⁴ Some 9,400 local authority houses were sold by local authorities over the period 2000-2005 of which 2,517 units (27 per cent) were sold in the Greater Dublin Area. A further 3,600 sales were approved at the end of 2005, with applications received from 4,622 tenants.

Importantly, there is no clawback rule as is the case with affordable housing.

The State is building some 4,000 local authority units per year. Figures obtained from the DoEHLG suggest the average all in build cost was around €155,000 in 2005, implying a total capital spend of around €652 million. When the full capital spend on new build and acquisitions as per Measure 1 is used, the total cost per unit is very similar at €157,000 in 2005, an increase of 3.1 per cent per annum on average over the last six years. The State has purchased over 5,000 units in the open market over the last six years.

While the proceeds from the current tenant purchase scheme, contribute to the financial resources of local authorities, these properties are sold at substantially less than it costs to replace them with either new build units in the local authority or acquisitions in the private market.

The Government is considering extending the tenant purchase scheme to include the sale of local authority flats from January 2007. Given the planned expansion of the social housing programme to 23,000 new social housing units between 2006 and 2008 this will require a substantial increase in investment in social housing. The proceeds from the sale of local authority houses are expected to contribute towards this cost and thus the disposal prices obtained should be at or close to their market values. The rising costs of local authority housing units over the last five years, equivalent to a total increase of 27 per cent since 2000, using the DoEHLG figures, raises concern about value for money in the housing public capital programme.

Table 13.5: Estimated Cost per Unit for Social Rented Housing

	2000	2001	2002	2003	2004	2005
A. Cost of building a LA House (€) (1)	122,000	128,000	141,000	137,000	146,000	155,000
B. Number of new LA Units	2,204	3,622	4,403	4,516	3,539	4,209
C. Estimated Capital Spend on LA Housing (2)	269	464	621	619	517	652
D. Actual Capital Spend on LA Housing (3)	420	671	792	695	704	805
E. New build plus acquisitions (4)	3,207	5,022	5,074	4,972	4,510	5,127
F. Average Cost per Unit (€) (5)	130,964	133,612	156,090	139,783	156,098	157,012

1. Average cost provided by the DoEHLG, including construction, technical fees and land costs.

2. Calculated by multiplying A by B.

3. Actual capital expenditure on local authority housing as per the PCP (Table 13.4).

4. 2000-2005 figures are the combined total of the first three rows in Table 13.18.

5. The calculated average cost per unit when acquisitions are included.

A second value for money issue concerns the fact that local authority rents are highly subsidised and are not indexed to inflation. There is little or no effort to monitor the circumstances of local authority tenants over time despite the fact that the State covers the cost of maintenance of the local authority stock. In this regard, the

most recent *Housing Policy Framework* (Department of the Environment, Heritage and Local Government, 2005) raises the issue of implementing a fair rents policy across all social housing tenures as part of a package of reforms in the social housing sector. It will be important that the issue of indexing rents is addressed as part of this package.

OPTIMAL TENURE MIX

The value for money issue is also related to the optimal composition of the State's direct involvement in respect of the main forms of tenure. Currently 80 per cent of total housing provision in the public sector is provided for through local authority and social housing programmes, which account for three-quarters of the capital spend. Affordable housing initiatives account for the balance, with no contribution from the private rented sector, although it is acknowledged that the sector is meeting the housing assistance needs of some 60,000 households through the SWA scheme plus there will be some contribution following the new arrangements put in place under the Rental Accommodation Scheme.

It may well be the case that the same number of households could be accommodated with a lower level of spending by altering the composition of the mix. A greater proportion of affordable housing in the mix, For example, and/or more use of the private rented sector, as with the Rental Accommodation Scheme, as opposed to the traditional form of local authority housing would imply a lower cost to the Exchequer. Equally the cost of maintenance would be significantly reduced if the shares of the overall social housing requirement delivered through affordable housing and the private rented sector were increased.

Table 13.6: Current Tenure Mix of Public Sector Housing Provision

	(Number of Households Accommodated)	2000-2005 % Share	2000-2005 % Share of Capital Funding
Social/Rented Housing		%	%
Local Authority Housing	49,553	69	63
Voluntary and Co-operative Sector	8,138	11	12
Total Social/Rented Provision	57,691	80	75
Affordable Housing	14,046	20	23
Private Rented Housing	0	0	0
Total Affordable & Rented	14,046	20	23
Total Housing Provision (Social/Rented/Affordable)	71,737	100	98⁽¹⁾
Rental Accommodation Scheme (from 2005)	33,000 persons		
Total Assessment of Social Housing Need ⁽²⁾	43,684 persons		
Total Affordable Housing Need	na		

1. The balance of 2 per cent on the funding side represents the funding for groups with special needs (travellers and the homeless).

2. Based on the latest local authority *Assessment of Social Housing Need* at the end of March 2005.

In recommending a more balanced mix of tenures and more use of the private rented sector, it is acknowledged that there is likely to be some impact on the market for private rented accommodation. This reinforces the need for there to be no obstacles to achieving the level of supply in the private sector that will be required over the period of the next NDP.

SOCIAL HOUSING

Following on the previous discussion regarding a more balanced mix of tenures it cannot be assumed that, based on the reduction in the waiting lists, the need for social housing will be eliminated over time. There will always be a need for social housing nationwide from those on low incomes who are not in a position to provide their own housing needs without State assistance. The key issue then is to assess what an acceptable rate of delivery might be and the most effective and efficient manner for doing so.

The most recent *Assessment of Housing Need* reported a reduction in the numbers on the social housing lists by almost 10 per cent to 43,684 since the 2002 assessment. The reduction has been attributed to the continuing increases in both the social and affordable housing provision. The majority on the social housing list are female, with approximately 25 per cent of the total under 25 years of age. Almost 87.5 per cent were on incomes of less than €18,000. In Dublin there was an overall reduction of 20 per cent from 15,674 households in 2002 to 12,608 households in 2005, with South Dublin recording a decline of 56 per cent to 1,847 households.

The DoEHLG *Housing Policy Framework* proposes the expansion of the social housing options over the coming years by: “Commencing in the region of 23,000 new social housing units between 2006 and 2008” made up of 6,000 units in 2006 and the balance in the following two years, compared with an average of 5,000 per annum over the period 2000-2005 and “...fully implementing the Rental Accommodation Scheme by end 2008”.

This proposed level of social housing supply compares with an increase in the stock by 73,000 units (net of tenant purchases) or in excess of 9,000 units per annum as recommended by NESC (2004) over the eight-year period 2004-2012⁵⁵. The most recent assessment of need together with the growing dependence of the economy on the housing market provides an opportunity to revisit what might be deemed to be a sensible level of social housing supply over the period of the next NDP. This review is consistent with the NESC report, which stated that: “The Council accepts that higher levels of investment in social and affordable housing must be sensitive to both macroeconomic considerations and the capacity of the housing industry.”⁵⁶

⁵⁵ This figure includes new build and acquisitions and compares with an average level of around 6,000 per year over the period 2000-2005. This NESC (2004) figure was derived before the results of the 2005 Assessment of Need became available.

⁵⁶ NESC (2004) Chapter 8, Paragraph 8.5.4, page 211.

Taking into account the record delivery from the private sector and the fact that equilibrium may be restored to the market over the period of the NDP, there may be a case for maintaining social housing supply close to current levels and increasing the social housing contribution from the private rented sector.

Other policies included in the *Framework* to support social housing include:

- The introduction of active land management strategies to support social housing provision.
- Introducing measures to reform the social housing sector to ensure that the system is fair, efficient and works better.
- The delivery of high quality social housing in mixed communities by rolling out a programme of regeneration and other remedial works, and completing the central heating programme by 2008.
- The completion of an audit of the social housing stock in 2008 to ensure that standards and levels of satisfaction are rising.
- The use of public private partnerships in regenerating local authority housing estates.⁵⁷

Given the analysis provided in this chapter and the need to reduce the overall level of capital expenditure identified in Chapter 5, the recommendation is to reduce social housing supply from current levels and to supplement it with schemes providing rented dwellings in the private sector. Furthermore, the Rental Accommodation Scheme (RAS) scheme should be fully implemented as soon as possible this year.

AFFORDABLE HOUSING

The focus, since 2000 on a number of affordable housing initiatives aimed at improving affordability and access to home ownership for those who are not in a position to meet their own housing needs in the private housing market without additional support is a new dimension of housing policy. The current range of schemes includes:

- Shared Ownership Scheme (started 1991).
- 1999 Affordable Housing Scheme.
- Affordable Housing under 2000 to 2002 Planning and Development Acts – Part V Schemes (2001).

⁵⁷The scope for PPP regeneration type schemes, such as at Fatima Mansions and O'Deveney Gardens, should be explored outside of the Dublin area. Under a new plan, proposed by Dublin City Council, the flats in Fatima Mansions are being totally demolished and replaced by high quality housing and very significant and necessary associated community facilities in a public private partnership type arrangement. The regeneration programme is providing an integrated development comprising social, affordable, co-operative and private housing. Approximately 300 homes will be provided for social housing that will be superior in design and quality.

- Affordable Housing Initiative under Sustaining Progress (2005).

With regard to the Sustaining Progress initiative, a new State agency, the Affordable Homes Partnership (AHP), was established in August 2005 to drive and co-ordinate the delivery of affordable housing in the Greater Dublin Area, with particular reference to the Dublin Metropolitan Area.⁵⁸ The work of the AHP combined with the establishment of the DoEHLG working group for the implementation of Part V are expected to ensure a more effective and efficient system for the operation of Part V which should result in increased housing output across all tenures to meet current and future demand.

Since 2000 individuals catered for under the affordable housing heading have tended to be first-time buyers who do not qualify for social housing as they are typically people in employment, but whose financial resources are deemed inadequate to raise a mortgage due to the escalation in house prices over the last decade. Thus this affordable group represents a new group, which were not catered for in the past by local authorities.

The need for affordable housing is determined by local authorities in their Housing Strategies, which have to be completed under the requirements of the Planning and Development Act 2000. Calculations that 20 per cent and upwards of households will fall into the social or affordable categories have been made in many counties. There is an issue concerning the assessment of the need of affordable housing across the country. Given the strength of new home completions in recent years, it is not clear that the affordability problem which Part V was designed to address is acute outside of the main urban areas, notwithstanding the continuing increase in house prices. The next round of Housing Strategies and Action Plans should address this issue.

A key element of the forthcoming housing policy statement will be the introduction of a new, simpler and streamlined affordable housing scheme for those seeking access to home ownership.

The implicit assumption in respect of the various affordable housing schemes is that all households formed are assumed to fall into the category of seeking owner-occupation. However, a significant portion of households formed are likely to choose the private rented sector, and this may be the preferred tenure for many, particularly in the first time buyer (FTB) age groups. There is, therefore, a risk of over-estimating the requirements for 'affordable owner occupation' to the extent that it fails to acknowledge the role of private rented accommodation in meeting the needs of households. Again in order to ensure flexibility and choice, there is a need to ensure an adequate supply of good quality rental accommodation at the lower end of the market.

⁵⁸Defined as encompassing the Dublin Metropolitan Area as defined in the Regional Planning Guidelines for the Greater Dublin Area, 2004-2016.

THE PART V PROVISIONS

Part V refers to the provision under the Planning and Development Act, 2000 that up to 20 per cent of land zoned for residential developments or for a mix of residential and other uses be reserved to meet affordable (and social) housing needs and be made available to the local authority at the existing use value rather than the development value. On the basis of the total of 2,171 social and affordable units transferred under Part V to the end of 2005, and based on an estimated subsidy of approximately €50,000 per unit, the total value of the subsidy is worth €108.6 million.⁵⁹ This represents the revenue foregone by the builder/developer from selling units below the market price. The latter excludes the €20 million collected to date in financial contributions under Part V, which is to be ring-fenced by local authorities for the provision of social and affordable housing. Thus the total of €128.6 million represents a levy or a tax on the builder's Part V requirement. This is likely to push up the price of the remaining 80 per cent of units and may therefore contribute to additional house price inflation. On the other hand, the growing numbers on the affordable housing lists of local authorities suggests that demand is increasing. Thus the Part V provisions for social and affordable housing artificially distort the market.

Affordable units are transferred at a discount to eligible persons resulting in an increased demand for affordable housing, the supply of which is the responsibility of the private sector. The 1,470 affordable units transferred to date under Part V have been sold on to eligible persons at discounts ranging from 30 per cent to 50 per cent off the market price. There is also the value of the clawback in the event that affordable units are sold on, which accrues to the local authority. While there is also the saving on maintenance costs for the Exchequer, the question arises whether this is the most efficient way to procure affordable housing and whether the State would be better placed to provide a rental subsidy for affordable rented accommodation.

SUSTAINABLE DEVELOPMENT

The recent housing policy framework entitled *Building Sustainable Communities*⁶⁰ emphasises a number of key policy directions for the medium term, including the building of active and successful communities, continuing improvements in the quality of houses and neighbourhoods as well as continuing the implementation of measures to modernise the private rented sector.

The focus on sustainability is likely to become even more important in the future. Sustainable development has many

⁵⁹ Based on Housing Statistics from the Department of the Environment, Heritage and Local Government.

⁶⁰ *Housing Policy Framework – Building Sustainable Communities*, Department of the Environment, Heritage and Local Government, December 2005.

dimensions, which can only be addressed in the future planning and provision of residential development.

There is a need to ensure that there is an adequate supply of zoned and serviced land for residential development in development plans in order to provide flexibility and choice and to restrain land price inflation. This will be a key factor in driving down the rate of house price inflation over the medium term.

Policymakers need to be aware of the linkages between housing, land-use, transportation and environmental policies (see Morgenroth, 2002). A number of factors have led to development out into the more distant hinterlands of our cities rather than in the city areas. These include lower development costs in greenfield sites as opposed to brown-field sites, restrictive planning and zoning personal preferences. As a result the spatial pattern of house building that has emerged has encouraged long distance commuting, which has adverse implications for the environment.

The provision of housing needs to be integrated with the provision of other infrastructure, particularly public transport which is only feasible with higher densities, but also water, sewage and social infrastructure and other amenities.

SPECIAL NEEDS

The provision of accommodation for groups with special needs is an important measure for tackling social exclusion. In total 187 travellers were 'removed from the roadside' at the end of 2004 and 193 traveller specific units were provided or refurbished.

In a recent *Review of Homeless Strategies* published by the DoEHLG, progress to date on the various Strategies and action plans developed to address homelessness were examined (Fitzpatrick Associates, 2005b). The report highlighted the significant increase in funding for the homeless sector since 2000. Over the last six years, a total of €230 million has been spent on accommodation through the DoEHLG and over €80 million on care services under the Department of Health and Children. In 2005 the DoEHLG recouped over €44 million to local authorities in respect of accommodation and related services for homeless persons, compared with €12.5 million in 1999. This year a total of over €50 million in current expenditure has been allocated for this purpose.

The *Review* identified five priority areas on which resources should be focused. The main priority was seen as the provision of long-term accommodation to be sourced from the local authority, voluntary and private rented sectors. The RAS is expected to play a significant role here.

There are no indicators of progress on the homeless component, despite the significant funding provided to address the problem. The *Review* called for better data on the extent, nature and causes of homelessness. In regard to funding initiatives, more formal funding mechanisms were advocated and it was recommended that Action Plans be reviewed on an annual basis. The Government plans to

produce a revised strategy on homelessness on foot of this review, which will take the recommendations forward.

KEY RECOMMENDATIONS

Arising from the above priorities, this section contains the main recommendations in respect of each measure, which makes up the housing priority in the current NDP.

Recommendations are provided for the future direction of funding for each measure over the Plan period 2007-2013 in terms of whether the funding level should be “increased”, left unchanged or the “same” or “reduced” relative to the 2006 provision. The NDP Expenditure provisions for 2006 include the separate provision for Asylum Seekers. This measure should be removed from the Housing Priority for the next NDP period.

The recommendations, which follow reflect the view that the level of expenditure on housing has reached unprecedented levels and there is concern over the dependence of the economy on the housing market. There is also concern about the value for money obtained by the expenditure incurred:

- *Tenure Mix:* A better balance of tenures should be achieved through schemes using the private rented sector, such as the *Rental Accommodation Scheme*. The net result would be a lower level of capital spending for new build, acquisitions and housing maintenance. Consequently, it is recommended that the average annual spend on local authority housing should be reduced in the next NDP compared with the 2006 level.
- *Special Housing Needs:* The spend on social rented accommodation by the voluntary housing sector should be maintained, given its focus on providing rented accommodation for key groups with special housing needs, such as the elderly, the disabled and the homeless.
- *Tenant Purchase Scheme:* The value of housing units sold under the tenant purchase scheme should reflect more closely the market value of the local authority dwellings being purchased outright. If market value is not an option there should be a clawback provision over the first ten years. In the event that costs are not fully recovered the scheme should be terminated.
- A priority should be to ensure that the *RAS* becomes fully operational as soon as possible this year.
- *Fair Rents Policy:* A fair rents policy across all social housing tenures, as stated in the *Housing Policy Framework* and addressing the issue of indexation of rents as part of this package needs to be implemented.
- *Rationalisation of Schemes:* The range of existing schemes and supports and their eligibility criteria need to be restructured in order to deliver a more streamlined set of housing policy interventions with clear objectives, targets and output levels.

There may be a case for considering whether the Mortgage Interest Supplement Scheme, administered by the Department of Social and Family Affairs, should be included as an instrument of housing policy with all other housing interventions administered by the DoEHLG. We support the need for a graduated system of supports but believe that the system, as it exists, could be simplified.

- *Affordable Housing:* A new simpler and streamlined affordable housing scheme for those seeking access to affordable housing for home ownership or renting should be implemented as planned. We recommend a reduced level of spending in the next NDP for non-Exchequer loan finance. With the entry of a number of financial institutions into the affordable mortgage market, the requirement for Housing Finance Agency (HFA) loans should be significantly reduced in any event.
- *Part V:* The housing supply provisions under Part V should be reviewed in order to ensure that they are working efficiently and effectively and that they are not holding up the delivery of housing supply. The impact on land prices as a result of Part V should also be examined. The Part V provisions should acknowledge the role of the private rented sector in meeting the needs of households. If the conclusion is reached that the Part V provisions are not working effectively, the subsidy transferred under Part V, of the order of €128.6 million should be collected by other means from the housing market.
- *Public Private Partnerships:* More use of public private partnerships should be made in urban areas for regenerating local authority housing estates and improving the quality of the existing local authority and social housing stock. This would allow a reduction in the overall capital provision for schemes aimed at improving the quality of the housing stock, most of which is spend on regeneration programmes.
- *Homelessness:* The recommendations from the Government's review of the implementation of its homelessness strategies need to be implemented. Schemes that provide accommodation for groups with special needs are important for tacking social exclusion and it is recommended that the level of expenditure remains unchanged.

Based on the projected levels of expenditure for each measure the overall planned NDP expenditure over the period 2007-2013 is set at €1.861 million per year on average compared with the estimated provision of €2.014 million for 2006. The capital amount is set at €1.67 million per annum on average compared with the estimated provisional PCP outturn of €1.55 million in 2005.

The provision of further resources for investment must be matched with other accompanying measures that will ensure that the interventions have the greatest possible impact. In this respect we

recommend a number of accompanying measures, which are further discussed in Chapter 11. These include issues relating to the better integration with land use planning and policy impact analysis.

Table 13.7: Housing Priority 2007-2013 Recommendations

Measure	Recommendation	2006	2007-2013
		€million	Average €million
1. Local Authority Housing	Reduce	875	820
2. Voluntary Housing	Same	278	278
3. Improving Access to Affordable Housing	Reduce	415	340
4. Housing Stock Improvements	Reduce	277	254
5. Accommodation for Groups with Special Needs	Same	95	95
6. Asylum Seekers	Same	74	74
Total		2,014	1,861

Note: Figures in above Table are taken from Appendix 3.⁶¹

⁶¹ NDP Expenditure in 2006 from the *Revised Estimates for the Public Service 2006*. There are, however, some discrepancies between the above figures and the estimates provided under the DoEHLG vote and the capital provisions in the PCP. The total capital plus current provision for Housing is €1,370 million according to the DoEHLG vote in the Estimates for the Public Service, compared with a total capital plus current provision of €2,014 million per the NDP Expenditure above or €1,940 million excluding the provision for Asylum Seekers. A considerable amount of the difference is due to the exclusion of some €410 million in non-Exchequer loans for affordable housing from the Housing Finance Agency. The current expenditure provisions above exclude €19 million for the new Rental Accommodation Scheme, which is included in the Estimates figures for 2006. The capital investment allocated under the MACIF is €1,245 million.

14. WATER AND WASTE

WATER INFRASTRUCTURE

14.1 Introduction

Water and sewerage infrastructure are a vital component of the national infrastructure since the availability of clean drinking water is a key factor underlying the health of the population. Water is required for many industrial and service activities and therefore is a prerequisite to the efficient functioning of the economy. Waste water treatment is necessary to preserve the environment and protect public health. However, the importance of water and sewerage infrastructure in itself is not sufficient justification for public investment in this area. Rather it highlights the need for Government to ensure that an adequate supply of clean water be available and the treatment of waste water be carried out to a sufficient standard.

While water and sewerage services are largely publicly provided, being the responsibility of the local authorities, in some cases individuals or groups of individuals have organised these services for themselves. As Table 14.1 shows over 80 per cent of households have a public water supply and almost 65 per cent have public sewerage access. The number of households that are connected to public water and sewerage facilities has increased significantly over the period 1991 to 2002 with over 300,000 additional households connected to public water supply and almost 250,000 additional households connected to public sewerage supply. Interestingly, the number of households utilising an individual septic tank, which identifies the housing unit as a one-off house, has increased by just 65,000, which seems at odds with some public comments over recent years.

Before we consider each of the factors in driving the need for investment it is important to note that the investment needs are not independent of the way the sector is organised. In particular, while businesses pay water charges, private households have been exempt from paying water charges since 1997. In this respect Ireland is an outlier in Europe since volume based charges are applied in almost all EU countries. This means that the most important signal to limit demand for water, namely the price of water is not obvious to individuals. In the absence of such price signals the demand for water will be excessive.

Table 14.1: Households by Water and Sewerage Infrastructure Type, 2002

Water Supply	1991	2002	Change
	739,313	1,055,577	
Public supply (incl. Local Authority Group Scheme)	(77.6%)	(82.5%)	316,264
Private Water Supply (incl. private group scheme)	175,145	183,531	8,386
	(18.4%)	(14.3%)	
No piped water and not stated	38,285	40,509	2,224
	(4.0%)	(3.2%)	
Total	952,743	1,279,617	326,874
	(100%)	(100%)	
Sewerage system			
	576,035	822,574	
Public sewerage	(60.5%)	(64.3%)	246,539
Individual Septic Tank	342,042	407,768	65,726
	(35.9%)	(31.9%)	
Other including no sewerage facilities and not stated	34,666	49,275	14,609
	(3.6%)	(3.9%)	
Total	952,743	1,279,617	326,874
	(100%)	(100%)	

Source: CSO *Census of Population 1991 and 2002*.

The international literature on the responsiveness of water demand to price changes shows that the demand for water is inelastic, that is a 1 per cent increase in the price of water will result in a less than 1 per cent reduction in the demand for water (see Dalhuisen, Florax, de Groot and Nijkamp, 2003). However, the introduction of charges would constitute a significant price change, which is likely to reduce demand significantly. In this respect the comparison of unmetered demand for water with metered demand for England and Wales provides some useful insights (OFWAT, 2005). These show that in 2004-5 metered water consumption was in the region of 10 per cent less than unmetered demand. In general, studies of the effects of the introduction of metered charging show reductions in water consumption of around 10 per cent, and much more in some cases.

Clearly, the demand for water determines the stock of infrastructure that needs to be in place to meet this demand and, therefore, impacts on investment needs. Metered consumption per day in England and Wales is less than 140 litres per head (OFWAT, 2005). In Ireland it is likely to be 170 litres per head per day (Fitzpatrick, 2005a). With excess demand in the absence of price signals, the level of investment needed to satisfy demand will also be excessive.⁶² While there appears to be a perception that the introduction of domestic water charges would be unpopular, results from scientifically conducted surveys suggests that only a minority of the population are opposed to the introduction of water charges (see Scott and Eakins, 2001).⁶³

⁶² Whether or not it would be economic to introduce metered charging is something that can be assessed, using a standard appraisal that takes account of financial and economic values (European Commission, 2001).

⁶³ These surveys were conducted in 1994 and 2000. 97 per cent and 82 per cent respectively reported that they were in favour of some direct charge. In 2000 just 6

Given the manner in which the provision of water and sewerage services is organised the rationale for further public investment is due to:

- Population increase,
- Increased economic activity,
- EU Directives,
- Climate change.

We briefly consider each of these.

POPULATION AND ECONOMIC GROWTH

As was shown above in Chapter 4, the population has increased substantially over recent years and is projected to increase further. Similarly, economic activity has increased but while strong growth is forecast this rate of growth is expected to moderate. This will inevitably lead to increasing demand for water and increased waste water output. Furthermore, as the population increase has a significant impact on the housing market through increased demand, new infrastructure will be required to facilitate housing construction.

Population growth, outlined above, points to the need for capacity to accommodate 4.86 million persons in 2013 and 5.28 million in 2020, in the *High Growth* scenarios. Given a baseline population of 4.13 million in 2005, these projections represent growth of 13 per cent and 28 per cent respectively. Additionally, the trend towards lower house occupancy will give an upward push because water consumption per head rises with lower numbers per household. GNP growth of 40 per cent is also projected though it is not certain what growth can be expected in the water intensive sectors such as Food and Chemicals, as against water extensive sectors such as Financial Services. There could be further requirements with respect to quality and to individual parameters (trihalomethanes, pesticides etc.). The National Urban Waste Water Study (Department of the Environment, Heritage and Local Government, 2004) outlined how trends in population growth point to continuing investment needs. In the absence of upgrades, 49 per cent of plants could have inadequate capacity by 2022. Clearly, the spatial trends in population distribution and the need to implement the NSS are important considerations in targeting investment.

EU DIRECTIVES

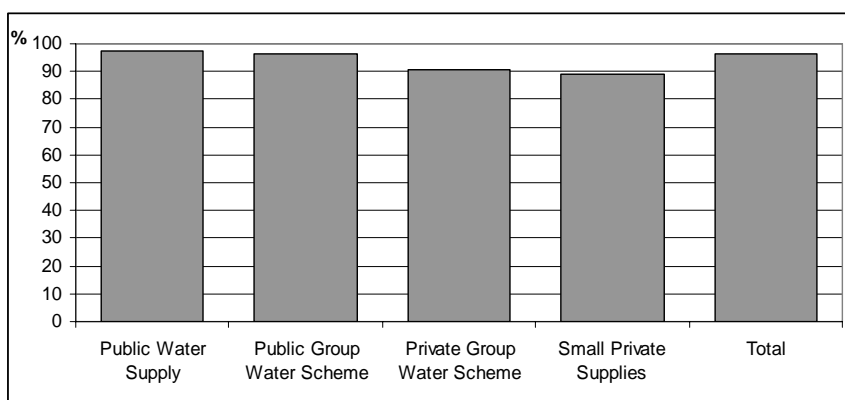
The main Directives of relevance are the Urban Waste Water Treatment Directive (91/271/EEC) and the Drinking Water Directive (98/83/EC) and, recently, preparation for the efficiency and management procedures under the Water Framework Directive's regulations (SI No. 722 of 2003).

per cent of respondents reported that they did not want a charge and thought 'Government should pay'.

The Urban Waste Water Treatment Directive (UWWTD) has been the main driving force behind the investments under Environmental Infrastructure during the 1990s and the current NDP. This Directive was particularly focused on the standard of waste water treatment rather than the environmental need for higher treatment standards. Consequently, the priorities for investment due to this Directive were rather different from the environmental priorities that might have been determined on an objective basis for Ireland. A higher priority should have been given to pollution of lakes and rivers than was the case and scarce resources were devoted to other lower priority areas because of the directive. Overall, implementing this Directive was expensive without necessarily achieving optimal impact (Scott and Convery, 1999).

The EU Drinking Water Directive (DWD) sets out to ensure that drinking water is free of harmful organisms and contains only safe levels of other substances, the levels of which are set by the Directive. Compliance with the directive is measured by the EPA, which has published regular reports on drinking water quality. The most recent report for 2004 is the first report that allows an assessment of compliance with this Directive. The report shows that overall 96.3 per cent of water supplies are compliant with the DWD. There are some differences on compliance rates between different types of supply as shown in Figure 14.1.

Figure 14.1: Compliance with the Drinking Water Directive by Type of Water Supply, 2004



Source: EPA (2005).

The Water Framework Directive (WFD, 2000/69/EC) came into force in December 2000. Its gestation during the 1990s encouraged the Government's approval in 1998 of a framework for charging non-domestic customers of water services and the setting up of seven River Basin Districts (RBD), three of which are shared with Northern Ireland. This paves the way for water authorities to combine to provide water services in a coherent manner.

The main innovation of this directive are threefold:

- It is oriented to enhancing human welfare. Rather than concentrating on the standard of treatment facilities, it focuses on an improved environment. The main objective is the achievement of “good status” in all waters by 2015. Where “high status” currently exists, it must not deteriorate.
- The river basin is to be the natural unit for water management and each river basin must be assigned to a River Basin District, which is to be the administrative unit for co-ordinated management. A River Basin Management Plan must be drawn up by December 2009 for each RBD describing the “gap” to meeting the objectives and the measures designed to fill the gap.
- Account of the principle of recovery of costs of water services shall be taken *including environmental and resource costs* in accordance in particular with the polluter pays principle. Adequate incentives are to apply to encourage consumers to use water resources efficiently, with recovery of costs for water services, and adequate contribution of users, disaggregated into at least industry, households and agriculture.

There is an opt-out for member states not wishing to apply sectoral cost recovery, say for social reasons. Ireland intends to avail of this opt-out in the case of the domestic sector due to opposition from a minority of the population (see the discussion above).

The regulations associated with this directive, S.I. 722 of 2003, European Communities (Water Policy) Regulations, came into force in 2003 with a series of target dates for compliance with different aspects. With a strong water-based leisure and tourism sector there are many advantages to be gained from compliance, besides health impacts.⁶⁴

The fact that compliance is a legal requirement need not mean that measurement of the effect of the investment on water quality is superfluous. There is scope for flexibility in the prioritisation of schemes, for example.

GLOBAL WARMING

Taking the long-term issue of global warming first, climate and hydrological studies for Ireland suggest that seasonal shortages are possible in areas where water supply capacity is already under stress (Sweeney, 2002, McGrath *et al.*, 2005). Looking at the effects on water resources by the middle of this century, Sweeney’s work suggests:

- A widespread reduction in total annual runoff is likely that will be most marked in the east and south-east of the country.

⁶⁴ The value of leisure use has been found to be significant and the value of salmon angling to be very high (Curtis, 2001).

- Winter run-off is predicted to increase in most of Ireland.
- All areas will experience a major decrease in summer runoff, particularly in the east of the country.
- Seasonal flooding may occur over a larger area and persist for longer periods of time.

Since evaporative losses are also likely to increase during summer months, the water resource changes projected will have a significant effect on reservoir yields. Water supply infrastructure is expected to come under growing pressure, particularly in the Greater Dublin Area and the strategic implications of this are profound for a number of areas, particularly spatial settlement strategy.

The projected changes in water availability pose potential problems for the dilution of water-borne effluent. With a greater frequency of low flow conditions, additional precautions will be required to ensure that concentrations of water pollutants do not give rise to acute effects. It is recommended that minimum flow constraints are determined more conservatively, particularly where new urban or agricultural discharges are envisioned. Greater incorporation of groundwater protection considerations is also recommended as aquifers assume increasing importance as sources of water supply as competition for reduced surface resources intensifies.

In addition to being more expensive to provide, water services will need careful positioning to avoid suffering infrastructural damage on the one hand and, on the other hand, to avoid imposing damage on vulnerable water resources through abstraction and discharges. In so far as the construction of water infrastructure itself acts as a “facilitator” for future population location and growth, the positioning of such infrastructure has long-term effects. Although global warming may only impact in the future, and there is much uncertainty, it is still worthwhile taking such matters into account where choices exist at present.

14.2 Assessing Progress

Expenditure on the four water measures of the Environmental and Social Infrastructure Operational Programme (ESIOP) under the current NDP to end-2004 has been €2.74 billion, representing almost 90 per cent of the forecast expenditure for this period. Expenditure targets were revised after the mid-term review. The overall reduction in target expenditure was from €3.8 billion to €3.1 billion. By contrast, there was a greater than anticipated expenditure on waste water projects, the domestic component of which is 100 per cent Exchequer financed. Overall expenditure has caught up and is running close to target. Financial progress is summarised in Table 14.2.

Expenditure under the Rural Water headings up to mid-2004 adds a further €194 million for the BMW region and €118 million for the S&E region.

Table 14.2: Financial Progress

Measures	Expenditure 2000 to 2004, € Million	% of Target %
1. Waste Water	1,673.9	135.7
2. Water Supply	289.2	71.7
3. Management and Rehabilitation	153.4	34.6
4. Infrastructure Support	280.0	54.7
5. Coastal Protection Measure	32.3	
6. Rural Water	311.7	54.0
Total	2,740.5	86.0

Source: Fitzpatrick Associates (2005a).

In contrast to overall progress, expenditure on Measure 1, waste water treatment, is way ahead of the original NDP targets, reflecting the large size of initial schemes. The other Measures lag behind to varying degrees.

The most striking feature is the slow progress with Measure 3, Management and Rehabilitation, which includes the water conservation programme, so much so that the target expenditure was radically reduced. This suggests that larger projects, which are directive driven, have crowded out small projects (Fitzpatrick Associates, 2005a). However, the recent increased rate of assistance on these rehabilitation works, from 75 per cent to 90 per cent, should have a positive impact in accelerating progress. Progress is on target in both NUTS 2 regions with the exception of the water supply measure where the Southern and Eastern region's expenditure is low in relation to target.

The targets for the period 2000-2006 were re-specified at the mid-term review in order to relate them more closely to the investment objectives, rather than to inputs, and these additional targets are also shown. Importantly, expenditure under the waste water measure has achieved 90 per cent compliance with the Urban Waste Water Directive.

14.3 Lessons from Past Plans

An important issue in measuring impact is the proper choice of indicators. The indicators given in the case of water supply are satisfactory and give a good idea of progress in relation to aims. These measure the number of persons (or person equivalents (PE)) in households supplied by new or upgraded schemes and the rate of compliance with drinking water regulations. However, the production of indicators for the output and impact of waste water schemes, on the other hand, has been more difficult. The original indicators, "Number of waste water schemes completed/in construction/planning", were improved after the mid-term review, being replaced by an indicator tracking additional capacity in terms of population equivalent.

But scheme-specific data on the quality of the waters downstream of the schemes, and ideally upstream too, is necessary if

one wishes to judge the effectiveness of the investments.⁶⁵ Indeed, in order to properly establish that the investment has resulted in water quality improvements it would be necessary to identify the water quality before and after the investment is put in place. This is important since there are polluting activities, other than municipal waste water discharges, that strongly influence water quality. For example, the effect of agricultural activities on waters, including runoff from animal wastes and fertiliser application, can be very important. The results of the waste water investments, though they may operate correctly, could range from useful to useless, depending on these other activities. The investment is likely to have been effective, other things being equal, if downstream water quality has improved, and downstream water quality, before and after the scheme has to be a major indicator.

This discussion highlights the importance of choosing the correct sampling points. According to a report on an earlier programme, it appears that no prior arrangements had been made to ensure relevant positioning of sampling points in the receiving waters in order to judge the effects of new schemes (DKM, 2004).

In terms of impact, a major area of improvement to the environment lies in the quality of tidal waters. The ratio of eutrophic (or potentially eutrophic) to the rest has declined from 30:70 to 22:78. According to the recent up-date Evaluation of the ESIOP (Indecon, 2005) there has been only a slight improvement in the length of river classified as unpolluted (from 67 per cent to 70 per cent) which is still well below target although the proportion of lakes that are unpolluted has improved more substantially (from 65 per cent to 93 per cent) but is also still below target. The update evaluation also noted that compliance with the Drinking Water Directive was expected to reach 100 per cent in 2006 having increased from 92 per cent to 97 per cent. Similarly, the compliance rate with the UWWD is expected to reach 100 per cent in 2006.

The fact that targets of the Directives are being met while the environmental benefits are not obvious raises the issue of whether other measures would have resulted in more environmental benefits. Clearly, water quality is a function of a range of activities. If the investment that has taken place has resulted in small environmental benefits or benefits that have been eroded by other activities, then the prioritisation for investment might need to be changed, and other actions such as tougher regulations on farm effluent should be considered.

Another major achievement is the improved water supply to two-thirds of a million persons. The most recent EPA report on drinking water quality referred to above is not directly comparable with previous reports. However, previous reports did highlight a

⁶⁵ As the methodology report (DKM, 2004) states: "Care is needed in identifying locations of water testing. As a general rule, a location as near as possible to the outfall should be used. More than one location might be worth investigating, for example, if there were water abstraction downstream of a waste water treatment plant, or a number of different amenity areas were affected."

steady improvement across all indicators. However, the reports did highlight persistent problems in private group water schemes.

It should be noted, however, that as the investments have been put in place over an extended period the overall environmental benefits may only arise over time. Thus, in some cases it may be too soon to judge the effects. The EPA reports stress the inexact nature of measurement and the many contributory causes of changes in water quality, including the weather. For example, changes in the stretches of river meeting a particular quality standard are often marginal so that it is difficult to conclude that there was any material change in environmental quality.

An important finding of cost-benefit analysis of water conservation projects by DKM (2004) was that these projects were almost invariably highly worthwhile and this finding begs the question as to why they were not undertaken earlier. The amount of water saved or, more accurately, the reduction in unaccounted for water was in the region of 20 per cent. That is, unaccounted for water was reduced from 59 per cent to 39 per cent, on average, allowing the water authorities to accommodate rapid growth without recourse to additional abstractions. The average internal rate of return was 25 per cent, and the benefit to cost ratio 2.65.

The absence of previous cost-benefit analyses may partly explain why conservation had not been undertaken earlier. But the more likely reason was the over-riding imperative of the directives, the less generous funding arrangements and the fact that saving water would have limited benefit for local authorities owing to the financial structures in the water sector. This is an example of the inefficiency to be expected from incorrect pricing. The issue of domestic water pricing will need to be addressed and it is discussed above in the chapter on accompanying measures.

Finally, while water and sewerage infrastructure has important health and environmental benefits, the empirical analysis on the economic returns to this infrastructure conducted as part of the *Mid-Term Evaluation* of the current NDP found that this return was not statistically different from zero which contrasts with the return to transport infrastructure (see Fitz Gerald *et al.*, 2003). However, the methodology used might not capture the full impact of this type of infrastructure, and the economic return might emerge in a more indirect way.

14.4 Priorities for the Next Plan

The rolling three-year Water Services Investment Programmes (WSIP) have taken account of the National Water Study (Atkins, 2000) and the report on urban waste water discharges (EPA, 2004) as well as the stated needs of water authorities. The most recent WSIP for 2005-2007 covers investments totalling €5.1 billion.

The proposed investment for each authority is broken down into four major categories, that is, (1) the investment in schemes including water and waste water schemes and investment in the network and planning; (2) water conservation; (3) asset management

studies and River Basin District projects under the WFD and (4) investment in servicing land to enable development.

The bulk of the investment, approaching 89 per cent, is proposed for the schemes under (1), of which some 45 per cent is earmarked for hubs or gateways. Some 5.5 per cent of the total is to be spent on water conservation and 5 per cent on servicing land. Of the investment in servicing land, some 60 per cent is for hubs or gateways. Investment in the studies including Asset Management studies represents about 1 per cent.

It is not possible to judge these allocations in the absence of an assessment of the costs and benefits of each type of investment. The *ESIOP Progress Report for 2005* notes that the programme includes all remaining schemes required to achieve full compliance with the Urban Waste Water Treatment directive. While the shares for gateways and hubs and for rehabilitation may look small, this may be for sound reasons and because investment in new water infrastructure will be more water sparing in any case. However, it is worth recalling the lessons learned above, that water conservation had been given insufficient attention and that spatial planning needs increasing scrutiny. The recent gateways study (Fitzpatrick Associates, 2005b) identified the need for investment in water and sewerage infrastructure in four gateways (Dundalk, Galway, Letterkenny and Midlands).⁶⁶ In any event, investment in water and waste water infrastructure required in the gateways and hubs should be prioritised in order to support the development of critical mass.

Given the analysis above, our recommendations for the different investment priorities are as follows:

Waste Water. Compliance with UWWTD stands at over 90 per cent at end-2005, having risen from 25 per cent in 2000 (Fitzpatrick Associates, 2005a). Given this high compliance rate only limited funding will be needed to achieve full compliance. The Government's more stringent aim should be to improve overall water quality, meaning that pollution from other sources such as from agriculture needs to be curtailed. Investment is required for growth and for compliance with WFD, which will be more 'objectives-based'.

Water Supply. By end 2005 some 0.666 million population (44 per cent) out of the target of 1.5 million population had been served, leaving a considerable gap. However, the level of public funding needed is moderated by the fact that substantial resources for development related infrastructure are collected as development

⁶⁶ As the basis for this recommendation was not outlined in that report it is difficult to comment in more detail on the investment needs in the gateways.

contributions.⁶⁷ Correct charging of domestic users could reduce total demand by some 10 per cent, and could delay the need to pipe water from west to east by 2 to 4 years with present technology. Investment is required to fill the gap and to cater for growth.

Management and Rehabilitation of Infrastructure: This activity has yielded high returns in the past and provided that this is still the case, the activity is being rightly stepped up, mindful of the limit to returns to leakage control beyond the economic level (ELL). Asset Management Studies and River Basin District projects also fit here, with a view to production of meaningful annual data series on water services.

Infrastructural Support for Expanded Economic Activity: Growth in population and economic activity call for this to continue, except that economies should be gained from adhering to the NSS by concentrating expansion at gateways and hubs in order to use large-scale networks and plant. Realistic payment on the part of all water service users would reduce requirements considerably.

Coast Protection and Management: No evaluation has come to hand on this measure, but as increased erosion is possible with the effects of global warming some investment is warranted.

Rural Water Investment: Some further investment is required to fill the gap in achieving the last NDP's target.

In addition to the discussion in this chapter, the analysis on the capacity of the building construction sector and the impact of expanding demand for the outputs of this sector (see Chapter 5), needs to be taken into account in framing the financial recommendations. Our recommendations are summarised in Table 14.3. As was outlined above the level of Infrastructure investment implicit in the public capital programme is higher than can be prudently delivered in the absence of simultaneous measures to reduce the private demand for the output of the building and construction sector. As a consequence the level of expenditure on water and waste water infrastructure will need to be limited.

⁶⁷ According to data from the Department of the Environment, Heritage and Local Government development contributions amounted to €546 million in 2005, which constitutes a significant increase over 1996 (€46 million) and 2000 (€110 million) (see <http://www.environ.ie/DOEI/DOEIPol.nsf/wvNavView/Overview?OpenDocument&L#14>).

Table 14.3: Recommendations on Water Infrastructure

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Waste Water	Reduce	179.3	90
Water Supply	Increase	45.6	70
Management and Rehabilitation of Infrastructure	Increase	35.9	70
Infrastructural Support for Expanded Economic Activity	Reduce	65.2	40
Coast Protection and management	Same	3.1	3
Rural Water	Reduce	147.0	60
Total	Reduce	476.1	333

Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

Investment in itself will not be sufficient to ensure efficient water and waste water services. Thus, a number of accompanying measures will be required. These were outlined in some detail in Chapter 11, so they are only summarised here.

The accompanying measures include:

- introduction of a proper pricing mechanism for domestic water and waste water,
- more extensive use of cost-benefit analysis,
- better impact measurement,
- collection of appropriate data and indicators,
- commercialisation of the sector,
- better integration with land-use planning.

15. WASTE INFRASTRUCTURE

15.1 Infrastructure: Progress Since 2000

The level of waste generation in Ireland, whether municipal, industrial or hazardous, has been rising rapidly over the last decade, driven by population and economic growth, notably the expansion of the construction sector (Construction & Demolition waste is now the largest non-agricultural waste stream).

At the start of the current decade, Ireland was towards the bottom of the class internationally in terms of waste management infrastructure, both physical and regulatory, with a high dependence on landfill and low levels of diversion to more environmentally benign channels. The landfill infrastructure was in general poor, with much of it reaching the end of (if not already past) its design life. Planning logjams and public opposition were slowing down the renewal and improvement of the infrastructure. OEE 2005⁶⁸ indicates that in 2001 there was an average of six years remaining landfill capacity around the country, with as little as two years in a number of areas.

A range of developments has occurred in the meantime, which has had a significant impact for the better. These include:

- As of 2004, remaining landfill capacity had increased to an average of 8 years, and all operating landfills are now licensed by the EPA.
- Charging for domestic waste collection has become the norm, and in 2004 the Minister for the Environment, Heritage and Local Government required the introduction of use-based charging systems.⁶⁹
- Waste collection has been privatised in many parts of the country and new private collection routes introduced, and in some cases waste disposal is also privatised, which should generate efficiency gains.
- The Plastic Bag Levy (15c per bag) was introduced in 2002, and has been successful in terms of reductions in number of bags used and in litter.

⁶⁸ Office of Environmental Enforcement, *The Nature and Extent of Unauthorised Waste Activity in Ireland*, 2005.

⁶⁹ S. Scott and D. Watson (2006). "Introduction of Weight-Based Charges for Household Waste Collection", presented at Irish Economic Association Conference, Bunclody, 28-30 April, 2006, highlights the benefits of use-related charging.

- A Landfill Levy of €15/tonne has been introduced, which at least partly internalises the environmental costs of landfill.
- Recyclables collection from the urban residential sector is now widespread, and the number of bring banks, recycling centres and Materials Recovery Facilities (MRFs) has risen significantly.

Recent guidance from the Minister for the Environment, Heritage and Local Government⁷⁰ has clarified that movement of waste across regional boundaries is not contrary to the proximity principle in waste management. This follows recommendations in the Department's policy document *Taking Stock and Moving Forward*, in the *Regional Planning Guidelines for the Greater Dublin Area 2004-2016*, and from the EPA in this regard.

The *Taking Stock and Moving Forward* document has also recognised the validity of compensating host communities for the presence of waste management facilities, through "community gain".

The Office of Environmental Enforcement (OEE) has been established within the EPA. The EPA has recently reported that problems of large-scale illegal dumping of waste, including cross-border, have reduced, due to improved enforcement and cross-border co-operation.

In addition, two new incinerators – one for hazardous waste and one for municipal waste – have passed through the planning and waste licensing processes, and should proceed to construction, though continued public opposition and legal challenges leading to further delay cannot be ruled out.

Notwithstanding progress to date, problems remain, notably:

- Waste disposal capacity problems exist in many parts of the country;
- There remain legacy issues regarding landfill sites used in the past (including illegal sites);

Despite progress in dealing with large-scale illegal dumping, illegal disposal of waste by individual households, whether through backyard burning, fly-tipping or unauthorised collection, continues. The EPA recently reported that 21 per cent of Irish households are not registered with an authorised collection system although it is not suggested that all these households are disposing of waste illegally.

One important driver for illegal dumping is the rapid increase in the price of legal waste disposal options, most obviously landfill.⁷¹ OEE 2005 indicates that the average price of landfill disposal has risen from typically €10 per tonne in 1996 to in the region of €150 per tonne in 2004, and in one case is €240 per tonne (see Office of Environmental Enforcement, 2005). The impact of these gate fees on collection charges creates a strong incentive to use unauthorised

⁷⁰ Circular WIR: 04/05, 3 May 2005, Department of the Environment, Heritage and Local Government.

⁷¹ This has also doubtless also been a major driver of the increase in recycling.

disposal methods: eliminating this at the level of small waste producers, particularly households, will represent a challenge. We understand, however, that landfill prices have fallen somewhat more recently, due to increased competition.

WASTE ARISING

Table 15.1 summarises waste arisings in Ireland since 1998, based on the EPA's National Databases for various years. There is a clear upward trend in waste generation in Ireland, driven doubtless by the strong increase in population and economic output.

However, a number of streams exhibit levels of change that are on the face of it unlikely. Construction & Demolition waste is particularly noticeable. The National Waste Report 2004 from the EPA highlights that significant improvements have been achieved in the quality of data collection over time. Given this, caution is needed in interpreting the data for earlier years and the growth rates. One would expect, however, that municipal and packaging waste data are reasonably robust over time. While still growing, there has been a slowdown in the rate of growth of municipal waste, and the quantity of packaging waste, having been on a strong growth path in the late nineties, now appears to be in gradual decline.

Table 15.1: Waste Arisings in Ireland, 1998-2004 (000 Tonnes)

Waste Stream	1998	2001	2004	Annual Avg % Growth	
				1998-01	2001-04
				%	%
Household	1,221	1,469	1,737	6.4	5.8
Commercial	755	1,157	1,227	15.3	2.0
Street Cleaning	81	78	70	-1.1	-3.9
Total Municipal Waste	2,057	2,704	3,035	9.6	3.9
Construction & Demolition	2,705	3,651	11,168	10.5	45.2
Manufacturing	4,876	5,120	5,044	1.6	-0.5
Mining & Quarrying	3,511	3,334	4,045	-1.7	6.7
Hazardous	370	492	674	9.9	11.1
Other	1,915	2,083	1,117	2.9	-18.8
Total Non-Agricultural	15,434	17,384	25,082	4.0	13.0
Packaging Waste	683	873	851	8.5	-0.8
Biodegradable Municipal	na	na	1,935		

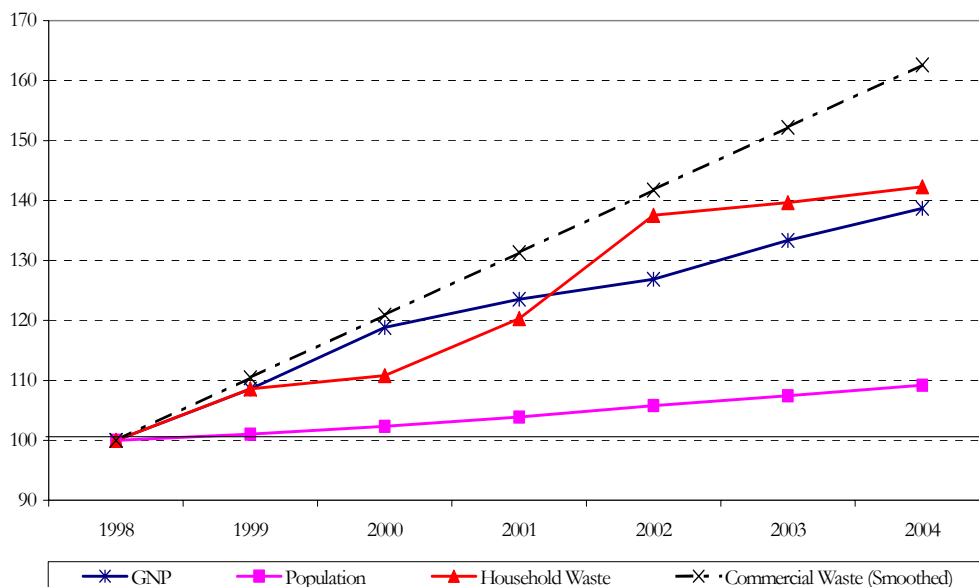
Source: EPA National Waste Database, various years, *National Waste Report* (2004).

If we compare growth in household, commercial and total non-agricultural waste with the aggregate real economic growth rate and the population growth rate, as per Figure 15.1 overleaf, it can be seen that household waste has been growing slightly faster than economic growth since 1998, but commercial waste has grown by significantly more (large year-on-year variability in the commercial waste line has been smoothed out).

DISPOSAL TO LANDFILL

Landfill still dominates as a waste management option in Ireland. A total of 6.4 million tonnes of waste was disposed of to landfill in 2004 (70 per cent of it industrial waste and 28 per cent municipal waste). Table 15.2 summarises the quantities of municipal waste landfilled in recent years, and the percentage that this presents of total municipal waste.

Figure 15.1: Growth in Household and Commercial Waste Vs Economic and Population Growth, 1998-2004



Sources: EPA, National Waste Databases/Reports, CSO, National Income & Expenditure Accounts and Population & Migration Estimates.

Table 15.2: Municipal Waste Landfilled, 2001-2004

	000 Tonnes	Percentage Change	Landfill Rate*
		%	%
2001	1,992		87
2002	1,902	-5	79
2003	1,833	-4	72
2004	1,819	-1	66

Source: National Waste Report (2004).

*Municipal waste landfilled as a percentage of municipal waste landfilled or recovered. Managed waste differs from waste arising due to household waste whose disposal method is unknown.

The proportion of municipal waste being disposed of to landfill is falling rapidly, as the recovery rate rises (see below). However, underlying growth in waste generated is eating up much of the improvement: the quantity of municipal waste landfilled fell by 0.8

per cent in 2004, having fallen by 4 per cent in 2003 and 5 per cent in 2002.

RECOVERY/RECYCLING

Table 15.3 below sets out the recovery rates in the main waste streams as of 2004, as well as the relevant targets. Since the only recovery method in use in Ireland to date has been recycling, the recovery rate equals the recycling rate. Improvements in the recovery rate in recent years have been remarkable, albeit from a low base. Ireland is close to if not already ahead of a number of the targets currently in place, notably for municipal waste and packaging waste. Municipal biodegradable waste is perhaps the stream furthest from its target: a reduction in volumes landfilled by 25 per cent between 2004 and 2006 appears unlikely to be achieved.

Table 15.3: Actual and Target Recovery Rates in Main Waste Streams

Stream	Actual		Target	
	2001 %	2004 %	%	Year
Household	5.6	19.5	50	2013
Commercial	23.8	50.8	Note 1	
Total Municipal Waste	13.3	34.0	35	2013
Construction & Demolition	65.4	85.2	85	2013
Industrial	25.5	35.4		
Packaging Waste	25.3	56.4	50	2005
Biodegradable Municipal	15.7	32.6	Note 2	

Source: EPA National Waste Database, various years, *National Waste Report* (2004).

Notes: 1. No specific target for commercial waste. 2. The original target for biodegradable municipal waste was to reduce the quantity landfilled to 75 per cent of the 1995 level, i.e. 0.97 million tonnes, by 2006. Ireland has notified the Cion of its intention to avail of a derogation on this requirement, until 2010.

Recycling of household waste, one of the two main constituents of municipal waste, has quite a way to go to reach the 2013 target of 50 per cent, and would need current momentum to be maintained over the period to reach it.⁷²

The implication is that recycling of commercial waste is making up the slack. A 35 per cent overall target for municipal waste recycling implies a very modest target for commercial waste recycling, and perhaps the balance between household and commercial recycling targets should be revisited.

We can also analyse the breakdown of household, commercial and packaging waste, as well as the respective recovery rates, by material type, as per Table 15.4. Paper & Cardboard is the most

⁷² A concern in relation to depending on continued growth in recovery rates is that we may be experiencing the take-up of easily exploitable recovery opportunities, particularly by commercial organisations, and probably driven in large part by the major increase in landfill charges. Looking forward, there may be non-linearities and “brick walls”, beyond which further progress will prove difficult.

important element in these waste streams, in weight terms. Glass, Plastics and Wood also feature, while Organics is the largest single element in household waste. Recovery rates vary greatly: significant proportions of Paper & Cardboard, Glass and Aluminium are recovered from households, but rates for other categories are low, notably organics, perhaps reflecting lack of centralised facilities. Significant levels of recovery are being achieved across most commercial wastes. The same is true of packaging waste, although the rates for Plastic and Aluminium are perhaps a little disappointing.

Table 15.4: Household, Commercial and Packaging Waste by Type and Recovery Rate, 2003

	Household		Commercial		Packaging	
	Breakdown by Weight	Recovery Rate	Breakdown by Weight	Recovery Rate	Breakdown by Weight	Recovery Rate
	%	%	%	%	%	%
Paper & Cardboard	21.0	21.6	50.5	49.2	42.5	41.2
Glass	7.0	49.0	5.6	32.4	13.0	53.0
Plastic	9.0	6.3	8.8	38.4	20.7	16.7
Ferrous			1.7	49.3	6.9	56.0
Aluminium	5.0	16.7	0.5	0.0	1.4	15.1
Other Metals			0.2	59.9	0.8	0.0
Textiles	2.0	5.8	0.7	7.6	0.1	0.0
Organics	32.0	7.7	12.1	10.4	0.0	
Garden	12.0					
Wood			11.1	95.3	10.3	94.1
Others	12.0	1.0	8.9	51.5	4.2	0.7
Total	100.0	13.1	100.0	47.4	100.0	41.7

Source: EPA, *National Waste Interim Report* (2003), Office of Environmental Enforcement, *The Nature and Extent of Unauthorised Waste Activity in Ireland* (2005).

* Breakdown of Commercial and Packaging waste streams are for 2001. Breakdown of household stream is for 2002, as quoted in OEE (2005).

Ireland's waste management infrastructure remains narrowly based, consisting almost exclusively of landfills and recycling collection and sorting facilities, as summarised in Table 15.5.

Table 15.5: Number of Waste Management Facilities, 1998 and 2004

	1998	2004
Landfills accepting Municipal Waste	76	34
Bring Banks	837	1,929
Civic Amenity sites	30	69
Households with segregated dry recyclable collection ('000)*	70	564
Percentage households with dry recyclable collection*	5.7%	40.7%
Households with segregated organic waste collection ('000)*	0	52

* Latest figure relates to 2003.

Source: EPA, various reports.

The number of landfills accepting municipal waste is now less than half what it was in 1998, as old facilities are closed down, and a

smaller number of new facilities are opened. Remaining capacity in landfills in 2004 was eight years, still too tight for comfort, given the tortuous planning process that new facilities must go through. There are areas of the country where remaining capacity is significantly less than eight years.⁷³ This implies that in some cases landfills will continue to be used beyond their design lifetime, with environmental implications, or there will be considerable shipping of waste around the country.

The numbers of bring banks and civic amenity sites have more than doubled over the same period, and there has been an eightfold increase in the number of households with recyclables collection.

Ireland's dependence on other countries to manage hazardous waste has increased significantly, with the majority of this waste being exported. Likewise, the final processing of recyclables collected in Ireland is largely occurring overseas, as Irish glass, iron and paper processing facilities have closed down in recent years. Exporting of waste and recyclables is not necessarily negative: it presumably is the most commercial (and perhaps the only) option at the moment, and may well be the best option from an environmental point of view, if economies of scale in treating such waste properly are significant.

15.2 Lessons from Past Plans

Waste management, like water services, is a decentralised public function, managed by the Local Authorities. It differs from water services in that over the last decade the Government has made (and stuck to) a decision that waste disposal should be largely self-financing. This, coupled with increasing privatisation of services, has meant most activity is not subject to central Government funding.

The current National Development Plan anticipated a capital investment of €826 million (£650 million) towards the provision of waste management infrastructure, broken down as follows:

- €572 million (£450 million) through the PPP method;
- €127 million (£100 million) through local authority own resources;
- €127 million (£100 million) through the Exchequer and EU co-funded grant scheme.

The €127 million grant scheme was to provide support towards capital costs of recycling and recovery infrastructure, as provided for in the regional and local waste management plans, and capital costs of hazardous waste landfills, to be provided in accordance with the EPA's National Hazardous Waste Management Plan.

The *Mid-Term Evaluations* of the relevant Operational Programmes indicated that slow progress was being made in delivery of investments in the waste management area, principally due to delays in adoption of regional waste management plans.

⁷³ Department of the Environment, Heritage and Local Government *Waste Management – Taking Stock and Moving Forward* (2004), p. 20.

While some progress has been made on the physical delivery of waste management facilities, most of it outside the aegis of the NDP, the question of delivery of this vital infrastructure within reasonable timeframes still needs to be addressed.

There is also a question as to whether current waste management structures are as economically efficient as they might be. Two factors lead to concerns on this issue:

(1) The price of landfill disposal in Ireland is currently high by international (particularly UK) standards, which could mean that either:

- There may be some inefficiency in delivery of or operation of these facilities;
- Ireland's landfill infrastructure is of a higher quality than in other countries;
- Landfill operators are exploiting local monopolies to charge high prices; or
- Landfill services provided by Local Authorities are not commercially priced.

We understand that landfill charges have fallen somewhat of late, as a result of increased competition, and there may be more scope for this.

(2) There are significant economies of scale in the delivery and operation of facilities such as landfills and incinerators. The regional approach to delivery of waste management services in Ireland may not be fully exploiting these economies.

These issues are worthy of further research.

15.3 Priorities for the Next Plan

The availability of waste management services is vital for the operation of a modern economy. The policy aims going forward should be:

- To deliver the optimal combination of waste management options for Ireland's circumstances, determined by the relative costs and benefits (financial and environmental) of the various options.
- To facilitate the emergence of a commercialised, economically efficient and environmentally responsible waste management sector, not necessarily totally privatised, but exposed to competitive pressures.
- To provide adequate capacity to service planned growth in the gateways and hubs as identified in the National Spatial Strategy is a particular priority. This does not mean that each gateway and hub needs to have its own individual set of waste management facilities, however, simply that it has access to such facilities at economically efficient prices.

Landfill will remain the single most important type of waste management infrastructure in the short to medium term.

Notwithstanding increasing diversion of waste to other routes (including incineration) over time, there will remain a residue that will need to be landfilled. Landfill will also act as the fall back where other routes are for whatever reason unavailable (for example, a breakdown in an incinerator or difficulties in recycling markets). Ensuring adequate landfill capacity is thus the highest single priority.

As of the end of 2004 there were 34 landfills accepting municipal waste in the State. Many of these have limited remaining capacity. With modernisation, rationalisation and increasing diversion over time, the eventual number of municipal landfills in the State should be considerably lower.

The delivery of other waste management infrastructure is also important, and the requirements of the Landfill and other Directives, and Government environmental policy, need to be taken into account. Furthermore, decisions regarding investments in infrastructures – particularly landfills and incinerators – cannot be taken in isolation, since they impact significantly on each other's waste supply streams.

As waste management services are largely self-financing, there is a limited role for central Government funding. Provided environmental externalities are fully internalised via EPA regulations and enforcement, the landfill levy and possibly an incineration levy, there should in theory be no need for further public subvention of recycling, composting or related activities.

We would see two exceptions to this general principle:

- There is an infant industry argument in favour of subventing waste management routes other than landfill and incineration in the short term at least. This should include technical and socio-economic research focusing on their usage and potential in Ireland.
- There remains a legacy issue with regard to the environmental impacts of old closed landfills that were not operated to adequate standards. The cost of remediation work to deal with these sites should not affect current and future markets for waste management services. In a competitive market this should automatically be the case (see discussion of competition issues below). This might put an inordinate burden on Local Authorities, however, and it would be appropriate for Central Government to fund the remediation of old public landfills. The remediation of old privately-owned landfills should remain the responsibility of their owners, though there is the possibility that the State will have to foot the bill in some cases, where private owners do not have the resources to do so. Care should be taken that this outcome does not become the norm, as the consequences for the taxpayer are significant.

For 2006, Central Government expenditure on waste management under the NDP is due to be €10 million for provision of recycling infrastructure, and €10 million for remediation works at existing landfills (a further €6 million is included under non-

Exchequer expenditure). We would be in agreement with this level of funding going forward.

Table 15.6: Financial Recommendations

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Waste Management	Same	26	26

Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

Beyond public subvention, there is the question of broader investment by society in waste management infrastructure. In the context of a commercialised waste management industry, the various suppliers in the market – Local Authorities and private companies – will decide the appropriate level of investment required.

However, the level of investment in modern landfill and incineration will need to increase considerably over current levels to deliver the required infrastructure in the medium term, and eliminate capacity constraints. Enhanced levels of investment may have to be maintained beyond the life of the next NDP. Every opportunity to take advantage of economies of scale should be utilised (see Chapter 11).

16. ENERGY

The challenges facing the energy sector in Ireland are considerable, spanning a wide range of different areas and a number of difficult economic and organisational problems. The international context sees rapidly rising demand for energy due to the growth in the world economy, which is eroding the potential spare world oil and gas capacity. With limited prospects of new finds of fossil fuels over the coming decades, it seems quite likely that real oil and gas prices will rise substantially in the longer term. In addition, the need to tackle the problem of global warming will also lead to increasing real prices for fossil fuels. Preparing for a world of much higher energy prices will require significant policy changes and significant additional investment. This is the context in which energy policy is being formulated in Ireland.

Ireland does not have a natural advantage in the supply of energy, except in the area of renewable resources where, with the exception of onshore wind, the technologies are not today competitive. In order to ensure that increasingly expensive energy resources are allocated among users in an optimal manner it is essential that in all cases business and households should pay the full economic cost of energy: there should be no explicit or hidden subsidies, even if Irish costs are higher than among some competitor countries. However, every effort needs to be made to ensure that the energy required is delivered at minimum possible cost to both business and household customers. Policy on investment in energy infrastructure needs to take this into account.

16.1 Background

The overall objective of the State in regulating the energy sector is to ensure the lowest possible cost of energy in the long term subject to supply being secure and subject to meeting the environmental constraints. The need for state intervention in the energy sector arises for three reasons:

- The presence of economies of scale in parts of the industry, which make competition difficult.
- Energy is a vital ingredient of modern life and the State has an important role in ensuring a secure energy supply, including a secure supply of electricity.
- The negative environmental externalities that arise from energy production and consumption (of which the most pressing is global warming) require State intervention to move the economy to a more sustainable path.

Ireland has seen exceptional economic growth over the last 15 years. However, the growth in energy demand has been much slower. For the future the rate of growth of the Irish economy is likely to slow (Fitz Gerald *et al.*, 2005), though still remaining more rapid than that of the EU generally, while the growth in the demand for energy is likely to be slower than that for output. The two exceptions to this trend are the demand for energy from the transport sector and the demand for electricity.

Demand for energy use from transport is likely to continue to grow for the foreseeable future. While this will require a further increase in the supply of energy, even more important, it will pose significant congestion problems. The solution lies in moving Ireland towards a more sustainable model of development involving less congestion. This would, in turn, deliver significant benefits in terms of reduced energy use and emissions. This approach underlies the recommendations on investment in transport in Chapter 12.

While the growth in demand for electricity is slower than that of GNP, it is still significant. This means that for Ireland to have a secure electricity supply, investment in electricity generation and electricity transmission infrastructure will be required for at least another decade. Significant additional investment will also be needed in transmission infrastructure in order to reap the benefits of an integrated all-island electricity market.

This need for new investment makes Ireland rather different from the rest of the EU where capacity is generally adequate. The cost of the new investment will have to be paid by consumers in Ireland over the next decade whereas in many other EU countries the cost of the necessary infrastructure has already been substantially paid off. Thus, policy measures to minimise the cost of financing infrastructural investment will be more important for consumers in Ireland than in much of the rest of the EU.

Ensuring a secure energy supply for the foreseeable future is of crucial importance for the health and economic welfare of the country. In the case of oil supplies there is limited action the Government can take to ensure physical security. While very unlikely, physical interruption to supply would have grave consequences. In the very unlikely event of it happening it would affect all of the EU and an integrated response at EU level would offer the best chance of minimising disruption.

Over the coming decade Ireland is likely to become increasingly dependent on gas to supply its energy needs. In particular, by 2010 the bulk of electricity generation will depend on gas. This means that any physical interruption of gas supply could have very serious consequences. If such an interruption were to be sustained for more than a few days it could see the island of Ireland lose the bulk of its electricity supply with very serious consequences for the health and welfare of its citizens.

While the chances of a break in an undersea pipeline are very small, if such an event were to occur it would take some considerable time to repair. It is for this reason that the second gas pipeline to Scotland was of major importance to the energy security

of this island. The provision of the second pipeline greatly reduces the probability of what was already a very unlikely event. However, the vast bulk of the island's gas supply still goes through a single onshore pipeline in Scotland. As a result, it is important that the supply of gas from the Corrib gas field is brought onshore as soon as possible to enhance the physical security of Irish energy supply. In addition, consideration should be given to strengthening the onshore gas transmission system in Scotland on which nearly all of Irish gas supplies currently depend.

Ireland, along with other developed economies, faces a much greater risk to its economy from sudden shocks to energy prices than it does from a possible interruption in physical supply. For example, even if there were major disruption in the Middle East, oil supplies would still be available – at a price. However, major price shocks could have serious economic consequences and the regulatory authorities need to consider how best to insure against such future shocks. A number of instruments can be used to provide such insurance: fuel diversity and financial instruments both have roles. The National Treasury Management Agency (NTMA) should consider whether the desirability of hedging against such risks should affect policy on the portfolio of the national pension fund. The regulatory authorities should ensure that consumers are aware of potential risks and that, where feasible, suitable instruments for hedging risk are available.

As the price of gas and oil are linked and are both likely to rise in real terms it is desirable to have some diversity in the source of electricity supplies. For example, undue reliance on gas could be limited through a levy on gas used in electricity generation with the proceeds of the levy returned to consumers. The need for some diversification would suggest awarding some premium to renewable energy over and above the market price. Fuel diversity should be managed by using market instruments rather than by regulation. Research and Development in alternative energy sources will be important in securing the long-term security of energy supply for the island (see Chapter 19).

With the full integration of the island gas market consideration should be given to developing gas storage facilities either in the old Kinsale gas field or else in salt caverns near Belfast. At present it does not seem wise for the Irish authorities to specifically encourage facilities for the supply of Liquefied Natural Gas (LNG). It should be left to market forces to determine if and when such a development should take place.

An all-island electricity market is likely to confer significant benefits on consumers, reducing the long-term cost of a reliable electricity supply below what it might otherwise be. To allow an integrated and efficient all-island electricity market to develop, it is essential that there is adequate investment in electricity transmission to physically link the existing separate systems. It seems likely that a second interconnector between Ireland and Britain could produce significant benefits for electricity consumers on the island.

The structure proposed for the all-island electricity market by the two regulators seems likely to provide the best opportunity for securing a competitive supply of electricity for consumers on the island of Ireland over the next decade. The electricity pool into which all generators will sell their electricity, when combined with a suitable regime of capacity payments to electricity generators, should encourage supply at a minimum price. It should also increase the transparency of the regime making for cheaper and more effective regulation.

16.2 Investment in Energy Infrastructure

The very rapid growth in the economy over the last decade has seen the demand for electricity and gas rise rapidly. Major investment in electricity generation in the early 1980s, in particular the construction of the Moneypoint generating station, left Ireland with overcapacity in electricity generation by the mid-1980s. However, this surplus capacity was gradually whittled away over the 1990s, leaving Ireland with a shortage of generating capacity by the early years of the current decade. This has required the ramping up of investment in the utilities sector, especially in new generation, to a level previously only seen in the early 1980s. A steady stream of new generation capacity will continue to be required well into the next decade.

While demand will in all likelihood slow in the next decade, the prospect of continuing growth in GNP of around 3 per cent a year will see some continuing increase in electricity demand for years to come. Over the second half of this decade the demand for electricity will rise by around 4 per cent a year (Fitz Gerald *et al.*, 2005a). With peak demand for electricity in the Republic of Ireland currently being over 4,500 MW this suggests the need for nearly 200 MW of new generating capacity each year. As new base-load power stations tend to come in units of 400 MW this suggests the need for a new generation station at least every two years. In addition, there will be a need to replace some existing stations, partly due to old age, but also because of the increasing commercial penalty that fossil fuel plant will experience as a result of the need to tackle the problem of global warming (Fitz Gerald, *et al.*, 2005b). It is very important for the economy that such investment takes place to avoid any interruption to supply.⁷⁴

In addition to the need for additional electricity generation, the electricity transmission system on the island is inadequate for the needs of the economy. The constraints, which it imposes raise the risk of possible temporary shortages of power and they also raise the cost of delivering power to consumers. As a result, there is also a need for major additional investment in transmission capacity. The current programme of investment in transmission is the largest undertaken for decades.

⁷⁴ As discussed in Fitz Gerald *et al.* (2005), such interruptions can be very costly.

There are a number of important strategic investments in electricity transmission that are urgently needed:

- First, to make the all-island electricity market work and to reduce the costs imposed by current transmission constraints, a second electricity interconnector to Northern Ireland is vital.
- Second, it is vital for the interests of the Northern Ireland system that the transmission system in the Louth area is strengthened to allow export of power to Northern Ireland. When this new interconnector is completed it will reduce all-island costs arising from transmission constraints and it will enhance security of supply and competition on the island.
- Third, in the longer term there may well be a need to invest in additional capacity for transferring electricity between the island of Ireland and Great Britain. This investment could well be important, not so much as a source of additional power, but rather to enhance competition and security of supply. The completion of this interconnector to Great Britain may not be achieved before the end of the NDP in 2013 because of the difficulties in dealing with physical planning regulations both in Ireland and in Great Britain.
- Fourth, the scope for business to grow in the North- West of the Republic could be seriously constrained by the absence of adequate transmission. The obstacle to providing this infrastructure lies in the physical planning system. This issue may not be solved by central Government. Instead the relevant local authorities in the BMW region may need to choose whether to progress the necessary electricity transmission infrastructure or to forego the opportunity for any major expansion in business activity.

Investment in the gas infrastructure was very significant over the 1990s with the roll out of the distribution system and the completion of the key elements of the transmission infrastructure. The second gas pipeline to the United Kingdom was completed in 2002. This pipeline was needed to ensure security of supply of gas, as well as providing for a long-term increase in capacity. However, there are three additional infrastructural projects in the gas industry that need to be completed. The first is the bringing onshore of the Corrib gas. This gas is needed to enhance supply security on the island. This piece of infrastructure will be completed by the commercial operator without any implications for charges to consumers or the taxpayer. The second piece of infrastructure will be the completion of the North-South gas pipeline over the next two years. This will be of value to Northern Ireland in enhancing supply security there. The benefits to the Republic are likely to be smaller. The final piece of transmission infrastructure is the possible need to strengthen the onshore transmission in Scotland. At present all gas for the island of Ireland comes through a single pipeline in

Scotland. This leaves Ireland vulnerable in the case of a very low probability event resulting in that pipeline's rupture. However, the need for this investment in Scotland would probably be obviated by the successful rapid completion of the Corrib infrastructure.

Other gas infrastructure issues that need to be resolved are the provision of gas storage on the island and also the possibility of a LNG terminal being developed. If a company wants to install a new LNG terminal in Ireland, providing they meet the necessary (and demanding) environmental and planning considerations, it will go ahead. However, there does not seem to be a good case for Government financial support for such a venture. The gas from such a terminal would sell onto what is effectively a British Isles gas market. Thus even if the LNG could be bought at a lower price, the operator of the terminal would sell it at the going market price. Given the small size of such a terminal relative to the British Isles market, it would not affect domestic prices in Ireland. While it would confer some security of supply benefits on the British Isles market, if the recommendations above (on Corrib and the onshore pipeline in Scotland) were implemented these benefits would be no different than if the terminal were in Great Britain.

In the case of gas storage the provision of additional capacity on the island could enhance security of supply as well as possibly cutting the cost of provision by allowing gas to be stored to cover the winter peak. Two possible locations are being examined – the old gas field off the South coast and possible underground storage near Belfast. The economics of such storage remains to be determined but, as with the rest of the gas infrastructure, the final decision on whether to invest should be done on a purely commercial basis.

16.3 Efficient Delivery of Infrastructure

To ensure such investment takes place in a timely manner will require the establishment of a transparent market that will provide adequate incentives for such investment. The new all-island electricity market, which will commence operation in July 2007, should provide a suitable framework for such investment. The market will make “capacity payments” to owners of electricity generation where they make a significant contribution to security of supply while the spot market price will reward the cost of actually buying fuel. Taken together this market should provide adequate, but not more than adequate incentives to achieve the necessary investment in generation.

In the all-island market (pool) each firm will offer to supply electricity at a pre-specified price. All firms will know that they will receive most of their capital and non-fuel operating costs from capacity payments. As a result, in the auction to supply electricity to the pool each firm will bid in only their fuel costs. This will greatly facilitate the information flow to the regulator. The regulator will know the price bid by each station and will be able to check that price against the price of the fuel delivered to that station. This will

facilitate the regulatory authority in its task of ensuring a level playing field for all market participants.

The move to the all-island market will somewhat reduce the ESB's dominant position. In considering the economics of enhanced interconnection to Britain the value of such interconnection in enhancing competition on the island should also be taken into account. The growth in demand for electricity, with further new independent generation coming on-stream over the coming decade, will also reduce the ESB's market share. However, even after these changes the ESB will still be in a dominant position.

The operation of the new market structure is likely to encourage new investment in generation in segments of the market where the existing ESB plant is not very economical. This should see significant closure of ESB plant over the rest of the decade to be replaced by new plant, generally built by different operators. Together with enhanced interconnection to Britain, this should see the ESB's dominant position in the generation sector on this island substantially eroded by early in the next decade.

Finally, the ESB should sell between 500 MW and 1,000 MW of plant over the period to 2010. If this happens, with the closure of uneconomic plant, the ESB could be allowed to replace some of the plant that will close. By early in the next decade this would achieve the necessary reduction in the ESB's dominant position.

It is important that the operator of the transmission system for the all-island market should be established on a basis independent of all other players. When this happens consideration should be given to transferring ownership of the transmission system in the Republic to ESB National Grid. Whoever owns the transmission system it will be important that that company would contract with other companies, including ESB, to maintain and develop the system, ensuring competitive pressure on costs. Where possible, ESB distribution and supply should also move to buying in services on a competitive basis. This is the model that was adopted by Bord Gáis Éireann in the late 1980s and it would make the cost structure of operators transparent, facilitating regulation.

All of this investment in energy infrastructure should be delivered on a commercial basis without any requirement for finance by the taxpayer. The general principle should be that consumers of energy should pay the full economic cost (including negative environmental externalities) of energy. Ireland does not have a comparative advantage in energy. To subsidise energy consumption in any way would lead to an inefficient use of resources. To subsidise consumption in any way would then encourage business to expand into areas where the cost of producing in Ireland is higher than elsewhere, moving the economy away from the sectors where Ireland's long-term competitive advantage lies. As well as misallocating resources, a subsidy to energy would further distort the economy because of the need to raise taxes to pay for it. For example, raising taxes on income to subsidise energy would cause significant damage to the economy.

However, while the State should not subsidise energy, as the regulator it will have a very important role in ensuring that this infrastructure is delivered efficiently. As outlined above, the new all-island electricity market has the capacity to deliver a more competitive electricity system. However, as outlined in Bergin, *et al.* (2005b), there is a need for the State to ensure that the ESB disposes of sufficient plant to reduce its dominant position in the market. There is also a need to streamline the physical planning system to ensure that the necessary strengthening of electricity transmission takes place within a reasonable time scale (Chapter 11). The State will also need to ensure that the necessary legislation is put in place to allow the market to function efficiently.

So far the role of the State in developing the energy infrastructure necessary for the economy of the next decade is seen as being purely regulatory; the costs will be carried by consumers through appropriate commercial charges. However, there are still some limited areas where it may be appropriate for the state to play a more active role.

If the appropriate price signals reflecting the cost of emitting greenhouse gases were provided by fiscal instruments there might be no need for even limited State intervention. However, as reflected in Fitz Gerald (2004) the new EU emissions trading scheme (ETS) is flawed as it discriminates against renewables by providing an indirect capital subsidy to fossil fuel electricity generators. If the EU does not reform the EU ETS for the next round by providing for the auctioning of the bulk of emissions permits, the market may not give the right signals to ensure an economically efficient deployment of renewable generation. This may require some support mechanism to offset the distortions arising from the failure to auction all the emissions permits under the ETS. However, any such support should be financed as a charge on consumers rather than on taxpayers (through the Public Service Obligation – PSO). In so far as support is given for renewables it should be neutral with respect to technologies.

While the EU ETS covers nearly all of electricity generation the price of other forms of energy does not reflect the true cost of the damage done to the environment through the emission of greenhouse gases. With the entry into force of the Kyoto protocol, Ireland will face significant costs in complying with the targets set. If compliance is achieved through purchasing permits this will see a net loss of resources to the economy. A much more efficient method of achieving compliance would be to impose a carbon tax on all energy not covered by the EU ETS. As the revenue would be available to the Government to reduce taxes elsewhere the cost to the economy of reaching the required reduction in emissions would be minimised.

Finally, recent studies on energy efficiency highlighted the scope for reducing costs through investment in economically efficient technologies (see O'Malley *et al.*, 2003 and Sorrell *et al.*, 2004). The failure to invest what would appear to be optimal amounts in reducing energy consumption arises from market failure. If

instruments can be found to effectively counter this market failure they would prove worthwhile to implement. However, it is important that the effectiveness of energy efficiency policies is tested properly. It is not sufficient to show that there is a theoretical gain from any particular investment. It is important to establish what the effects of such investments are in practise.

17. TELECOMMUNICATIONS

17.1 Introduction

The vast bulk of activity in the communications sector is resourced entirely on a commercial basis. Within the current NDP there is one exception to this in the form of the E-commerce and Communications measure. The aim of this measure is to address gaps in infrastructure, to maximise the use of existing shared infrastructure and to drive demand in new services and activities in the sector.

Broadband access allows individuals and businesses instant access to the internet without dialling-up and provides a much higher capacity to access or send large amounts of digital data. It constitutes a technology that allows both businesses and individuals to change the way they operate. For businesses, broadband allows for improved communications and information transfer between plants or branches within the same organisation and improved communications and information transfer between businesses and their customers. This is particularly important in information intensive activities in the services sector or the services side of the manufacturing sector. Indeed, broadband has provided the basis for a range of innovations in business practices, which would not have been possible before. The whole range of telephony and data services are becoming part of a competitive market for those who have access to a broadband connection. Consequently, broadband has been identified as a factor that can contribute to increased productivity. For individuals the faster information transfer that is provided by broadband allows for changes in consumer behaviour e.g. downloading individual music tracks rather than purchasing entire albums. By providing more convenient and versatile access to the internet, broadband should increase PC ownership and usage and thereby increase the IT competence of the wider population, which in turn might have a positive impact on productivity. It is for these reasons that the future of a competitive telecommunications market with ready access to a suitable high-speed internet connection is of high importance for all businesses and all households.

The nature of the technology suggests that the primary gains from broadband are captured by firms and individuals directly so that any externalities are limited.⁷⁵ On that basis public intervention would not be warranted. However, the State has an important role

⁷⁵ This arises out of the fact that individuals or firms can be excluded from the service where it is available, which implies that telecommunications infrastructure/services only have very limited public good qualities.

as regulator of the sector, especially where there are monopoly elements to the provision of infrastructure. It is also clearly desirable to increase IT competence in the wider population as this may have some long-run benefits. Therefore, one should consider broadband a merit good, i.e. one the consumption of which should be encouraged, which means that there is a public interest in considering issues that prevent the roll-out and take-up of broadband. However, this does not provide a rationale *per se* for public expenditure, which is only justified if there are specific market failures that cannot be dealt with through better regulation of monopolies and which prevent roll-out and take-up.

17.2 Current Activity

Current activity in the NDP has been concentrated on a number of areas. First, the Metropolitan Area Networks (MANs) scheme, which was launched in 2004, aims at providing open access transmission networks in metropolitan areas, either through the laying of fibre optic cables or through wireless infrastructures. During the first phase of this scheme 27 networks have been constructed, of which 20 are managed by e-net. A further 90 networks were at a stage of advanced planning in the last quarter of 2005 (see Forfás 2005b).

A second scheme is the County and Group Broadband Scheme (CGBS) that was also launched in 2004 to promote roll-out of broadband services to smaller rural communities of less than 1,500 people.⁷⁶ Under the first phase €1.4 million was invested to provide broadband access for 36,000 people. The second phase, which has been in place since the start of 2005, aims to complete 119 projects covering a population of 355,000, which will cost €6 million. If these targets are achieved then 22 per cent of the rural and village population is expected to be reached through this programme.

Finally, the Department of Education and Science has been implementing a broadband programme – provision of broadband in all schools – and nearly all schools are now connected.

17.3 Experience

Over recent years a number of issues have emerged in relation to broadband. Overall roll-out of broadband has been slow resulting in relatively low broadband penetration. In an international comparison Ireland ranks second last among EU-15 countries with just Greece having lower availability (Forfás, 2005b).

One reason that has been put forward as a possible constraint to broadband roll-out is the low population density. A low population density may render a service commercially unviable since the cost of providing the infrastructure exceeds the likely return. This is likely to

⁷⁶ In 2002 the CSO *Census of Population* identified 552 small towns and villages with a population of less than 1,500 inhabitants, which accounted for a total population of 282,469 or just 6.8 per cent of the total population. Just over 1.5 million or 36.7 per cent of the population reside outside urban centres altogether.

be the case in relation to fibre-optic cables, but alternative technologies such as wireless technologies could be utilised instead, which should reduce the infrastructure cost, since at the margin an additional user will not result in additional costs.

The Forfás benchmarking study highlights the fact that other countries with a low population density, such as Sweden and Finland, have managed to achieve high broadband coverage. However, rather than focusing on density the focus should be on urbanisation. For example, while on average there are just 22 persons per square kilometre in Sweden, 78 per cent of the population reside in urban areas. In other words there are a large parts of Sweden, which are essentially uninhabited. Providing broadband infrastructure in urban areas is considerably cheaper as the total cable length required is substantially shorter. Thus, for a given investment a larger market can be served resulting in higher profitability. Thus, it may not be the low population density in Ireland that is the constraint but the spatial pattern of the population distribution, which is characterised by low urbanisation and excess dispersion compared to most other developed countries (see the discussion in Chapter 6).

Broadband take-up has been slow with Ireland ranked 25th out of 32 countries in an international comparison, despite the fact that demand has increased substantially but from a low base. A number of factors contribute to determine broadband take-up. One of the key factors has been the structure of the industry and the weakness of the regulatory framework. The incumbent had weak incentives to invest and the regulatory framework had limited power to regulate the crucial monopoly part of the business. For the future, availability of broadband will itself determine take-up but demand will determine availability. As roll-out of broadband has been slow in Ireland it should not be surprising that take-up has been slow.

Another important determinant is price. In this respect there has been a substantial improvement since cost of broadband access has reduced over recent years so that the cost of Digital Subscriber line (DSL) access has declined from a high €141 per month in 2002 to €29 per month in 2005. Of course, prices are strongly influenced by the degree of competition in the market place, and indeed the degree of competition appears to have increased across platforms and to some extent within. Nevertheless, substantial progress still needs to be made to increase competition. In the second quarter of 2005 just 2 per cent of telephone lines had been fully unbundled. In this respect the market structure is likely to be the major constraint on further rapid development, with the dominant player having little to gain from making its network available to other operators. Here stronger regulatory intervention is likely to result in significant progress.

Since broadband is primarily accessed through a PC the low demand for broadband may be related to the low PC ownership in Ireland. As is shown in Table 17.1 overall less than half of households had a PC in 2002, and just over 34 per cent had internet access. Noticeable is a significant urban-rural divide in the sense that

PC ownership is significantly higher in towns with a population in excess of 1,500. Interestingly, this difference is not quite as significant for Internet access. It is notable that PC ownership and Internet Access lags significantly behind mobile phone ownership where ownership is in excess of 100 per cent of the adult population. The experience with mobile phones suggests that once take-up reaches a certain level private demand will develop rapidly.

Table 17.1: Percentage of Households with Personal Computer (PC) and Internet Access by Type of Area

Area type	PC	Internet
Towns 1,500+	45.3	35.9
Towns 1,000-1,499	35.1	27.0
Towns 500-999	36.2	27.8
Towns under 500 but at least 50 houses	35.6	26.7
Rural – outside urban	41.7	32.1
Aggregate Rural Area (all areas outside of towns with a population in excess of 1,500)	40.6	31.1
State	43.5	34.1

Source: CSO Census of Population (2002) Volume 13.

17.4 Recommendation

Broadband can be regarded as a merit good. Thus, its provision and take-up should be encouraged. The merit good characteristic alone is not sufficient, however, to justify large-scale public intervention. Nevertheless, there are a number of issues that do require attention.

The interrelated low supply and demand for broadband can potentially be resolved through the market. However, the State still has an important regulatory role and there must be concern that regulatory problems have slowed the deployment of new technology. The regulatory powers of Comreg and the Department of Communications, Natural Resources and Marine may need strengthening to deal with the industry, in particular in dealing with the dominant incumbent Eircom. The current model of regulation is designed to deal with a situation where the incumbent faces effective competition through technical change giving rise to competing technologies. However, new technologies do not appear to be providing such competition effectively and the telephone wire (or optical fibre) connection to individual homes and businesses remains a key in providing broadband services.

As a result, the regulation of this key link and the powers of the regulatory authorities need strengthening. The regulator should ensure that the key final link to individual households is made available to competing suppliers of telecommunications services at minimum cost, subject to maintaining and developing the network. The investment in this final link is a key part of the national telecommunications infrastructure and is a de facto monopoly. The incumbent can potentially limit access for competitors through pricing or connection policy. The regulatory authorities have taken

action to ensure that this does not happen. However, the incumbent also has a strong incentive to get a return on its capital investment in a very short space of time, giving rise to a potentially very high long-run rate of return.

As with other vital infrastructure this key part of the system is a long-term investment and the regulator should have the power to control pricing so that the monopoly provider achieves its return over the life time of the asset, not just in the first few years. In addition, the regulator needs to have the power to require adequate investment to be made in upgrading the system.

Because of its monopoly status, and the resulting relatively certain return for investors, it is appropriate to allow a relatively low rate of return on this investment related to the interest rate on corporate bonds. One of the problems with the current situation has been that Eircom has a high level of debt finance. This could restrict the regulator's freedom of action. It means that if the regulator forces a pricing regime that involves temporary losses as the firm builds up business, it could pose financial difficulties for the firm.

The takeover of Eircom in 2001 and 2006 and the leveraging of that investment by new owners in 2001 restricted the company's ability to invest and price for the long term. In turn this has put pressure on the regulatory authorities to be less exacting on the incumbent. The recent takeover compounds these problems. It is now important that the regulatory authorities are given the powers to regulate the monopoly element of the business to promote long-term development of the telecommunications system.

Demand has increased strongly over recent years and this is likely to stimulate further roll-out of broadband. Demand can be further stimulated at no (or relatively low) cost to the Exchequer in a number of ways. Resources have already been devoted to providing broadband access for every school in the country. However, it is not clear exactly how this access is to be used. The obvious use is for computer studies classes. However, a more progressive approach would be to integrate the use of information technology including broadband in all subjects. This clearly requires the curriculum to be developed appropriately. This would develop IT competence among pupils and stimulate broadband demand at home as broadband access becomes an integral part of the education system. It is difficult to recommend the most appropriate mechanisms through which this should be done. Therefore, a number of different approaches should be developed and piloted in schools.

A further stimulus to broadband provision can be provided by Local Loop Unbundling (LLU) as this will generate additional competition. This should result in greater product variety and lower prices, thereby stimulating demand. Rather than requiring exchequer resources this can be achieved through effective regulation.

As was indicated above, the spatial distribution of the population in Ireland is such that provision of broadband infrastructure by the private sector in some areas may be slow and, indeed, without public intervention some areas may never receive provision. In this case there is a clear market failure, which needs to be assessed

thoroughly. The fact that a particular area does not have broadband access is in itself not sufficient to warrant intervention if there is not local demand for that service. This point is important since if no demand exists the resources expended on broadband infrastructure will have been wasted, at least in the short term.⁷⁷ In general the use of wireless facilities, which could be put in place in response to demand from the private sector, which would then require a lower level of subsidisation, is preferable, especially outside of the centres designated in the NSS.

CBGS has already made a significant impact on providing infrastructure in smaller more remote communities. Likewise MANs have also progressed. A key issue affecting these networks is proper integration into the wider national infrastructure to allow for backhaul. The lack of this backhaul facility may be deterring the take up of these facilities by service providers. As these facilities are already in place, or at the stage of advance planning, there is a risk that the resources that have already been devoted will be wasted. Included in the recommendation in Table 17.2, is a provision for limited support to linking these local infrastructures to the backbone infrastructure which should be considered. In order to ensure value for money such links should only be provided if a service provider can be found for the network and this service provider should be required to make a contribution to the cost of linking the network.

More important than any financial provision by the State will be the implementation of an appropriate regulatory framework. The current framework may need strengthening to deal with the monopoly elements of the system and to ensure that they are managed in a way that produces an appropriate long-run rate of return for the owners while at the same time delivering a cost-effective service to consumers.

Table 17.2: Financial Recommendation

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
E-Commerce	Reduce	26.7	20

Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

⁷⁷In this respect the experience in Northern Ireland is instructive, in that it shows that broadband availability does not guarantee high take-up rates. While there is 100 per cent broadband coverage take up is limited to 25 per cent of households, representing 52 per cent of households with internet access (OFCOM, 2006).

18. HUMAN RESOURCES

18.1 Context

It has been argued that the expansion in educational participation, at both second and third level has been one of the main factors underlying Ireland's rapid economic growth during the 1990s (Fitz Gerald, 2000). As noted in Chapter 2 of this report, human capital is of particular importance to growth and competitiveness. The rapid development of Irish society over the past four decades entailed a process of occupational upgrading to meet the skill needs of a rapidly modernising economy and, as a consequence, educational credentials have come to assume major importance in determining the economic prospects of individuals (O'Connell, 2000).

Forecasts of future skill needs indicate that high skilled occupations will continue to expand over the medium to long-term and emphasise the need for continued investment in human capital, and the continuation of high demand for higher education graduates (Sexton, Hughes, McCormick and Finn, 2001; and Sexton, Hughes, Casey, Finn, and Morgenroth, 2004). In a context of ongoing rapid changes in the technology and organisation of production and service delivery, education and skills have come to assume central importance both for macroeconomic performance as well as for the labour market prospects of individuals. Increasing productivity and enhancing productivity in the future will require additional investment in research and development and in the expansion of tertiary education, at undergraduate as well as post-graduate levels.

18.2 Strategic Goals in Human Resource Development

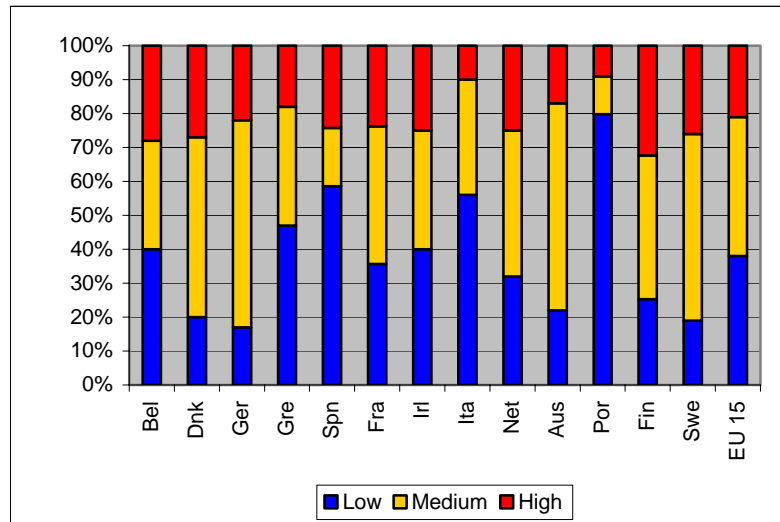
In pursuit of the two objectives of economic development and social progress, the Irish education and training system is confronted with two major challenges: (1) to produce a highly educated population and labour force by the standards of other advanced countries; and (2) to ensure that the educational system serves all members of society in promoting equality of opportunity in initial education and in access to continuing vocational education and training.

Irish educational outcomes are now broadly in line with the average among OECD countries, but they lag behind the best performers. If Ireland is to achieve its objectives of further economic development and social progress it will need to increase investment at all levels to match those of best practice countries.

In terms of educational attainment, the adult population is polarised: Figure 18.1 shows educational attainment of the

population aged 25-64 years, thus including the main age groups from which the workforce is drawn. Ireland compares favourably with other EU countries in the proportion of the working age population with higher levels of educational attainment: 25 per cent of the population in this age group in Ireland have third level qualifications, compared to an EU average of 21 per cent. However, Ireland also has a larger proportion at low levels of education: 40 per cent of the population aged 25-64 years in Ireland have lower secondary education, or less, compared to an EU average of 38 per cent, and to only 17 per cent in Germany, 19 per cent in Sweden, 20 per cent in Denmark, and 25 per cent in Finland. In this respect Ireland falls short of the leading countries with which it must compete.

Figure 18.1: Educational Attainment of the Population Aged 25-64 years, 2002



Source: Department of Education and Science, *Annual Report, 2003*.

Data presented in Appendix Table A6.1.

Low attainment = Lower Secondary education or less.

Medium attainment = Completion of Upper Secondary education.

High attainment = Third level education.

Closely related to the objective of increasing the supply of highly skilled labour is the need to reduce the share of those with low skills. The number of people leaving the initial education system without upper secondary education is about the OECD average but well above best practice examples (OECD, 2006). This requires actions to reduce early school leaving and raise rates of completion at upper secondary level. It also requires a substantial increase in the provision of continuing vocational education and training to those who have already entered the labour force. However, Ireland is below average in terms of the extent of participation by employees in continuing education and training (OECD, 2006). It is also well established that participation in continuing education and training is strongly related to educational attainment, with the result that those

with lower education are much less likely to participate in training to upgrade their skills than those with higher levels of education (O'Connell, 2005). Therefore, raising the educational attainment rate will also raise the participation rate in training.

Given the demographic changes discussed in Chapter 4 of this report, Ireland faces a long-run decline in the number of new entrants to the labour force. This means that, in contrast to the situation in the 1990s, increasing the skill profile of the workforce must rely heavily on upskilling those already in the labour force. This means that in addition to investing in initial education, it is increasingly necessary, on both efficiency and equity grounds to invest in lifelong learning of those already in the labour force (Task Force on Life-Long Learning, 2002).

While the proportion of the working-age population with third level qualifications in Ireland is higher than the European average, this sector is crucial to increasing productivity and maintaining competitiveness. Increased investment in the third-level sector is needed to provide for growing enrolments, to enhance standards, to expand post-graduate education, and, as outlined in recent announcements, to develop linkages between learning, research and the enterprise sector (see Chapter 19).

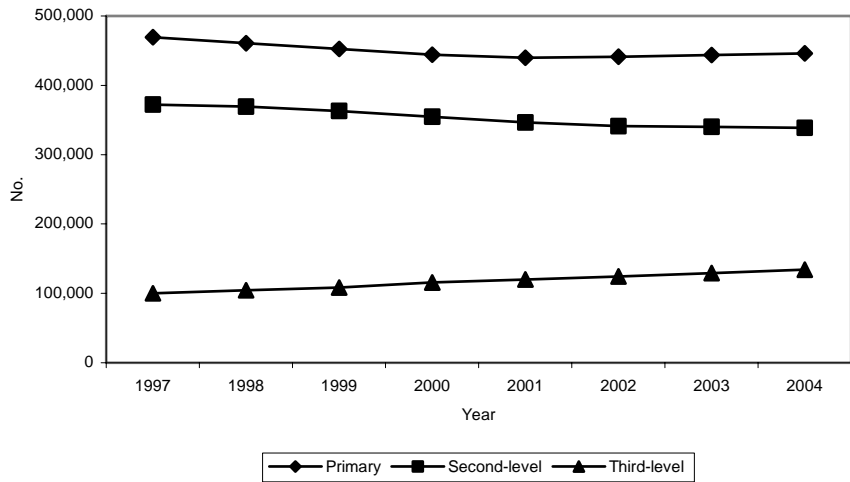
18.3 Current Activity

EDUCATION

There has been a decline in full-time enrolments in the primary and second-level sectors of 5 per cent and 9 per cent respectively over the period 1996/7 to 2003/4 (Figure 18.2). Primary enrolments reached their lowest levels in 2001 but have increased somewhat in subsequent years. At the same time, full-time enrolments in third-level education have increased by over a third over their 1997 levels. It should also be noted that there has been an increase in part-time enrolments within third-level institutions (from 25,000 in 1997/8 to 34,000 in 2003/4).

The number of children under the age of 9 years is projected to increase by over 15 per cent between 2005 and 2015 while the numbers aged 10 to 19 years of age are projected to increase by 5 per cent (see Chapter 4 and Fitz Gerald *et al.*, 2005). Therefore, the primary school-aged population is expected to increase significantly (by 18-29 per cent) while the second-level school-age population is expected to decline until 2011 and increase thereafter (CSO, 2004). Even without any changes in participation rates within second level education, resource requirements are consequently expected to increase substantially in the primary sector with somewhat more modest additional requirements at second-level over the lifetime of the National Development Plan.

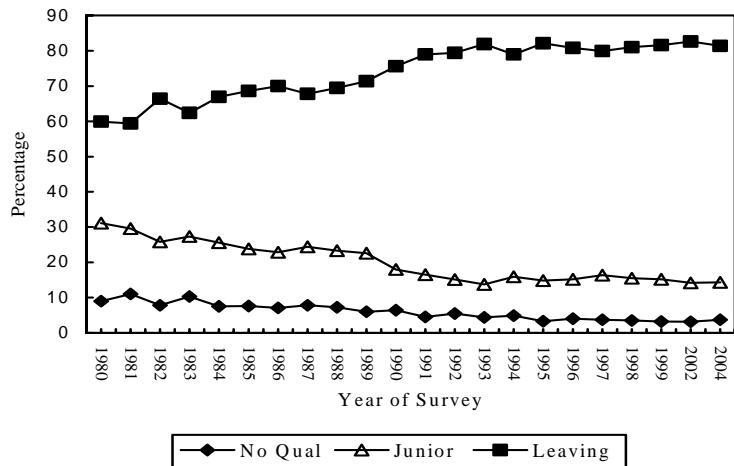
Figure 18.2: Enrolments in Full-time Education by Sector 1997-2004 (aided institutions only)



Source: Department of Education and Science, *Statistical Reports*, various years.

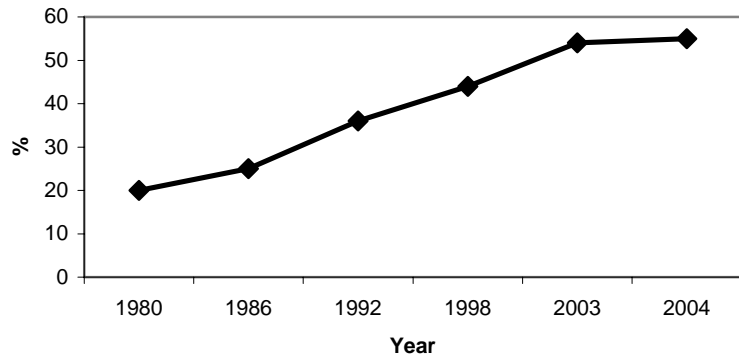
Reductions in both the number of primary and second-level pupils have reflected demographic trends rather than changes in participation rates. After a marked increase in retention to Leaving Certificate level during the 1980s and early 1990s, rates of Leaving Certificate completion have plateaued since the mid-1990s, with just under a fifth of young people leaving school without senior cycle qualifications⁷⁸ (Figure 18.3).

Figure 18.3: Qualification Level of School Leavers 1980-2004



Source: Gorby *et al.*, 2006.

⁷⁸ Even allowing for participation in post-school apprenticeships, 17 per cent of young men and 15 per cent of young women are not on routes leading to senior cycle qualifications, a higher proportion than in several other European countries (see Appendix 4).

Figure 18.4: Admission Rates to Higher Education, 1980-2004

Source: O'Connell *et al.*, 2006, Table 5.1.

Rates of admission to higher education have increased dramatically from 36 per cent in 1992 to 55 per cent in 2004 (Figure 18.4). Indeed there is nothing to suggest that declining population numbers in the higher teenage years has led to any decline in the numbers attending third level education. The absolute number of full-time students increased by almost 12 per cent between 1999/00 and 2002/03 and that of part-time students by 10 per cent. It should be recognised that part-time students are an important component of higher education, representing about 21 per cent of all students in higher education. While young people from professional, employer and managerial backgrounds continue to be over-represented in higher education, the expansion in enrolments has facilitated some improvement in third-level participation among young people from working-class backgrounds (O'Connell *et al.*, 2006).

Enrolment at tertiary level has almost tripled from 37,000 in 1979/80 to 134,000 in 2003/4. Notwithstanding the scale of expansion of the sector the demand for graduates continues to be strong. Graduate employment prospects have remained buoyant as evidenced by the *Annual First Destinations Surveys* published by the HEA and private returns to higher education continue to be strong (OECD, 2005a).

Table 18.1: Number of Students Enrolled in Third Level Courses in Institutions (aided by the Department of Education)

	1999/00	2002/03	% change
Full-time	115,696	129,283	11.7
Part-time	31,469	34,680	10.2
Total	147,165	163,963	11.4

Source: www.heai.ie

As well as changes in demographic patterns and rates of educational participation, recent years have seen increasing diversity within the educational system. There has been some movement from a culturally homogenous society to a more culturally diverse

one, with increasing numbers of people with non-Irish nationality living in Ireland. Diversity is also evident in terms of the 'ability' mix of students within schools. There has been a decline in the number of pupils attending special schools since the 1990s with a greater policy emphasis on inclusion. However, little is known about the consequences of increasing diversity at the school level in terms of resource requirements and day-to-day teaching and learning.

Table 18.2: Public Expenditure on Education, Ireland and Selected Countries, 2002

	Ireland	Finland	Netherlands	UK	OECD
Per Capita Expenditure in US Dollars					
Primary	4,180	5,087	5,558	5,150	5,313
Secondary	5,725	7,120	6,823	6,505	7,002
Tertiary	9,809	11,768	13,101	11,882	10,655
Total Public Expenditure, All Levels, as % of GDP	4.4%	6.4%	5.1%	5.3%	5.4%

Source: OECD (2005a), *Education at a Glance*. OECD Indicators, 2005.

Note: Using Purchasing Power Parities for GDP.

Table 18.2 shows comparative data on public expenditure on education for Ireland, selected other countries, and the OECD average. On a per capita basis, and expressed in US dollars and adjusted for purchasing power parities, Irish expenditures in 2002 fell short of expenditures elsewhere, and the gap was particularly large in respect of primary and secondary expenditure. The ratio of educational expenditure to GDP was also lower than the OECD average, and lower than any other country reported in Table 18.2. Indeed, by this measure, Ireland ranks 25th out of 28 OECD countries in the share of GDP devoted to public educational expenditure. If the ratio is adjusted for the GNP/GDP gap in Ireland, then this would bring Ireland closer to the OECD average, but Irish spending remains lower than in other advanced societies.

Expenditure on higher education in Ireland in 2002 was closer to the average OECD expenditure per capita, although, well below the leading countries. Higher education has expanded dramatically in recent years: enrolment at tertiary level has almost tripled from 37,000 in 1979/80 to 134,000 in 2003/4.

Graduates from third level earn a substantial premium over those with lower qualifications (OECD, 2005a). There is some evidence to suggest that the return to third level, compared to no qualifications may have declined somewhat (from about 100 per cent in 1994 to about 80 per cent in 2000), but these returns nevertheless remain significant (Barrett, Fitz Gerald and Nolan (2002) and the discussion in Chapter 2). The evidence also suggests that investment in human capital over the 1990s increased the supply of skilled labour sufficiently to dampen high-skilled wage

inflation (Bergin and Kearney, 2004). The investment thus contributed both to competitiveness as well as to reduced earnings dispersion, and thus to equality and social inclusion objectives.

If Ireland is to achieve further economic growth, enhanced productivity and competitiveness, and social progress, it will need to match its leading competitor countries in terms of both investment in as well as outcomes from, tertiary education. As such the recent increases in expenditure announced in the 2006 Budget, as well as initiatives to support institutional reform at third level are to be welcomed. The available evidence thus points to a strong economic case for investment in higher education

CONTINUING EDUCATION AND TRAINING

In discussing continuing vocational education and training (CET) it is useful to distinguish between training for those in employment versus training to assist the unemployed.

CET for Employed Persons

O'Connell (2005) shows that expenditure on education and training of employed persons by public providers and bodies amounted to about €173 million and supported the training of about 260,000 workers in 2003. About €124 million of this was accounted for by apprenticeship training of about 27,000 young entrants to designated trades. This would suggest that outside of apprenticeship programmes, which should, in any event, be classified as Initial Vocational Education and Training (IVET), State funding to support the training of persons in employment – in the region of about €49 million in 2003 – is on a very modest scale. In addition, there was public expenditure of about €41 million on part-time enrolments at third-level institutions. While no direct correlation exists between part-time enrolments and labour market status, approximately 90 per cent of part-time students are also in employment.

Total expenditure by employers on training costs is estimated to have been in the region of €1 billion in 2003. This figure includes both the direct costs of training, including tuition fees, and the wage costs of employees while engaged in training. Of about €45 million paid in private fee expenditure, some of this amount is already included in the €1 billion expenditure from employers, where employers pay for, or subsidise, part-time study at third-level institutions.

Public Expenditure on Assisting Unemployed Individuals

State expenditure on training to assist unemployed individuals secure work accounted for about €270 million in 2003. Some proportion of these programmes may, of course, also be regarded as contributing to the productive capacity of the economy as well as the employability of their participants. Programmes targeted at the unemployed encompass a far wider range of measures than is

captured by the training data above. NESF (2006) shows that about €1 billion is spent per annum on the active labour market interventions, employment and social inclusion mainly aimed at helping people into work. Nonetheless, State investment in CVET is modest, particularly so in respect of training of employed workers. Table 18.3 shows comparative data on participation in non-formal learning, which mainly encompasses learning outside of the mainstream educational system.

Table 18.3: Participation Rate in Non-formal Learning by Employed and Unemployed in Last 12 Months, 25-64 Year Age Group, 2003, Selected Countries

	Employed	Unemployed
	%	%
Greece	6	7
Hungary	6	5
Italy	7	2
Portugal	11	9
Spain	12	16
Netherlands	13	9
Poland	15	4
Germany	16	12
Czech Republic	17	6
Ireland	17	12
EU-25	21	14
France	25	20
Cyprus	25	13
Belgium	26	13
Slovakia	29	7
Austria	30	25
United Kingdom	42	26
Finland	50	25
Denmark	53	41
Sweden	53	24

Source: Ireland: Derived from CSO *Quarterly National Household Survey, 2003 Q2*, Module on Life-long Learning, micro data. All other countries: Fox (2003).

In Ireland about 17 per cent of the employed participated in non-formal training in the previous twelve months., compared with an average of 21 per cent across the EU-25, and well below Denmark, Sweden and Finland, where over 50 per cent of employees participated. In most countries, participation in non-formal training is higher among the employed than the unemployed. In Ireland, 12 per cent of the unemployed indicated that they had participated in non-formal training, compared to 14 per cent across the EU-25 as a whole, and, again, well behind the leading countries, that included Denmark, Finland Sweden and the United Kingdom.

18.4 Investment Priorities

In general our recommendations on investment in human capital are guided by the widely acknowledged importance of such investment and by the evidence that such investment, where appropriate, pays dividends to both individuals and to the economy. Investment priorities for the post-2006 period should be consistent with the needs of a rapidly growing economy seeking to increase productivity as well as to promote equity and social inclusion. In general the priorities for human resources investment relate to:

- Meeting the skill needs of the economy.
- Achieving equity of access to education.
- Reduction of early school leaving.
- To support the development of a knowledge and innovation based economy, production of a strong stream of well-educated graduates from higher education and development of a strong research capacity, linked to the needs of enterprise and public policy.
- Promoting lifelong learning for both the employed and unemployed.

These priorities are consistent with the Lisbon Agenda and with the priorities of the National Reform Programme (Department of Enterprise, Trade and Employment) and the high level objectives in education identified by the Department of Education and Science. In summary the strategic objectives by level are as follows:

EARLY-CHILDHOOD EDUCATION

- Most studies indicate that early childhood education brings enduring benefits in terms of better school outcomes and enhanced social skills in later life. However, Ireland is below average and lags well behind the leading countries in the proportion of 3-5 year olds in pre-primary education (OECD, 2004; Goodman and Sianesi, 2005).

PRIMARY EDUCATION

- Investment in physical infrastructure is needed to raise standards.
- Investment in programmes to counter social disadvantage and poor educational achievement is needed to prevent school failure and dropout which has a high social return (see Morgenroth, 1999).

SECONDARY EDUCATION

- Currently just under one-fifth of young people leave school without having completed the upper secondary cycle, as discussed below. This is an unacceptable wastage of human resources and it should become a core objective of the

second-level system that every student should complete either a Leaving Certificate or its equivalent (NESF, 2006).

HIGHER EDUCATION

- Investment in higher education is essential to support the development of an economy based on learning and innovation. The two priorities in higher education are (1) to maintain a strong stream of well educated graduates to fill technical and managerial positions in the labour market; and (2) to support the growth of research in higher education institutes, with strong linkages to the private sector. These priorities are reflected in the commitment of greater resources to higher education and in developing the research infrastructure and in providing ongoing support for research.
- An additional complementary priority, and one that is a core component of national objectives is to widen access to higher education. This includes not only those from disadvantaged socio-economic backgrounds, but also mature students and students with disabilities. Some progress has been achieved in respect of the former two in recent years, but there has been much less progress in improving access for students with disabilities.

CONTINUING EDUCATION AND TRAINING

- Ireland falls well below the leading countries in investment in the ongoing training of employed workers. This, combined with the decline in the new entrants to the labour force, suggests the need for increased investment in continuing education and training. There is a strong argument for targeting public investment in continuing education and training towards the lower skilled, because they are less likely to participate on the basis of their own resources, and upgrading the skills of the low skilled has the potential to meet skill shortages. Training of individuals with greater endowments of human capital is more likely to be funded by their employers, particularly where the returns to such training, both to employers and employees, may be more apparent.

With low unemployment, many of those who experience difficulties in finding employment, particularly the long-term unemployed, suffer a range of diverse difficulties. Programmes to assist their reintegration to the labour market need to be intensive, client centred, and effective (NESF, 2006).

At both primary and secondary levels, a major priority remains the needs of those children who are currently being failed by the system. Their difficulties are multi-faceted and while the outcome is educational failure and/or dropout, the answers to the problem are

not to be found within the educational system alone. It will be important to integrate measures to address educational disadvantage with other measures to counter poverty and social exclusion (see Chapter 9). Within the education system, there is also a strong rationale for the expansion of pre-school and early childhood education for disadvantaged groups (see Chapter 22). At second-level, a key objective should be the 20 per cent of school leavers who leave without having completed the Leaving Certificate. In both sectors, also, it will become essential to devote more resources to meeting the needs of pupils with physical and learning disabilities.

A newly emerging priority, deriving from the success of the Celtic Tiger and the associated immigration of new workers and their families, is the increase in national, ethnic, cultural and religious diversity in Irish schools. Such diversity is directly related to economic success, and is to be welcomed in its own right, but it does require additional resources to ensure that the 'New Irish' children are successfully integrated into Irish society, into the educational system, and, eventually, the labour market.

In higher education, the key strategic objectives are meeting the skill needs of the economy and widening participation in higher education to groups that have heretofore been under-represented. Participation rates have increased strongly in recent years, and while Ireland is about average in terms of participation rates in higher education, it falls behind some of the leading, high-skills high-productivity countries that we may wish to emulate. While it should be acknowledged that substantial numbers of young Irish people go abroad to take up higher educational opportunities, mainly in the UK, little is known about the return migration patterns of such students. However, to the extent that they remain abroad they represent a loss of talent to the Irish economy and society.

Investment at third level needs to promote the continued production of a strong stream of well-educated graduates to take up positions in science, technology, management, the caring professions, and in the formation and implementation of public policy. Investment is also needed to support the expansion of post-graduate education to underpin increased research activity in key strategic areas – the expansion of the so-called "Fourth Level" of education and research. Increased investment also needs to be accompanied by institutional reforms to enhance both teaching and research in order to maximise the effectiveness of the sector and its responsiveness to economic and social needs.

Accepting that substantial additional investments are required in the tertiary sector to serve national efficiency and equity goals, the question then becomes one of where those resources are to come from. Further investment in higher education should be framed in a context where it is well established that the private returns to higher education are high. This provides a strong argument for some sharing of the burden of the cost of higher education through the re-introduction of fees. A recent OECD report (2006) argues that the re-introduction of fees would also have additional benefits in

terms of efficiency and responsiveness of institutions to their stakeholders.

EDUCATION

Capital Expenditure

Primary and second-level infrastructure development focuses on new build and refurbishment. Given demographic trends and the need to upgrade existing facilities, investment in infrastructure at both primary and second-levels will be required. The framework for investment decisions should incorporate the following criteria:

- Infrastructural development should be responsive to the regional and local demographic trends and should be linked with land-use planning under the National Spatial Strategy and the Regional Planning Guidelines;
- Developers of new residential developments should be required to provide serviced sites and possibly school buildings as part of integrated residential development schemes;
- Standardisation of design, design and build contracts, and bundling of projects will help in maximising value for money.

Current Expenditure

Evidence from other countries has indicated that the provision of high quality early childhood education targeted at disadvantaged groups has positive consequences for young people's retention within the educational system as well as their longer-term life-chances. Investment in early childhood education has been assessed to be cost-effective; each dollar spent on one intervention in the US (the High/Scope Perry Program) yielded savings in public expenditure of \$12.9 per participant, due to higher employment rates, lower welfare dependency and lower crime rates among programme participants (Belfield, *et al.*, 2006). Currently, participation in pre-school education in Ireland is low by European standards and the Early Start Programme (targeted at children from disadvantaged backgrounds) covers just 3 per cent of the cohort entering junior infant classes in primary schools. The new *Delivering Equality of Opportunity in Schools Programme* (DEIS) allows for support for early childhood education in the schools serving the most disadvantaged communities. However, there is a strong rationale for the expansion of pre-school provision for disadvantaged groups beyond current and proposed levels, given its likely contribution to lower rates of educational underperformance and early school leaving. Such provision should be subject to on-going monitoring and evaluation to ensure it achieves these objectives. This monitoring should take account of the quality framework being developed by the Centre for Early Childhood Development and Education and the curriculum framework for early childhood

education developed by the National Council for Curriculum and Assessment.

Expenditure per student on primary and second-level education in Ireland remains below the OECD average (OECD, 2005a). Due to demographic trends, even maintaining the status quo in provision will require additional resources, especially at primary level, over the time frame of the Plan. However, there is a case for additional targeted expenditure on certain key areas over and above that required by increasing numbers of pupils. Targeting additional resources on schools serving disadvantaged communities has been a feature of educational policy since the 1990s. Such an approach has a strong rationale given that examination performance is lower, and rates of early school leaving higher, in schools with a sizeable concentration of students from disadvantaged backgrounds (Smyth, 1999; McCoy *et al.*, 2006). Furthermore, there is a persistent significant gap between designated disadvantaged and non-disadvantaged schools in the reading scores of their pupils (Eivers *et al.*, 2005). The new DEIS initiative proposes to change the nature of resource allocation to schools serving disadvantaged communities. The intention to integrate previously fragmented initiatives under one umbrella is to be welcomed.

To date educational interventions for disadvantaged students have varied in the criteria used to target schools and/or students and have fallen under the jurisdiction of a range of agencies. The increase in the allocation to designated schools is likely to help to bridge the gap between the resources of schools serving disadvantaged communities and those of other schools. However, not all young people from disadvantaged backgrounds attend designated disadvantaged schools. The *Giving Children an Even Break* initiative had established the principle of providing more graduated support for schools catering for different levels of disadvantage. However, second-level students not attending designated disadvantaged schools do not receive any extra assistance at present. It is recommended that, in addition to the additional funding targeted on schools serving the greatest concentration of disadvantage through the DEIS initiative, funding should be provided for schools with somewhat lower levels of disadvantage on a graduated basis; this would be analogous to the approach taken by *Giving Children an Even Break* at primary level.

The DEIS initiative proposes to secure maximum class sizes of 20 in the junior classes of the 180 primary schools with the highest concentration of disadvantage, while maintaining existing maximum class sizes for schools previously involved in the schemes for designated disadvantaged primary schools. This maximum represents an increase over that adopted for the *Breaking the Cycle* scheme (15) and is higher than the threshold specified as securing benefits in international studies. While the further reduction in maximum class sizes for the senior classes (to 24 in the schools serving the most disadvantaged communities) is to be welcomed, international research has indicated that the benefits of smaller class sizes accrue to children who are allocated to classes with fewer than

17 pupils over a sustained period of time.⁷⁹ It is recommended that additional funding be allocated in order to bring the maximum class size for junior years to 15 in order to maximise the learning of children at this crucial stage of their engagement with the school system.

The targeting of expenditure at schools serving disadvantaged communities and the reduction in class sizes are only likely to be successful in so far as they are underpinned by measures to improve student educational progress and retention more generally, a perspective that is taken on board in the DEIS policy document (Department of Education and Science, 2005c). Measures to promote literacy and numeracy are a key priority, given how fundamental these basic skills are to later educational attainment and even adult life-chances. Such measures should take account of international best practice and schools should take advantage of any reduction in class sizes to focus on the development of appropriate pedagogical practices. These literacy/numeracy measures should be underpinned by learning support provision for those students who experience particular difficulties. The adequacy of the level of learning support and resource teaching, in the light of recent changes in the basis for teacher allocation to schools, should be monitored on an on-going basis.

There would appear to be considerable potential to achieve a further reduction in the prevalence of early school leaving, which is especially important given the significance of Leaving Certificate qualifications for early labour market transitions and later adult life-chances (see Gorby *et al.*, 2006). Despite a range of interventions to tackle educational disadvantage, rates of early school leaving have plateaued since the mid-1990s. Given that upper secondary completion levels are higher in a number of other European countries (principally, the Nordic countries and those with a 'dual system' of apprenticeship and education combined), it would seem feasible to increase senior cycle completion in the Irish context. Early school leaving has been found to reflect a cumulative process of educational underperformance, poor attendance and disengagement from school. High quality early childhood education along with literacy/numeracy measures within primary school (and beyond) should help to increase student retention. It is crucial, however, that such provision be supported by a positive school climate. Early school leaving is found to be higher where students have a negative experience of school and little sense of ownership over school life. School development planning should facilitate the development of more positive relations between teachers and students and higher teacher expectations within the school along with promoting measures to increase student and parental involvement (NESF, 2005). It is, therefore, recommended that an additional €3.5 million per annum be allocated for school

⁷⁹ Finn *et al.* (2001) indicated a gain in reading achievement of almost six months for children assigned to classes with 13-17 pupils, compared with those in classes of 22-26 pupils, for a period of three years.

development planning specifically to address issues of student engagement and retention. Student engagement could also be facilitated by allowing greater student choice over curriculum components, a variety of assessment methods, more active teaching methods and a better balance of knowledge and skills, as envisaged by the NCCA (2005) proposals for reform of the senior cycle curriculum.

The development of Post Leaving Certificate (PLCs) programmes has been one of the success stories of the Irish education system in recent decades. PLCs provide vocational training for a substantial proportion of young people who do not progress from second-level to higher education, and has become an increasingly important provider of second-chance education for mature students. It also plays a vital role in delivering relevant skills to the labour market. On this basis, State funding for this sector should be maintained. It is, however, the case that most PLC provision is delivered within second-level organisational structures and the teaching workload is comparable to that on traditional second-level courses. The McIver Report (2003) indicated the need for organisational and staffing changes in order to promote planning, flexibility and programme development within the PLC sector. Consideration should, therefore, be given to reforming organisational arrangements to ensure that PLCs have the organisational independence and flexibility appropriate to fulfilling their mission.

Higher Education

Recent years have seen significant increases in participation in higher education, and the most recent evidence suggests that the increased participation levels have been associated with a reduction of some of the most glaring socio-economic inequalities in access. A key priority in higher education is retention. Attrition rates in certain fields, particularly science, engineering and computing are known to be high, with the result that investment in these key areas may be wasted. It is possible that dropout from higher education may be related to socio-economic background, but there is as yet, a shortage of evidence on this point. High dropout rates also raise concerns about educational preparedness for higher education. More research is urgently needed on this.

There is a commitment to a very substantial increase in funding for higher education, particularly to expand the number of those engaged in advanced postgraduate (“fourth level”) education to support a greatly enhanced research effort in higher education. This will require building capacity to provide high quality postgraduate programmes. Whether this is the most cost effective approach to generating a highly skilled scientific elite needs to be carefully examined in relation to each area of study: for some areas it may be more appropriate to provide support for Irish students to study at leading international research centres, and then, of course encourage them to return. A vibrant postgraduate education and research system also needs the infusion of new talent from abroad,

so attracting foreign students to undertake postgraduate studies at emerging centres of excellence in Ireland should also be an important element of this sector for tertiary education. Funding criteria should also cover the important relationship between Ph.D. programmes and research and the rest of the higher education sector.

It is well established that the third-level sector is in need of substantial further resources (OECD, 2005a; HEA, 2004), and this has been recognised in the increased provision in the latest Budget. It is also well established that the private returns to higher education are positive and high. This suggests that students should, and would, make a contribution to their tertiary education and, as argued above, there is a strong case for a review of free fees. Resource needs in the sector are such that fee income should be additional to, rather than substitute for, public investment. While this suggestion may not be particularly feasible at this point in time, it may be possible to review the issue over the long term. Introducing a charge for participation in tertiary education would also require some reforms to the current system of grant-aiding students from lower income backgrounds. The OECD review suggests that a loan system has substantial merits and, as such, would be worth further investigation.

It would also be important not to lose sight of the importance of the need to upgrade the quality of education at primary and secondary levels, as discussed above. Access to higher education rests on the experience of the primary and secondary sectors: high standards at earlier levels provide a good basis for learning at tertiary level, and maximising the proportion of the cohort that completes upper secondary education can improve equality of access to higher education.

TRAINING

Training of the Unemployed

Unemployment rates in Ireland have remained below 5 per cent for the past five years or more. In this respect the current situation differs markedly from that in the 1990s, when the unemployment problem was dominated by long-term unemployment. Labour market policies, informed by the European Employment Strategy, emphasise the importance of measures to prevent the drift to long-term unemployment. This strategy requires targeting of effective measures with strong linkages to the labour market to those at risk of becoming long-term unemployed.

At the same time there is a need to provide measures to enhance the employability of those who, for whatever reason, remain long-term unemployed. This is now a comparatively small group. At the end of 2005 the number long-term unemployed was 27,600, representing 1.3 per cent of the labour force. This represents a very substantial decline in long-term unemployment (which was about 9 per cent in the mid-1990s) although in the current tight labour

market, the long-term unemployed are likely to suffer particularly severe labour market disadvantage, requiring particularly strenuous interventions.

A recent NESF report calls for a radical reform of the range of training, education and employment measures to ensure that spending is responsive to current labour market conditions rather than those pertaining in the early 1990s. This could be employed as a framework to guide future investment on behalf of the unemployed. Measures to assist two groups in particular should be prioritised: early school leavers experiencing difficulties in accessing employment and the long-term unemployed. In relation to both priority target groups, the decline in numbers should allow more intensive interventions. The effectiveness of measures to assist new entrants to unemployment would be greatly enhanced if the means of identifying those most at risk of drifting into long-term unemployment could be identified early. A recent study suggests that investing in some form of profiling system to identify 'hard to place' clients could enhance effectiveness, reduce unemployment durations and generate savings in unemployment related social welfare payments (Layte and O'Connell, 2005).

Continuing Vocational Education and Training of Those at Work (CVET)

We have noted above that the lion's share of investment in vocational education and training is borne by employers and that the State contribution to CVET is modest. The returns to CVET are mostly private: training is believed to enhance productivity and organisational performance, and in turn leads to higher corporate profitability and employee earnings. As such, it is appropriate that the private sector accept the principal responsibility for investment in training.

However, there are market failures in the provision of CVET, resulting in under-investment in CVET. This under-investment particularly concerns low-skilled workers, older workers, and those working in small and medium-sized enterprises. A strong case can be made for State intervention to counteract market failures and to provide support for particular targeted groups where investment in CVET would otherwise be sub-optimal.

Recent proposals in this field, from a range of sources, including the report of the Enterprise Strategy Group, the Irish Congress of Trade Unions, and FÁS, are in broad agreement on the need to provide training opportunities to allow low-skilled young people to upgrade their educational attainment. Some such proposals have included study leave supported by the State at minimum wage levels, perhaps with an employer top-up, a proposal that merits serious consideration. The potential for such initiatives is enhanced by the development of the *National Framework of Qualifications*.

In this context, consideration should also be given to equalising the situation applying to fees for part-time versus full-time third-level students. This would entail either charging fees for full-time students, or extending free fees to part-time students at

higher education (or a fee rebate on completion of a course) for those taking occupationally relevant part-time courses, for the first time, in further or higher education. NESF (2006) argue that such a proposal would be consistent with the idea of a one-step-up approach to helping workers attain higher qualifications, and it would also have an equitable dimension in benefiting those with lower levels of qualification. On balance, however, charging fees to all students, irrespective of whether they are full- or part-time, appears more appropriate in the light of the private returns to higher education.

More generally, both types of intervention to boost qualification levels of those with lower levels of educational attainment, would be consistent with the Lisbon Agenda and would help to meet Ireland's commitments under the *European Employment Strategy*, an issue that has been raised repeatedly in the *Employment Guidelines* in the related *Recommendations from the European Commission* in recent years.

Inward migration has been a significant component of labour force growth in recent years. Given growth forecasts this is likely to continue. Immigration from the new accession States is expected to continue to be an important component of inward migration. There is evidence to suggest that many immigrants are working below their levels of qualification (Barrett *et al.*, 2006). Provision of language training could assist in the integration of new immigrants as well as facilitate their employment in occupations commensurate with their qualifications. This would ensure that available human capital would be more fully utilised, essential in an economy suffering labour and skill shortages, and could also contribute to social inclusion objectives.

Table 18.4: Summary of Investment Priorities in Human Capital

Sector	Recommendation
Primary	
Capital Infrastructure	Increase, with value for money
Early childhood education	Increase
Disadvantaged Schools	Increase + target
Literacy and Numeracy	Increase + target
Integration of diverse ethnic groups	Increase
Second-Level	
Capital Infrastructure	Increase, with value for money
Disadvantaged Schools	Increase + target
Literacy and Numeracy	Increase + target
Integration of diverse ethnic groups	Increase
School Development and Planning	Increase
Post Leaving Cert Programmes	
Funding	Maintain
Structures	Reform
Third Level	
Infrastructure	Increase
Current	Increase
	Improve retention
	Maximise 3 rd - 4 th level linkages
Continuing Education and Training	
Unemployed	Maintain, but target to high risk groups
Employed	Increase
	Target low-skilled

Table 18.4 above provides a summary of recommendations relating to investments in human capital. More detailed recommendations, as well as the underlying rationale will be found in Table 18.5 below, and in the text.

Table 18.5: Investment Priorities in Human Capital

	Current NDP 2004 €million	2007-13 Average €million	Comment
Education			
Early childhood	2.0	45.3	1/3 of €136 proposed by NESF report.
Disadvantaged Schools	24.7	155.0	Incorporates existing expenditure under current NDP + DEIS initiative + ESRI recommendation for graduated support at 2nd level + reduction in class sizes in targeted schools.
Literacy & Numeracy	3.6	10.0	Increase.
Integration of Diverse Ethnic Groups	1.5	8.0	Extend to all school and all non-English speaking children.
School Development Planning		3.5	Improve school organisation to achieve retention goals.
School Guidance	30.0	40.0	Guidance is important for progression.
Modern Languages	3.0	3.0	Maintain.
3rd Level Access	36.0	72.0	Increase to achieve access agenda.
LLL Back to Education	95.0	45.0	This is part of wider PLC etc provision, difficulty meeting throughput targets in NDP, so budget not fully spent. Structures need reform.
Third level	347.0	300.0	Vocationally oriented courses - market incentives already positive.
Strategic Innovation Fund		50.0	Enhance capacity of 3rd level sector & increase post-graduate output for '4th level'.
ET System Development	40.0	40.0	Maintain (Qualifications framework, training of trainers etc.).
Equality	3.8	3.8	Maintain and allow for equality proofing of NDP measures.
Capital Infrastructure – 1st Level	277.0	315.0	Increase to meet demographic needs.
Capital Infrastructure – 2 nd Level	229.0	229.0	Maintain to meet demographic and needs and quality enhancement.
Capital Infrastructure – 3rd Level	70.1	150.0	Increase, demography + investment in postgraduate at '4th level'.
Continuing Education/Training			
Unemployed			
Early School Leavers	95.0	100.0	Maintain, target effective programmes.
Activation & training unemployed	667.4	600.0	Unemployment is low, so reduce, but target effective programmes at those most in need.
Sectoral Entry Training	50.6	50.6	Maintain, but target effective programmes (includes early school leavers).
Employed			
Apprenticeship	207.5	207.5	Maintain but avoid training too many in construction industry.
Ongoing sectoral training	21.8	15.0	This is mainly in contracting sectors.
In-company training	43.5	30.0	Hard to spend in current NDP - divert funding to 'One Step Up' (see below).
Disabilities	60.5	70.0	Needed to respond to policy developments
Adult Literacy & Lifelong Learn	20.0	20.0	Important area but needs strategic plan & integration with other initiatives.
Social Economy	42.0	20.0	
One Step Up training		75.0	ESG Proposal for training of low skilled workers.
	2,411.0	2,697.7	

18.5 Supporting Measures

There are a number of supporting measures that would enhance the impact of existing investment in human capital.

RECOGNITION OF PLC QUALIFICATIONS IN PROGRESSION TO HIGHER EDUCATION

At present qualifications earned in Post Leaving Certificate courses are not evenly recognised and accepted for progression throughout the higher education system. This represents an unjustifiable barrier to skills enhancement and progression and is at odds with the principles underlying the development of the National Framework of Qualifications. All third-level institutions not already doing so should be encouraged to develop systems to recognise such qualifications.

RECOGNITION OF SKILLS OF IMMIGRANTS

Anecdotal evidence from diverse sources suggests that immigrants to Ireland experience difficulties in having their educational credentials recognised by Irish employers and educational institutions. The available empirical evidence does suggest that many immigrants work below their levels of qualification (Barrett, et al., 2006). To the extent that this occurs it has the potential to waste available human resources and may contribute to social exclusion. Further research is needed to examine the extent of the problem and to ascertain how systems can be developed to facilitate the recognition of educational qualifications and skills by educational institutions and employers.

DEVELOPMENT OF INFORMATION DATABASE ON CONTINUING EDUCATION AND TRAINING

Key decision makers in CET, including policymakers, employers and employees all face significant information deficits with respect to a series of key questions:

- What, if any, CVET is needed? Individuals are often not well informed about what training they need. Employers may also have difficulty and this is a particular problem for small enterprises.
- What CVET is available, what is the cost and quality? Individuals also encounter difficulties in assessing which training providers are best and best value. Employers face the same information deficit, and the problem is particularly severe for small enterprises – large enterprises may be better placed to survey the training market.
- What are the returns to investment in CVET? Individuals typically have, at best a rough sense that CVET may be useful and lead to better career prospects, but without any precision. Employers also encounter severe difficulties in assessing the returns to training. Many employers rely on subjective evaluations by trainees on the quality of training

received, but this does not generate useful information on the impact of investment in training on corporate performance – productivity, market share, quality or profitability. States also have difficulty in establishing in a rigorous manner returns to investment in training.

- An effective and appropriate State intervention would help solve these information gaps confronting all key actors in the field. This would entail provision and dissemination of information for employers and employees on levels of skills and competences by sector and occupation, as well as on the cost and quality of training provision. It could also entail investment in research to rigorously assess the returns to training for employers and employees.

19. RESEARCH AND DEVELOPMENT

19.1 Benchmarking Ireland's R&D Performance

Compared to other expenditure items within the current NDP, public spending on R&D is relatively small, accounting for around 3.0 per cent of NDP spending. As was shown in Chapter 2, in economic development terms R&D investments, and their commercial counterpart, innovation, play a central role in the process of wealth creation. At EU level this has been recognised in the EU Lisbon Agenda and in Ireland expenditure has increased rapidly in recent years to address historic under-investment. In considering R&D, however, it is important to recognise that R&D investments are not homogenous, and that different types of investment – undertaken by different types of organisations – have very different economic outcomes. A recent study by Guellec and Van Pottlesberghe (2004), for example which includes Ireland and fifteen other OECD countries emphasises the importance of business, foreign and public R&D for productivity growth. Importantly from an Irish perspective Guellec and Van Pottlesberghe (2004) find the largest productivity effects from foreign R&D followed by public R&D, which includes R&D by public bodies and universities, and then business R&D.⁸⁰ They conclude that: “The social return on business R&D is therefore much greater than the ‘normal social return’...The long-term impact of R&D seems to be higher when it is performed by the public sector than by the business sector, probably because the former concentrates more on basic research, which is known to generate a higher social return” (p. 366).⁸¹

Guellec and Van Pottlesberghe’s study focuses on the strength of the macroeconomic linkages between types of R&D and productivity. Different types of R&D influence innovation and productivity through very different mechanisms, however. Public support for Higher Education Expenditure on R&D (HERD) or Gross Expenditure on R&D (GERD), for example, will generate positive direct expenditure effects, but will also have much more important dynamic effects by generating exploitable knowledge. This exploitation might operate through direct channels such as

⁸⁰ They estimated a Multi-Factor Productivity (MFP) elasticity of 0.45, 0.17 and 0.13 for foreign, public and business R&D respectively.

⁸¹ Other studies have, however, suggested more modest productivity gains from R&D and differential patterns of effects between public and private sector R&D investments (e.g. OECD, 2003).

spin-outs, license agreements, consultancy by universities etc., or indirect through enhancing the skills of research students or through knowledge spillovers. For any given level of R&D spending, the productivity effect of public investments in higher education R&D will, therefore, depend on the effectiveness of universities' technology transfer activities and recipient firms' ability to absorb and exploit new technologies. Locality may also be important, here, as recent research studies have emphasised the greater effect on innovation when firms are closest to R&D performing universities – a type of clustering effect.⁸²

Similarly, public support for Business Expenditure on R&D (BERD) may encourage private sector investments by addressing market failures associated with incomplete information or lack of suitable finance for innovation. Direct, private benefits – i.e. to the R&D performing company – will depend on the degree of additionality in the support provided, firm's innovation capability and its ability to exploit any innovation introduced. Indirect, public or social benefits arise when the R&D or innovation generate either 'rent spillovers' or 'pure knowledge spillovers'. Rent spillovers occur through supply chain links, where quality improvements by a supplier are not fully translated into higher prices for the buyer(s). Productivity gains are then recorded in a different firm or industry than the one that generated the productivity gains in the first place (Beugelsdijck and Cornet, (2001, p. 3). Pure knowledge spillovers, on the other hand, occur when a firm "...investing in research or technology development will end up facilitating other agents" innovation efforts..." (Breschi and Lissoni, 2001, p. 975).⁸³ In each case, however, the ability to realise spillovers will depend on donor firms' ability and willingness to share knowledge, the degree of 'connectivity' between firms, and recipient firms' absorptive capacity.

This discussion is important, in the context of the aspiration that "...by 2010 Ireland will be internationally renowned for the excellence of its research and be at the forefront in generating and using new knowledge for economic and social progress, within an innovation driven culture..." (Forfás, 2004, p. 2). In particular, it emphasises the importance of substantial and consistent investments in higher education or Government R&D in order to generate a stock of commercialisable new knowledge, as well as a flow of trained researchers. Second, it emphasises the need for Irish firms to have a high level of absorptive capacity to enable them to take advantage of the new knowledge being developed in Irish universities, and to absorb and use knowledge developed elsewhere. This absorptive capacity is strongly related to firms' own R&D investments, with numerous studies suggesting the importance of

⁸² See Anselin, Varga and Acs (1997); Zucker, Darby and Brewer (1998) and Fischer and Varga (2003).

⁸³ This facilitation may occur either unintentionally, as it happens when inventions are imitated, or intentionally, or as it may happen when scientists divulge the results of their research.

in-house R&D as a key element of absorptive capacity.⁸⁴ Third, it points to the importance of effective knowledge transfer both between universities and firms and between firms themselves. This will involve university knowledge transfer activities as well as reflecting the extent of both supply-chain and network activity between firms and other organisations.

So, where does Ireland stand relative to its international competitors in terms of public R&D investments, absorptive capacity etc.? In 2002, for example, Ireland's level of investment in HERD (as a proportion of GNP) was 0.31 per cent, broadly in line with that in Spain (0.31 per cent) and Greece (0.29 per cent).⁸⁵ By 2010 the aspiration outlined earlier might necessitate levels of HERD spending similar to those in Canada (currently 0.73 per cent of GDP), Finland (0.67 per cent), Denmark (0.60 per cent) and Sweden (0.83 per cent), which requires more than doubling levels of HERD investment over an eight-year period.⁸⁶ Progress to date has been impressive with the most recently available figures (for 2004) suggesting that HERD increased in real terms by 44 per cent between 2002 and 2004, reaching 0.4 per cent of GNP, and a consequent move up the OECD league table (26 countries) from 19th place in 2002 to 16th place in 2004⁸⁷ (see Table 19.1). Over the same period the number of researchers in the Higher Education sector (HE) in Ireland increased from 2,695 in 2002 to 4,152 in 2004 (Forfás, 2005c, p.3).

As Figure 19.1 indicates levels of HERD spending in Ireland, as of 2004 at least, remained marginally below the EU-25 average and significantly below that in benchmark countries such as Denmark and Finland where HERD spending has also risen markedly since 2000. Despite these increases elsewhere, levels of HERD in Ireland have actually caught-up some ground on these benchmarks. From 2000 to 2004, Irish HERD increased from 71 to 93 per cent of that in the EU-25, from 60.0 to 66.6 per cent of that in Denmark and from 44.2 to 59.7 per cent of that in Finland.

Interestingly, levels of HERD expenditure in Ireland also lag behind those in Northern Ireland and some other UK regions. In 2003, for example, the latest year for which regional figures for the UK are available, around half of UK regions, including notably Scotland at 0.7 per cent, had higher levels of HERD investment than Ireland (see Figure 19.2).

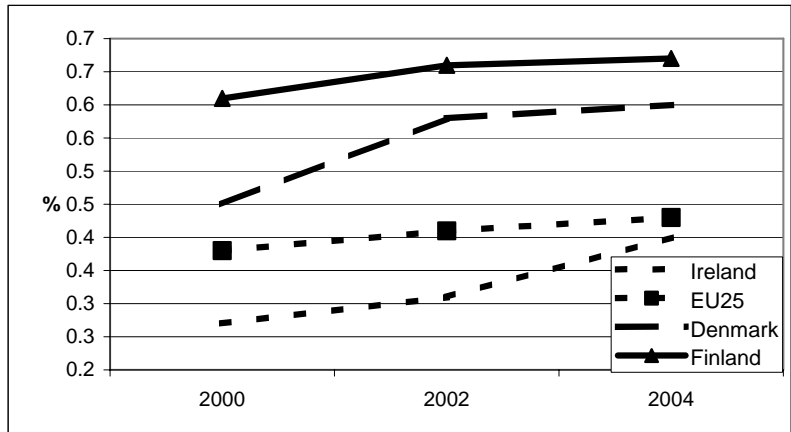
⁸⁴ See for example, Cassiman and Veugelers (2002), Zahra and George (2002) and Schmidt (2005).

⁸⁵ *Source:* Forfás, 2005c; Appendix 5, Table A5.1, p.34.

⁸⁶ Even then, however, viewed from the perspective of knowledge stocks, sustained investment at this level would be necessary if HERD is to contribute the same impetus to innovation in Ireland as in these international competitors where levels of HERD spending have been at similar levels for some years.

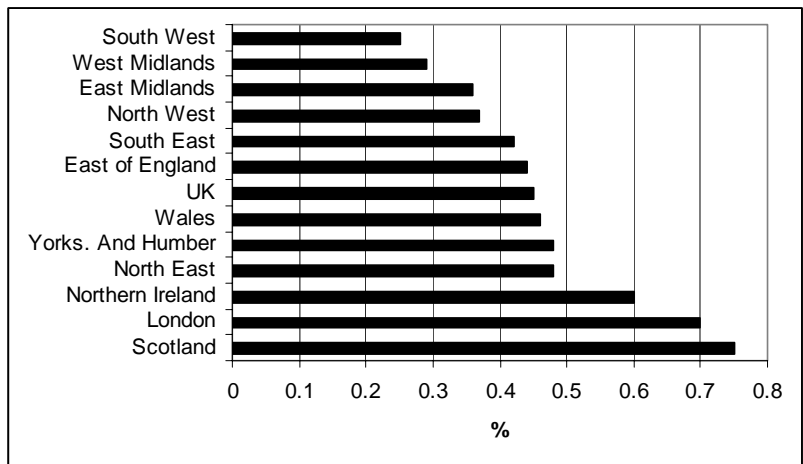
⁸⁷ *Source:* Forfás, 2005c, Appendix 5, Table A5.1, p.34.

Figure 19.1: Higher Education R&D as a Percentage of GDP or GNP: Ireland and International Benchmarks



Source: Forfás, 2005c.

Figure 19.2: HERD as a Percentage of Regional Value Added, 2003



Sources: GB regions – Research and experimental development (R&D) statistics, 2003, Economic Trends 621 August 2005, Office for National Statistics 28. Northern Ireland, NI R&D Statistics 2005, DETI.

Increases in HERD in Ireland since 2002 have been driven primarily by increases in direct Government support, primarily through, SFI, PRTLI and Enterprise Ireland, and indirect public investment (through the HEA).⁸⁸ Overall, HERD spending rose by 44 per cent from 2002 to 2004, with increases in direct Government support of 48 per cent and indirect support of 58 per cent. Notably, Irish firms’ support for HERD remained static over

⁸⁸ This process of increasing direct support for HERD has continued with SFI, for example, increasing its support for HERD from €72 million in 2004 to around €121 million in 2005 (Sources: Forfás, 2005, p.11 and Forfás, 2005a, p.6).

the 2002 to 2004 period having previously fallen by around a quarter from a 1998 high (Forfás, 2005c).

This reflects the wider level of investment in BERD, which as of 2003, was marginally lower as a proportion of GNP in Ireland than in 1999 (see Figure 19.3). At this time levels of Irish BERD were also significantly lower than the EU average and around half those in benchmark countries such as Finland and Denmark where levels of BERD have increased significantly since 1999. This means that over the 1999 to 2003 period levels of BERD in Ireland actually fell from 91.2 to 86.6 per cent of the EU level, 72.5 to 55.4 per cent of the Danish level and from 46.8 to 40.2 of the Finnish level. The levels of absorptive capacity for new technology in Irish firms are likely to be significantly lower than in either Danish or Finnish businesses and, more worryingly, are likely to be falling increasingly behind.

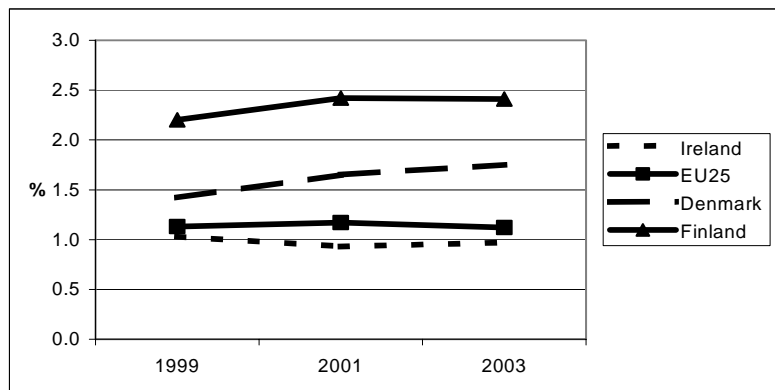
Table 19.1: R&D and Technology Indicators: Ireland and Selected Comparators

	Higher Education R&D % of GDP/GNP	Business R&D % of GDP/GNP	Technology Balance of Payments % of GDP
Ireland	0.40	0.97	-10.46
OECD	0.40	1.45	na
EU	0.43	1.12	na
Finland	0.67	2.41	0.16
Norway	0.48	0.96	0.09
Sweden	0.83	3.32	na
Denmark	0.60	1.75	0.35
UK	0.40	1.26	0.72
France	0.42	1.36	0.11
Germany	0.43	1.73	-0.05
Japan	0.43	2.32	0.19
Korea	0.27	2.01	-0.40

Notes and Sources: HERD and BERD figures from Forfás (2005c) and Forfás (2005b). Technology BOP as a percentage of GDP in 2003 (Denmark 1999).

Source: OECD *Science, Technology and Industry Scoreboard*, 2005.

Figure 19.3: Business R&D as a Percentage of GDP or GNP: Ireland and International Benchmarks



As well as being relatively low by international standards, BERD expenditure in Ireland has a somewhat skewed distribution with an unusually strong concentration in the high-tech sectors and foreign-owned firms. In terms of sectoral concentration, for example, 72.6 per cent of R&D spending in 2003 was concentrated in software/computer related activities, electrical and electronic engineering and pharmaceuticals compared to 42.8 per cent in EU-25 (Forfás, 2005b, p. 13). R&D activity is also very concentrated in foreign-owned firms (72.1 per cent or 252 firms) with 27.9 per cent of BERD in 873 Irish-owned businesses. This means that average R&D expenditure per Irish R&D performer was around €340,000 compared to an average of €3.1 million per foreign-owned business. Two implications follow. First, absorptive capacity in firms in Ireland is likely to be concentrated in the high-tech sectors where R&D is greatest. Second, the absorptive capacity of foreign-owned firms is on average likely to be much greater than that of Irish-owned firms.

The profile of R&D and technological activity in Ireland also stands out from other developed OECD economies in two other respects: low levels of intra-mural R&D spending by Government and its dependency on external research activity.⁸⁹ In 2004, for example, intra-mural R&D spending by Government in Ireland amounted to €138.4 million, equivalent to 0.11 per cent of GNP compared to the EU average of 0.25 per cent and an OECD average also of 0.25 per cent. This suggests, first, that historically Irish Government departments are under-spending on intra-mural R&D compared to their equivalents elsewhere to the potential detriment of effective evidence based policymaking. Second, it also means that public sector R&D in Ireland is more strongly concentrated in the higher education sector than that in many comparator economies. In terms of external dependency, Table 19.1 provides figures for the Technology Balance of Payments (TBOP) for different countries, which reflects the balance of inward and outward knowledge transfer through patents, licensing etc. Countries such as Finland and Denmark with historically higher levels of business and university R&D both have small positive TBOPs, while Ireland has a significant TBOP deficit (i.e. net inward transfer) equivalent to 10.5 per cent of GDP. While these figures have to be regarded with some caution, the message is clear: over the last decade Irish growth has relied to a massive extent on inwards technology transfer and to a lesser extent on Irish-owned technology.

The aspiration expressed by the Inter-Departmental Committee on Science Technology and Innovation (Forfás, 2004) is clearly to move away from this 'innovation by invitation' strategy and towards a 'Nordic' development model based more strongly on indigenously developed technology. Important steps towards this goal have been taken through the current NDP such as Science Foundation Ireland

⁸⁹ For a more detailed account of these comparisons see Fitz Gerald *et al.* (2003), Appendix 7.

(SFI), Programme for Research in Third Level Institutions (PRTL) etc. In the next section we review the evidence to date on the effectiveness of these measures and identify priorities for future development. In large part, our views reflect those of the Inter-Departmental Committee on Science Technology and Innovation (Forfás, 2004), emphasising the need for a continuation of significant investment in HERD, increased support for BERD to address issues of absorptive capacity and institutional support for the Higher Education Institutes (HEIs) to develop their commercialisation activities.

19.2 Assessing Policy Effectiveness

Any assessment of policy effectiveness in terms of public R&D investments is complicated by the uncertain and highly skewed returns from different R&D projects but also because of the relatively long time scales, which attach to R&D investments, particularly those in basic research activity. In the context of Ireland, the situation is complicated further by the rapid development of public sector support institutions for higher education R&D, in particular, since 2000. New research councils, new funding streams through the Higher Education Authority (HEA) as well as Science Foundation Ireland (SFI), have all been established over this period.

While these institutional developments are positive, reflecting the developing maturity of the Irish research system, their newness means that any evaluation inevitably reflects operational outputs rather than economic outcomes. The recent International Review Panel assessment of SFI, for example (Forfás, 2005a) has much to say about research quality and bibliometric indicators but inevitably very little about the added value to the Irish economy of SFI investments. Similarly, evaluations to date have tended to be piecemeal rather than systemic in nature. The evaluations of PRTL and SFI, for example, both acknowledge the importance of potential synergies or co-ordination between the initiatives but the assessments were undertaken separately. Operationally, this is clearly an easier approach but may fail to identify overlaps or conflicts between individual measures. In the innovation systems tradition a better approach going forward may, therefore, be a more systemic approach to evaluation, which considers the whole range of support for HERD in Ireland. For the moment, however, we can only draw on the evaluative material to date relating to supports for HERD, Business R&D (BERD), GERD and knowledge transfer activity.

SUPPORT FOR HERD

Support for HERD is driven largely by the public sector and therefore has substantial budgetary implications. Targets suggested in Forfás (2004) are that national investment in HERD and Government R&D should increase to around 0.8 per cent of GNP by 2010, which would amount to around €1.1 billion (Forfás, 2004).

As Government R&D is unlikely to increase significantly over this period relative to GDP, the majority of the increase will come through an expansion of public investments in HERD either through increases in the HEA block grant or 'direct' funding initiatives through the NDP. In 2004, 41 per cent of Government support for HERD was supported by 'direct' Government support through the NDP (primarily SFI and PRTLTI) with a further 41 per cent supported by indirect support, primarily through the HEA block grant (Forfás, 2005c). Assuming a continuation of Government R&D at the current level of 0.15 per cent of GDP (Forfás, 2004, p. 25), and a maintenance of the division of Government support for HERD remained similar this would suggest NDP expenditure on HERD support of around €400 million per annum towards the end of the planning period. An additional investment of a broadly similar size would then need to be provided through the HEA as part of the block grant.

In terms of the 2000-06 NDP, the main direct supports for HERD in Ireland were:

- ***Science Foundation Ireland*** which began work in 2001 following a foresight exercise with a focus on establishing world class research capability in niche areas of ICT and bio-technology. Over the period of the NDP, 2000-06, around €650 million was committed to supporting SFI, and as of 2005: SFI had established 163 research groups led by Principal Investigators (PIs), of whom 34 were new to Ireland, and centres employ over 1,150 research staff (around a fifth of the entire research staff in Irish HEIs) and around 450 Ph.Ds. Six Centres for Science Engineering and Technology (CESTs) in core thematic areas.
- The ***Programme for Research in Third-Level Institutions*** (PRTLTI), operated by the Higher Education Authority, was established in 1998 with Exchequer support and contributions from Atlantic Philanthropies to support high quality basic research in third-level institutions. The overall financial commitment over the period of the current NDP was around €698 million. Headline figures as reported by International Assessment Committee in 2004 included €135 million of new capital and €260 million for new research buildings along with 34 new academic appointments (14 professorial) as well as over 1,500 new postdoctoral or postgraduate research appointments. Other outputs include a range of new courses as well as extension of collaboration between institutions and internationally.
- Two new research councils were also established in 2000/01: ***The Irish Research Council for Science, Engineering and Technology*** (IRCSET) and the ***Irish Research Council for Humanities and Social Sciences*** (IRCHSS) to support postgraduate and post-doctoral research as well as providing some project based research

funding. Both research councils have annual budgets of around €10 million.

Although it is early days to be making judgements about any of these initiatives, recent evaluations have been positive about scheme outputs, and suggested the need for continuing funding in order to achieve sustained gains. An International Review Panel conducted in 2005, for example, examined the work of SFI and concluded: “impressive progress towards developing a strong research capability in biotechnology and ICT the existence of SFI funding is having a positive catalytic effect on the performance of research in its two fields”. The review team argued that “SFI investments are continued and made an established part of the innovation system” (Forfás, 2005a, p. 21). Earlier an International Review Committee also concluded that “...investment in PRTL is fully justified and should be continued the important goals of PRTL will only be achieved if funding on a significant scale is sustained over an extended period for at least another ten years” (HEA, 2004, pp. 46-47).

A key output of both the SFI and PRTL initiatives, supported by the research councils has been the increase in postgraduate and postdoctoral research training in Irish HEIs. Progress to date in this area has been impressive as both the review of SFI and PRTL suggest. Continued development of skilled researchers in Irish universities, and their retention within the Irish National System of Innovation (NSI), will be necessary if national targets on both HERD and BERD are to be met. Research trained staff also play a key role in increasing the absorptive capacity of firms and provide a strong inter-personal link between firms and universities.⁹⁰ This type of personal linkage has repeatedly been shown to be an important element of knowledge transfer activity.

Notwithstanding some administrative and operational criticisms on each scheme, there are positive arguments for continued NDP support for both SFI and PRTL.

Three clear areas for development are suggested by the evaluations, however.

It is vital to ensure that these investments in R&D activity are of maximum benefit to the Irish economy. Links to advanced postgraduate level (4th level) skills and human resource development are already relatively well developed in both measures, and provide a key rationale for continued investment in this area. Less well developed and under-resourced are measures to promote commercialisation and the exploitation of research results. Proposals to address this are discussed in more detail below.⁹¹

⁹⁰ In this respect it is worth noting that recent research has shown a low level of interaction between businesses in Ireland and HEIs (see Jordan and O’Leary, 2005).

⁹¹ The need for some emphasis on improved commercialisation of outputs is reinforced by evidence from the BERD survey, which suggested that the proportion of firms active in higher education collaboration has decreased from 30 per cent in 1999 to 24 per cent in 2003 (Forfás, 2005b, page 6).

It is necessary going forward to ensure the coherence and complementarity of NDP supported measures as they mature, particularly if budgets are going to be expanded. This would address a point made in the PRTLTI evaluation, that it is difficult to understand how PRTLTI integrates with the wider innovation system (HEA, 2004, p. 46).⁹² There is a similar weakness of understanding of how the innovation systems of Ireland and Northern Ireland work together. Of particular importance here are the potential for identifying and exploiting synergies between policy measures, and ensuring an appropriate expenditure balance between the focused and more strategic ‘world-class’ research ambition of SFI and the more broadly based ‘international-standard’ objectives of PRTLTI.

There is a need to develop a clear rationale for the prioritisation of sectoral R&D investments. Tradable services, for example, are likely to generate most new economic activity in years to come but are only weakly supported by current R&D investments under the NDP while some sectors with more limited prospects have benefited from ear-marked financial allocations.

SUPPORT FOR BUSINESS R&D

A more difficult policy challenge than that associated with higher education R&D is the need to increase through, both broadening and deepening, the level of business R&D spending in Ireland. The Inter-Departmental Group on Science, Technology and Innovation (IDGSTI) emphasises the refocusing of public support for industry on R&D, suggesting an increase in the proportion of development budgets allocated to R&D support from around 3 per cent of State-aid to match the 30-40 per cent in leading EU competitors (Forfás, 2004, p.24). The magnitude of this increase is necessary due to the scale of the expansion required in business R&D, and to the currently low level of support provided by the Irish agencies for R&D. More specifically, the IDGSTI advocate an increase in business R&D to 1.7 per cent of GNP (around €2.5 billion per annum) by 2010, up from (€1.01 billion in 2003).

In the context of essentially static levels of BERD relative to GNP over recent years (see Figure 19.3) and the programme of support, which has been in place since 2000 this target is hugely ambitious. Support for BERD in the NDP 2000-06 was provided through a range of demand-led measures operated by Enterprise Ireland. The key activities were:

- The *Competitive RTDI Scheme*, which provides support for R&D projects as part of an integrated package of assistance through the Business Development Model, an approach often cited as reflecting international leading practice. Interim evaluation of this measure suggested generally positive outcomes both in terms of increasing

⁹² An important start has been made in this area with the establishment of the interdepartmental committee for SSTI and the Cabinet sub-committee.

firms' R&D investments and introducing new firms to undertaking R&D (see, for example, Indecon, 2003). The indicative budget over the 2000/06 NDP for the RTDI scheme was €180 million.

- **Measures to Promote Collaboration in R&D** have also proved relatively successful, although the mid-term review notes progress in developing national collaborations to be stronger than that of international collaborations. Collaboration measures had an indicative budget of €255 million over the 2000/06 NDP.
- Other measures, also operated by Enterprise Ireland were intended to support the development of **Innovative Management** (€45.5 million) and **R&D capability** (€91 million).

Overall, these measures provide a fairly comprehensive support for business R&D focusing both on the need to develop individual firms' R&D capability and build research collaborations. Moreover, the original rationale for each of these measures still holds good, with the continued need to build the volume of R&D activity, strengthen firms R&D capability and develop denser patterns of association between firms and between firms and research organisations. The measures currently in place also have the key advantage of being well understood by firms. This suggests an approach based on continuity rather than change, and a development and expansion of current measures under the new NDP.

SUPPORT FOR PUBLIC R&D

Other measures within the current NDP focused on targeted support for R&D in the food, marine, forestry, agricultural and environmental sectors. While recognising the importance of these sectors within the Irish economy and their continued potential to generate export earnings, there seems little specific economic justification for their prioritisation, particularly in the context of the goal of moving Ireland rapidly towards a knowledge economy. Having said this, there is a clear need to invest in intra-mural Government R&D in Ireland to support evidence-based policymaking, and to ensure that the benefits of investment in R&D in these sectors in the NDP 2000-2006 are fully captured by Irish firms. There is also a need to ensure that more basic research conducted in these sectors is of international quality. These goals suggest the potential value of a reconfiguration of investment priorities in these sectors with:

- Support being provided for R&D, which supports policy development and implementation in these areas.
- Focus on knowledge transfer and adoption to capitalise on research investments under the current NDP.

- Opening up of competitive mainstream funding sources (e.g. PRTLL, SFI) to allow independent research institutes to compete for research funding alongside the HEIs.

Strategic arguments for a specifically targeted programme of R&D focused on environmental technologies, sustainability and energy self-sufficiency are much stronger. In particular, Ireland's current dependence on internationally traded energy is high by international standards, and research, which can support moves towards energy self-sufficiency, is strategically important. More generally, such research may contribute to Ireland's ability to meet current and future international commitments on greenhouse gases etc., and help to ensure the sustainability of commercial development. To achieve these objectives, research in this area will need to be complemented by effective technology transfer and adoption measures to ensure take-up and implementation of research results.

In addition to these sectoral priorities there is also a clear need to remedy under-investment in R&D in Ireland to support other elements of public service such as health. Benchmarking expenditure levels in this area is difficult, but figures from the HRB suggest that funding for health research in Ireland is one-sixth of that in the UK as a proportion of the health budget (0.25 in Ireland compared to 1.6 per cent of NHS spending). The need to invest in this area has recently been recognised by the decision to support the Health Research Board's Investment Programme in Research for Health and Wealth. Further investment here is necessary, however, to support health care provision in Ireland, to attract and retain highly qualified staff and to complement other public investments in R&D particularly in aspects of biotechnology.

19.3 Investment Priorities

Our recommendations for investment priorities reflect three main influences. First, the aspirations of the Enterprise Strategy Group (ESG) and Interdepartmental Committee on R&D, which themselves reflect the wider aspirations of the EU Lisbon Agenda. Building on investments to date, these essentially aim to achieve a step change in the level of R&D investment in Ireland over the period of the NDP 2007-2013, and the measures we are suggesting are designed to support this aspiration. In particular, we envisage substantial increases in public investment in both higher education R&D and support measures for private sector R&D activity and the continuation of funding for public R&D to support policy development and implementation. Following the recommendations of the ESG we are also recommending a continuation of most of the current funding mechanisms for R&D and innovation implemented under the NDP 2000-05 (Enterprise Strategy Group, 2004, pp 65-76).

Second, our recommendations reflect the current strengths and weaknesses of the Irish innovation system outlined earlier, as well as the evaluation and profile of investments in the NDP 2000-05.

These points are important, as recent studies have emphasised the importance of systemic and institutional competencies in creating competitive advantage (e.g. Cooke and Leydesdorff, 2006). For example, research by Rodriguez-Pose (1999) and Fernandez *et al.* (1996) suggests that in an economy dominated by small and medium-sized firms with an intermediate technological and industrial base the returns may be greater from more applied research, which is more easily absorbed by local firms. A similar point is made by Oughton *et al.* (2002), who consider what they call the ‘regional innovation paradox’, which they define as “...the apparent contradiction between the comparatively greater need to spend on innovation in lagging regions and their relatively lower capacity to absorb public funds earmarked for the promotion of innovation...” (p. 98). Other related points are made by Edquist (2004) who argues for the importance of ‘coherence’ in defining organisational roles within a systemic approach. ESG (2004) argues that in Ireland a lack of ‘cohesion or strategic focus’ is reducing the effectiveness of current innovation support (p. 66).

Third, recent reports on SFI, PRTLI as well as the ESG (2004) report emphasise the need to increase the effectiveness of the commercialisation activity in Ireland’s universities. This has the potential both to increase the value added derived from public funding of university research activity but also to help to embed mobile firms in Ireland by increasing the strength of their relationships to local knowledge providers. With some notable exceptions, this is one element of the Irish innovation system, which is under-developed compared to that in other European economies. Our recommendations here, therefore, draw on leading practice from elsewhere; focusing on the UK experience of the Higher Education Investment Fund (HEIF).

Within the RTDI priority we identify seven sub-priorities:

- Focused International Research – to continue to develop and expand world-class research capability in sectors of strategic importance to economic development in Ireland.
- Broadly-based International Research – to continue to upgrade the research capability of Irish HEIs across the range of subject areas and disciplines.
- Research to Support Public Policy – to contribute to effective, evidence based policymaking across a range of key policy areas.
- **Commercialisation** – to develop and extend current commercialisation activities within the higher education sector.
- **Business R&D** – to increase the number of R&D performing companies, and increase R&D intensity among existing R&D performers.
- **Collaboration** – to increase the strength of national, North-South and international networks and collaboration in R&D and innovation.

- ***Coherent Development*** – to ensure greater consistency and synergy between the role of different actors within the Irish innovation system.

Objectives 1 to 6 are dealt with in this section, having expenditure implications for the NDP, which are summarised in Table 19.2. Objective 7 is discussed in the supporting measures section below as it relates to institutional structures and building organisational competencies, which has less clear budgetary implications.

Under the ***Focused International Research*** sub-priority we recommend continued and expanded funding for SFI. This reflects the consensus view of the ESG and the International Review Group who recently considered the performance of SFI. Continuation of this funding is important to consolidate the value of investment to date and continue to enhance Ireland's position as a centre for world-class research (Table 19.2). Alongside the expansion of funding there is a need to ensure the commercial relevance of SFI investments and that SFI's funding priorities change in a direction, which is consistent with national development priorities, and the remit of other R&D support organisations and particularly the research councils. To support the budgetary expansion we therefore suggest that:

- as in EU Framework grants, groups funded by SFI should be required to develop an exploitation plan by the mid-term of any award as a condition of funding;⁹³
- where appropriate, SFI funding be accessible to publicly funded research groups where it is applicable;
- SFI's investment priorities should be set by an external foresight group with a system-wide perspective, perhaps under the auspices of Technology Ireland (see below);
- consideration be given to how SFI's agenda might strengthen North-South co-operation.

Our recommendations for supporting more ***broadly based research of international standard*** also emphasise continuity of measure while recognising the need for an expansion of public support. This reflects the recommendations of the ESG (p. 65) as well as more recent evaluative comments on the value of the PRTL (HEA, 2004). As the PRTL evaluation emphasises, continuation of funding in this area is necessary to achieve the step-change in the R&D capability of higher education institutes in Ireland envisaged in 'Ahead of the Curve' (Table 19.2). As with the expansion of SFI resources, however, there is a need to maximise the economic potential and relevance of R&D while recognising the wider cultural and educational benefits of curiosity driven research.

⁹³ We recognise that in some cases SFI research is fundamental in nature and, therefore, may not have any immediate or short-term commercial application. Even where research is 'basic', however, we believe it is appropriate to ask research teams to consider potential exploitation routes even if this is longer term.

We therefore suggest that alongside increased budgets for PRTL and the research councils that:

- projects be required to develop explicit exploitation plans and that these should be part of funding requirements;
- where appropriate research funding should be available both to HEIs and other publicly funded research groups.
- that priorities for PRTL and Research Council funding should be considered by an external foresight group. In each case we also see the potential for increased North-South co-operation.

In addition to boosting the level of HERD in Ireland, the measures in this priority also play a key role in generating high-level skills in Ireland. This is a matter of substantial concern especially given recent studies, which have emphasised potential skill shortages in the future. McDowell and Ruane (2004), for example, suggest that from 2004-2014 labour demand in Ireland for those with third-level qualifications will be around 30,000 higher than will be met by domestic supply and that this gap will need to be filled by in-migration.⁹⁴ Barrett *et al.* (2005) echo a similar point, emphasising that 54 per cent of migrants to Ireland have third level qualifications compared to 27 per cent of the native population but that currently migrants are under-utilised in the Irish economy, and would add 3.5-3.7 per cent to GDP if employed at an appropriate level. More specifically in terms of research skills the Expert Group on Future Skills Needs (EGFSN) publication *A Model to Predict the Supply and Demand for Researchers and Research Personnel*, (2004) points to a net shortage of 609 Ph.D graduates and 2,947 non-Ph.D graduates in Ireland over the 2004-2010 period. Two factors are important here: first, the capability of the research councils and PRTL to expand the training capacity of the Irish University System and second the importance of attracting and retaining high quality research trained scientists from elsewhere. As the EGFSN (2004) argues: “it seems highly appropriate to develop a migration framework to facilitate at the in-migration of high-skilled labour from countries outside the EU” (p. 115). To help meet future skill demands we recommend a substantial expansion of the role of the research councils over the NDP period and suggest that assessments of future skills be carried out at the All-Ireland level.

In terms of **research to support public policy** we recommend the continuation of current support for targeted programmes in the agriculture, marine and forestry areas albeit at a level slightly below that in the 2000-2005 NDP. In addition, we would wish to see research teams in these areas able to compete for research funding from the growing resources of the mainstream funding sources (i.e. SFI, PRTL) and, if appropriate, the research councils. This approach, while a clear break with the past, will provide continued support for the development of evidence-based policy, help to ensure the international quality of research in these areas, and

⁹⁴ This point is also made by Sexton *et al.* (2004)

provide the scope for the attraction of increased R&D funding for strong areas of research activity.

Our recommendations in this area also include provision for an expanded programme of research emphasising environmental sustainability and measures, which can support energy self-sufficiency (Table 19.2). This will continue and develop research supported under the NDP 2000-05. We envisage this as a strongly applied priority supporting action research projects, which have a demonstrable contribution to sustainable development or energy self-sufficiency. This will support medium-term macro-economic policy objectives as well as helping to reduce Ireland's international exposure on energy.

Specific support is also provided here to develop the research programme of the HRB. The aim is to support the HRB in putting in place a research base, which can contribute to improvements in the quality and effectiveness of health service provision in Ireland and also expand Ireland's health research capacity. As was highlighted in Chapter 21 health policy related research is required in a number of areas. Key issues here reflect demographic changes such as ageing as well as the need to maximise the efficiency of health service provision through effective intervention and resource management.

In terms of *Commercialisation*, our recommendations build on previous investments in R&D activity in the NDP 2000-06 and leading practice elsewhere. The need for developments in this area has recently been stressed by both the SFI and PRILI review bodies as well as the ESG. The latter in particular recommend the establishment of "...a *Competitive Innovation Fund* (CIF) for higher education institutions to encourage them to further exploit technology and deliver innovative services to enterprise. A proportion of this fund should be ring-fenced to support the institutes of technology..." (p. 76). In this area policy in England has developed rapidly, and current proposals there relate to Round 3 of the Higher Education Innovation Fund (HEIF3). This might provide a model for a development in Ireland. HEIF3 support comprises two elements: a formula funding element based on the characteristics, research intensity and scale of the HEI itself (75 per cent), and a competitive element for collaborative bids (25 per cent of the budget). This mix has proved positive, providing continuing 'core funding' for universities' commercialisation activities as well as stimulating creative collaborative bids, often based on leading international practice in commercialisation. Current levels of support for HEIF3 in the UK amount to around 3 per cent of HERD spend and a broadly similar level of expenditure is being recommended here. This would support the development of current proposals from Department of Enterprise, Trade and Employment for a competitive fund to support the function of the technology transfer offices in the HEIs. In addition to this competitive programme for HEIs we envisage smaller competitive and targeted programmes (Innovation Funds) for commercialisation initiatives designed to build on the R&D activity

undertaken under the food, marine technology, agriculture, forestry, energy and health sector programmes (Table 19.2).

Our recommendations on support for **Business R&D** and **Collaboration** follow the general principles for best practice in support of business R&D suggested in EU (2003). This advocates the use of a relatively small number of flexible policy instruments, which are readily understood by firms and are supported by Government on a long-term basis to reduce potential uncertainty. As indicated earlier our feeling is that the current suite of support instruments operated by Enterprise Ireland is with some refinement appropriate for this purpose. We, therefore, recommend the continuation of the main support measures developed and embedded under the current NDP. Budgets for these schemes will have to increase substantially, however, to support the levels of BERD recommended in the report of the Inter-Departmental Working Group (Forfás, 2005b).

We also support the recent adoption by Enterprise Ireland of a suggestion by the ESG for a specific measure intended to develop innovation networks in Ireland. This type of initiative is important as it can help with both technological and non-technological innovation and may therefore be appropriate both to manufacturing innovation as well as that in services. We recommend support for this measure, which we feel should be competitive in nature and have a clear emphasis on the joint commercialisation of research results. We have set support for this measure at the level suggested by the ESG and would be keen to encourage some North-South co-funding of this measure (Table 19.2).

In terms of support for Business R&D and Collaboration a major concern relates to the ability of the agencies as they are currently staffed to deliver effectively much expanded programmes of R&D support. In essence this reflects the changing mission of these agencies as they move from providing mainstream business support towards a role as technology support agencies, with a corporate focus on supporting R&D and innovation. Casual empiricism suggests, for example, that TEKES the Finnish Technology Agency has a much larger proportion of staff with higher-level science qualifications than either the grant administering elements of Enterprise Ireland or IDA Ireland. A higher proportion of staff with advanced skills may allow more rapid evaluation of proposed projects as well as the earlier identification of potential research synergies or applications between proposed project or firm expertise. Therefore, alongside the expansion of resources to support BERD a rigorous benchmarking examination of the qualifications of agency staff in Ireland compared to those in leading practice countries (e.g. Finland, Denmark) should be carried out to ensure the efficient allocation of resources.

Finally, as was pointed out in the *Mid-Term Evaluation* of the current NDP (see Fitz Gerald *et al.* 2003), progress with regard to the R&D measures was very uneven across the two NUTS 2

regions, with disappointing progress in the BMW region. This may be due to the spatial distribution of HEIs, a lower absorptive capacity of firms in less developed regions or poor links between HEIs and firms in those regions.⁹⁵ Therefore, in order to support the NSS more attention needs to be paid to the regional dimension of R&D policy.

In the analysis of regional development (see Chapter 6) we showed that while the proportion of the population with third-level qualifications has increased substantially in all regions, those regions that had a higher proportion to start with have done better. In other words in relation to advanced skills there is a process of divergence which reduces the relative capacity to innovate or absorb innovations in the weaker regions. The cause of this is likely to be a circular process where graduates have the best employment opportunities in the more developed and particularly urban areas so that they are attracted to these areas following graduation. This reduces the total number of graduates in other regions, which may deter new high skills investment in these regions, thereby reinforcing advantage of the more developed regions. This type of cumulative causation process, which has been highlighted in the literature on growth and economic geography, is difficult to break (see Chapter 2).

In the light of poor progress in the current NDP and the underlying weakness with regard to human capital and innovation capacity of the less urbanised regions more modest goals need to be set for these. In this respect the role and capacity of the Institutes of Technology, which serve most of the smaller gateways, needs to be reassessed. These should play a central role in building both absorptive capacity in firms and carrying out research of their own. The latter will require a strengthening of the research capacity of the ITs through stronger links with the universities.

19.4 Supporting Developments

The investments in supporting R&D and innovation envisaged for the new NDP represent a significant public expenditure commitment. There is, therefore, a need to develop an effective system of policy development and evaluation to ensure that resources are allocated effectively and their benefits in terms of wealth creation maximised. This is complicated in practice because of the number of agencies, departments and organisations involved in supporting R&D and innovation as well as potential conflicts and overlaps between institutional agendas.

⁹⁵ The Gateways study (Fitzpatrick Associates, 2005c) showed that 57.5 per cent of full-time researchers in the HEIs were working in the Greater Dublin Region and a further 37.1 per cent were working in the main gateways Cork, Limerick and Galway. Thus, other areas account for just 5.4 per cent of full-time researchers.

Table 19.2: RTDI Priority – Summary of Recommendations

Sub-Priority	Measures	Recommendation	Expenditure 2006 €million	Average Recommended Expenditure 2007-2013 €million
Focused International Research	SFI	Increase	147	180
Broadly-based International Research	HEA programmes (incl. PRTLII)	Increase	117	160
	IRCSET	Increase	31	30
	IRCHSS	Increase		15
Research to support policy	Agriculture RTDI	Reduce	9	6
	Food RTDI	Reduce	14	10
	Marine RTDI	Reduce	4	3
	Forestry RTDI	Reduce	4	3
	Environmental/Energy RTDI	Increase and Re-orient	16	23
	Health RTDI (HRB)	New	0	20
Commercialisation	Competitive Innovation Fund (HEIs)	New	0	15
	Agricultural Innovation Fund	New	0	1
	Food Innovation Fund	New	0	1
	Marine Sector Innovation Fund	New	0	1
	Forestry Innovation Fund	New	0	1
	Environmental Innovation Fund	New	0	2
	Health Innovation Fund	New	0	1
	Business R&D	Competitive RTDI	Increase substantially	
	R&D Capability	Increase substantially	254 for all three measures	50
	Innovation Management	Increase substantially		33
Collaboration	National and International Collaboration Innovation Networks	Increase substantially	21	65
Total			617	822

Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

Government intervention in this area has traditionally been justified in terms of market failure, which leads to sub-optimal levels of private R&D investment. More recent thinking, however, has emphasised the partial nature and inadequacy of such criteria for intervention, stressing instead the role of the Government in addressing ‘system failures’. OECD have summarised the situation as follows, arguing that Governments should “...address systemic failures that block the functioning of innovation systems, hinder the flow of knowledge and technology and, consequently, reduce the overall efficiency of R&D efforts. Such systemic failures can emerge from mismatches between the different components of an innovation system, such as conflicting incentives for market and non-market institutions (*e.g.* enterprises and the public research

sector), or from institutional rigidities based on narrow specialisation, asymmetric information and communication gaps, and lack of networking or mobility of personnel”.⁹⁶ This reflects issues of policy coherence and institutional capabilities, which the ESG group argued was reducing the effectiveness of current policy initiatives in Ireland (pp. 64-65).

This points to the need for some form of overarching body which can adopt a strategic approach to the development of the Irish innovation system, and which has sufficient power to alter expenditure priorities and agency remits. This is hinted at in the suggestion by the ESG for ‘Technology Ireland’ and welcome progress has been made in this direction with the establishment of the inter-departmental group for SSCI. Issues remain in this area, however, and we recommend that alongside the expenditure increases suggested earlier some benchmarking activity is undertaken comparing NSI governance in Ireland to international best practice.

At a more local level the capabilities of specific organisations will also need to change. Concerns about the delivery capability of the industrial development agencies as their agendas move increasingly towards supporting R&D have been mentioned earlier. Similar concerns may also be registered about the HEIs as they are asked to further expand and develop rapidly their research and commercialisation activities. In both cases considerable institutional investment and restructuring is likely to be necessary involving both staff re-training and recruitment and we recommend that consideration is given to both issues in future strategic planning exercises.

⁹⁶ *Source*: OECD (1999), p. 10.

20. PRODUCTIVE SECTOR

Strong growth over the recent past has been generated through the excellent performance of firms in many sectors. However, there is substantial heterogeneity across sectors with some growing extremely rapidly while others are not performing well. In general it must be the aim of policy to best utilise the resources of the country and this means that resources that are locked-up in declining sectors should be released for use in growing sectors, which inevitably carries some restructuring costs. Especially in the case of human resources workers will only be able to make the transition from a lagging to a growing sector if they have the required skills. Thus the investment in training and education outlined in the human resources chapter above has an important role to play. Experience from other countries shows that supporting lagging industries slows down the transition towards better economic performance. Thus rather than supporting lagging sectors, support should be given to restructuring measures.

An important development in the changing structure of the economy is the growth of services. Basic manufacturing, not just in traditional sectors but also in high-tech sectors is coming under increasing pressure due to a lack of cost competitiveness. Movement of economic activity towards un-traded and especially internationally traded services has to date compensated for any negative impacts from this development. For the future, economic growth will see a greater emphasis on growth in traded services, though high-tech manufacturing will still remain very important to the future prosperity of the country. This shift in emphasis, with a greater role for the services sector, needs to be reflected in general industrial policy and in human resource development. A further notable development has been the strong growth of construction which, as was outlined above, is having a negative impact on other sectors, which when the building boom eventually comes to an end will face significant adjustment costs.

The rationale for public intervention in the provision of infrastructure, education and training and R&D is established through the public good qualities that characterise these investments. When it comes to the various activities that are aimed at supporting the productive sector we adopt a different approach. Thus, need or importance in itself does not justify public investment. Rather, the case for public intervention has to be made

on the basis of market failure; otherwise a case could be made for public intervention in all productive sector activities.

Structural difficulties in an industry do not mean that there is market failure, as these structural problems may simply be due to changes in the competitiveness of that industry arising from international market conditions. Indeed well functioning markets may expose structural weaknesses more readily. With the growth of the economy over the last decade and a half, wage rates have increased in response to increasing demand for labour. In this respect it is useful to keep in mind the steady change in the internationally tradable side of the economy towards the services sectors and the high-tech manufacturing sector and away from the traditional manufacturing and primary sectors. As a consequence of the overall economic success of the country, some sectors have become uncompetitive. Devoting public resources to supporting such sectors would be inefficient as public funds have to be raised through taxes, thereby raising the overall tax burden. Rather than devoting public funds to supporting declining sectors they should be re-directed to investment areas with good growth prospects.

If a market failure cannot be identified in any aspect of the productive sector there is no justification for public intervention. The nature of that market failure should determine the nature of the intervention and the length of time over which the intervention needs to be in place and the interventions can be classified into public good, corrective pricing, or targeted interventions. This distinction is important since, for example, a targeted intervention should only be in place for a limited period. Thus, for example a targeted intervention may be required to stimulate a particular activity, which is currently not taking place because private agents lack sufficient information. Once the intervention overcomes this information deficit it will no longer be required.

This approach necessarily limits the role of public intervention in the productive sector and therefore the range of activities reviewed here. In an era of full employment and rapid growth, substantial public sector involvement in the productive sector appears inappropriate. Rather, the role for Government is to create the right environment within which the productive sector will flourish and resources are allocated efficiently. The proposed investment in the key growth drivers, such as infrastructure, human resources and research and development, proposed in this study will be vital in improving the operating environment for the productive sector. These investments by and large will yield a higher return, as they are there for the wider economy rather than a few selected sectors. Nevertheless, there are some important areas where continued public investment is warranted.

Overall, the sectoral coverage of the supports to the productive sector under the current NDP is interesting. The sectors specifically covered are agriculture, forestry and fishing, food, tourism and the film industry. In quite a number of these sectors the prospects are not bright and, as a result, further investment may not always produce a reasonable return on public funds. Perhaps a more

appropriate approach in the next NDP would see the prioritisation of sectors with good future growth prospects.

ENTERPRISE STRATEGY GROUP REPORT

The most important report on the development of the Irish productive sector is the Enterprise Strategy Group Report – *Ahead of the Curve* (2004). This report highlighted a number of challenges, which need to be met if living standards are to continue improving. These challenges include:

- globalisation,
- increasing cost base,
- declining corporate tax advantage,
- average performance of indigenous enterprises,
- EU enlargement,
- demographic change,
- changes in EU policy (State aid).
- environmental issues.

Furthermore, major changes including the shift towards services and the growing importance of knowledge as a driver for economic growth will shape the future economic development in Ireland.

The report identified internationally traded services, such as education and software development, as having high potential. Furthermore, new areas franchise management, intellectual property management, and eClinical trials could also prove useful niches.

Importantly, the report highlighted that Ireland's strengths currently lie in the areas of production and operation. This reflects the heavy orientation towards manufacturing FDI in the past, where R&D and other strategic capabilities were centred in the HQs of the organisations. However, as continued FDI is uncertain, and indigenous firms have underperformed, possibly due to low degree of outward orientation, it will be necessary to develop the other important areas of business development such as developing international marketing and sales expertise, and world-class product and services development.

Product and market development will need to become a stronger focus, since in a globalised world competition is increasing, requiring more attention to market development. With the move towards a high wage economy, Ireland will only be successful if high-value products and services are developed.

This will inevitably require the appropriate skills mix to be put in place. In this respect it is not only the education system that will be important but also the State agencies that support business development which will need to facilitate the broadening of expertise. In particular the report recommends that:

- Establish within Enterprise Ireland special sections to promote marketing and product development.
- Increase applied R&D funding.
- Enterprise networks.

Cost competitiveness will also be important. In this respect the report identified low production costs, and a high level of infrastructure, innovation and entrepreneurship and management capabilities as essential conditions for business. It argues that cost competitiveness can be supported through increased competition, regulation and proper workplace incentives. Furthermore, the report recommends that the attractive taxation regime be retained and Government be agile and effective.

20.1 Agriculture Forestry and Fishing

The primary sectors of agriculture, forestry and fishing have traditionally been important to the economy. Overall however, primary production has steadily lost importance. This trend follows the well-known pattern of economic development of countries that starts with a heavy emphasis on primary production, that subsequently declines in importance as other sectors grow which typically produce higher value added.

While agriculture, forestry and fishing account for less than 6 per cent of total employment and about 4 per cent of GDP their role in the more remote parts of Ireland remains important in relative terms. Developments in these sectors, therefore, play a significant role in rural development and some intervention may be justified on those grounds.

In general it is difficult to conduct a review of the various schemes without simultaneously considering the whole common agricultural policy, which dominates the developments in agriculture and forestry, which is beyond the scope of this report. Consequently, a very narrow range of measures, that were part of the current NDP are considered here. A similar point applies to the fishing industry, which is dominated by the Common Fisheries Policy.

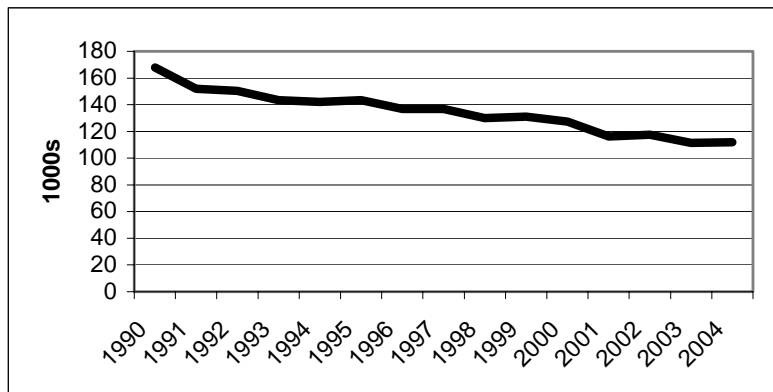
20.2 Agriculture

In the case of agriculture in particular the sector has attracted substantial subsidisation over many decades. Much of this subsidisation was aimed directly at supporting production rather than dealing with any structural problems within the sector. The indirect objective of much of public policy has been to support farm incomes, with the effects on output being of secondary importance. However, the recent reform of the Common Agricultural Policy, through the decoupling of subsidies from production and the introduction of the single farm payment, is likely to have a significant impact on the sector. This change in policy has made explicit the link between public support and income. To the extent that the bulk of public support for the sector has an income support objective it does not belong in the National Development Plan, rather being part of the role of the State in providing income support and is, therefore, not considered here (because it is not aimed at making a permanent difference to productive capacity).

International competition is becoming increasingly important not only outside of the EU where EU produced agricultural outputs have competed largely with the help of export subsidies, but also within the EU since trade negotiations have resulted in increased access to the EU for overseas producers. As increasing competition comes from countries that are less developed than Ireland, with the consequent cost advantages particularly with respect to labour and land, Irish agriculture is becoming less competitive especially as the CAP regime has resulted in slow structural change in the industry.

Consequently, the outlook for agriculture is relatively poor, and the sector's share in national output will continue to decline. Full-time farmer numbers have steadily declined and are projected to continue on this path. For example, the Agri Vision report (Agri Vision, 2004) projects, that viable farm numbers will decline by 22 per cent between 2002 and 2015. The decline in full-time farmer numbers should result in significant structural change, which is necessary if the sector is to have a satisfactory future. However, as many farmers continue to farm on a part-time basis this structural change remains elusive. Agricultural employment continues to decline correspondingly, as is shown in Figure 20.1, which shows that agricultural employment has declined by one-third since 1990. Over the period 1990 to 2003 agricultural output barely grew with an average annual growth rate of 0.1 per cent.

Figure 20.1: Employment in Agriculture (ILO Basis)



Source: CSO *QNHS* various issues.

CURRENT ACTIVITY

A range of measures targeted at the agricultural sector have been part of the current NDP covering a wide range of issues.⁹⁷

⁹⁷ The CAP Rural Development Measures were not in the Operational Programmes. Here we specifically do not consider the Common Agricultural Policy interventions. The CAP can by in large not be considered an investment e.g. Disadvantaged Areas. While the early retirement scheme may yield some benefits in restructuring the sector it is largely a redistributive scheme.

General Structural Improvements

The General Structural Improvements comprised six sub-measures:

- Installation Aid for Young Farmers.
- Farm Waste Management.
- Improvement in Dairy Hygiene Standards.
- Improved Animal Welfare Standards.
- Animal Carcass Disposal.
- Development of Grain Storage Facilities On-Farm.

A number of these measures, such as Installation Aid and Farm Waste Management, have been in place in some form or another for some time, however, it is nevertheless useful to consider the objectives and rationale of the measures.

The *Installation Aid* sub-measure provides a one-off subsidy to young farmers who take over a farm. The eligibility criteria set a maximum age, minimum qualifications, and minimum farm size. As such it appears to support structural change in the industry by helping farmers with higher qualifications to improve competitiveness. However, it is not clear to what extent the measure is successful in providing an incentive for young people to enter the agricultural sector who would not have done so anyway, and to what extent it acts as an incentive to develop the required qualifications.⁹⁸ In other words, the measure is likely to have high deadweight and is, in effect, largely redistributive in nature.

Agricultural waste, mainly animal manures, represents the largest arising of waste in Ireland. The EPA's *National Waste Database 2004* indicates that a total of 60.2 million tonnes of such waste arose that year, compared with 25.1 million tonnes on non-agricultural waste. Organic agricultural waste has value as fertiliser, and is mainly disposed of by spreading on the land,⁹⁹ with a proportion subject to pre-treatment. Developments such as the Nitrates Directive and increasing concerns about impacts of agriculture on water quality, however, have highlighted the problematic aspects of land-spreading of untreated waste. In this context there have been calls to promote pre-treatment of the waste, via the use of anaerobic digestion.¹⁰⁰

The *farm waste measure* provides grants to farmers to build farm waste storage, silage storage, livestock housing and the purchase of mobile equipment for the disposal of farmyard manure. Thus, it addresses important aspects of livestock production that could have

⁹⁸ There may well be an economic return but it does not accrue to the wider economy, but is captured by the young farmer who in any event may have taken over the farm. It is unlikely that important life decisions are influenced in any substantive way by a payment of just under €10,000.

⁹⁹ The 2004 *National Waste Database* records that a 2005 ruling by the European Court of Justice indicated that agriculture manure spread on land may be considered not to be waste, if certain criteria are met.

¹⁰⁰ See Curtis, J., *Anaerobic Digestion: Benefits for Waste Management, Agriculture, Energy, and the Environment*, Discussion paper by the Strategic Policy Unit of the EPA, January 2005, for a concise treatment of the issue.

a significant environmental impact. The implementation of the Nitrates Directive, which among other things places restrictions on the timing of slurry application and the required land area for the disposal of the waste of a given number of livestock, has a direct impact on the requirement for on-farm storage of farm waste.

The facilities provided through this measure are necessary to protect the environment and demand for them is further increased by the Nitrates Directive. This however, is not sufficient justification for the continuation of this measure. Farm waste storage infrastructure and spreading equipment are required for the proper operation of a livestock enterprise in the same way as waste facilities are necessary for example in the chemicals industry. In the latter the provision of such facilities is left to the private sector and enforced through regulation. Agricultural waste arises from the production activities of farmers, and as such the Polluter Pays Principle should apply.¹⁰¹ Its disposal should be the responsibility of its producers, with regulation to ensure environmental impacts are within acceptable parameters. Thus in principle there is no justification for public subvention of treatment and disposal of this waste.

Apart from allowing farmers to adhere to proper environmental standards, which clearly have a benefit for the wider public, these facilities have a significant private return as they allow higher productivity through better livestock management, thereby suggesting that deadweight is likely to be high.¹⁰² Furthermore, this measure has been in place in some form for decades. It is therefore difficult to see where the demand for this measure should come from. This point is underlined by poor progress in the measure under the current NDP.¹⁰³

Both the *Improvement in Dairy Hygiene Standards* and *Improved Animal Welfare Standards* sub-measures address concerns that could also be addressed through effective regulation and are therefore poor value for money. However, the *Animal Carcass Disposal* is warranted since following the emergence of BSE in cattle the cost of disposal of fallen animals has increased substantially. In order to safeguard public health it is important to ensure the safe disposal of fallen animals.

Given the discussion so far it is particularly difficult to rationalise the inclusion of the *Development of Grain Storage Facilities* sub-measure as the benefit of these facilities is completely captured by the farmer and indeed this measure is aimed at a relatively commercial sub-sector.

¹⁰¹ It is important to note that most other commercial sectors have to pay the economic cost arising out of waste created, it is, therefore, difficult to see why agriculture should be exempted.

¹⁰² The return arises out of reduced poaching damage to grassland, and ease of management, which is particularly important to part-time farmers.

¹⁰³ The foot and mouth outbreak is blamed for the poor uptake, but given that this can only have impacted for less than 12 months, FMD is unlikely to be responsible for the poor overall take-up.

Alternative Enterprises

Diversification must be an important goal of the industry as it appears uncompetitive under the current structure and policy regime. However, in many cases there is a high return from the investment, which suggests that subsidies could have high deadweight. Under this measure, however, a number of well established sub-sectors such as potato growing is being aided. Thus, the targeting appears to be poor. In general, one would expect private finance to be available to carry out investment in more profitable segments of the market.

The organic sector development sub-measure appears to have the potential to address a genuine market failure in the sense that the conversion from 'conventional' to organic farming is likely to be associated with initial loss in income. However, farmers must have completed the transition to organic before qualifying for aid under the development of the organic sector measure. For this reason, we note that there is a significant element of deadweight attached to these schemes, as the eligible recipients are likely to be in a position to undertake the required investment without this targeted intervention. This measure may, therefore, benefit by a change in the eligibility criteria such that farmers that are in the process of converting to organic farming become eligible.

Services for Agricultural Development

Finally this measure provides an important service as it supports the restructuring of the industry and increases the human capital of farmers. However, this is current expenditure, which does not fit well within an NDP. The second sub-measure, which provides a subsidy for the farm relief service constitutes a direct subsidy to a commercial operation with no obvious market failure, and therefore is hard to justify.

RECOMMENDATION

Much of the current activity is hard to justify on economic grounds and appears more aimed at redistribution than at addressing any identified market failure. On that basis there is little justification to continue the majority of the measures. It might, however, be useful to re-orientate some of the activity towards meaningful environmental improvement that would have genuine public good qualities and cannot be achieved through regulation.

**20.3
Forestry**

Development of the forestry sector has been constrained through the heavy subsidisation of the agricultural sector over many decades (see Barrett and Trace, 1999). While some research shows that the long-run return to farmers from forestry exceeds that of other enterprises on the poorer soils or against the less profitable cattle and suckler enterprise, the reform of the CAP may erode this advantage resulting in a reduction of the total area that will be

afforested (Bacon *et al.*, 2004). This may have a significant negative long-run impact as it may render further processing plant unprofitable.

Overall, employment in forestry has declined by almost one-third since 1990, which is similar to the decline suffered in the agricultural sector. However, unlike the agricultural sector there has been reasonable output growth of 3.2 per cent per annum since 1990. Thus, labour productivity in the sector has increased by 6 per cent per annum.

CURRENT ACTIVITY

Generous grants are available for the planting of forestry and forestation targets were set in the *1996 Strategic Plan – Growing for the Future*. These targets have not been met, which undermines the viability of a competitive processing sector. Furthermore, the species mix which had been envisaged has not materialised (see Bacon *et al.*, 2004). Concerns have been raised that forestry management has been poor resulting in lower long-term returns, which might further discourage forestation.

Through the afforestation grants the sector is receiving a very substantial level of support. Indeed, the *Review and Appraisal of Ireland's Forestry Development Strategy Report* (Bacon, 2004) estimates that in order to generate €100 grower income requires a support payment of €121.6.

Activity under the current NDP was confined to three sub-measures. The first of which was aimed at improving the quality of forests could be justified as it deals with an externality that may otherwise not be addressed. Given the concern about the poor management of forests this sub-measure is further justified as quality improvement can only be achieved through better management.

The second measure provided support for the purchase of harvesting machinery, which was aimed at growing harvesting capacity in order to increase output from the sector. This sub-measure cannot be justified on economic grounds as the returns to this investment are captured entirely by the woodland owner, implying 100 per cent deadweight in the absence of any market failure. It is therefore important to note that the measure has been suspended.

Finally, the forestry roads sub-measure is aimed at improving access for forest plantation development, maintenance and fire protection. As with the harvesting machinery sub-measure it is difficult to justify this measure as the benefits are almost entirely captured by the woodland owners. While these roads may be necessary to maximise the return on the investment in forests, it is the forestry owner who reaps the benefits from the investment. Failure to thin and maintain crops due to low or even negative returns to this activity is not market failure since the long-run benefits to the woodland owner are significant. The only externality would arise if these forest roads were open to the public for

recreation e.g. walking, cycling etc. Thus, if any support through this measure is to be maintained a condition of granting resources should be access rights to the public.

RECOMMENDATION

The forestry industry makes a wider contribution to rural development. It currently attracts substantial subsidies, which however, have not been sufficient to achieve planting targets. The subsidisation regime should be kept as transparent as possible to allow potential planters to properly evaluate the long-run income streams from forestry. This provides a further rationale to limit public interventions through the NDP to those, which actually address market failures.

Most of the current activity under the NDP has been targeted at investment areas with high deadweight and no or very little market failure rationale. These sub-measures should be scrapped and instead the focus should be on improving the quality of woodland. This, apart from supporting the improvement of the species mix so that the industry better meets the demand for timber, would also have a significant positive impact on the amenity value of forestry and thereby support the development of tourism.

20.4 Fishing and Aquaculture

As with tourism it is difficult to define the marine industry using the conventional industrial classifications since it incorporate diverse activities such as fishing, aquaculture, marine transport, energy exploration and tourism. Consequently, investments under the current NDP are found in a number of Operations Programmes (OPs). For example, the sports angling component is found under the tourism product development measures while marine transport fits most usefully into transport infrastructure. This is also reflected in this report so that R&D, Infrastructure and Human Resources issues are covered in other chapters.

Notwithstanding the difficulties in measuring the contribution of the sector it is possible to quantify sub-sectors such as fishing and aquaculture, which are the target sub-sectors of the NDP interventions, which have not been covered elsewhere. It is therefore useful to briefly review the performance of these two sub-sectors. While aggregate numbers are readily available these mask the geographic distribution of the sector, which of course is largely confined to coastal areas (there is some inland fisheries activity). In particular, the activity of the fishing and aquaculture sectors is concentrated in more remote coastal communities so that the sector makes a significant contribution to rural development.

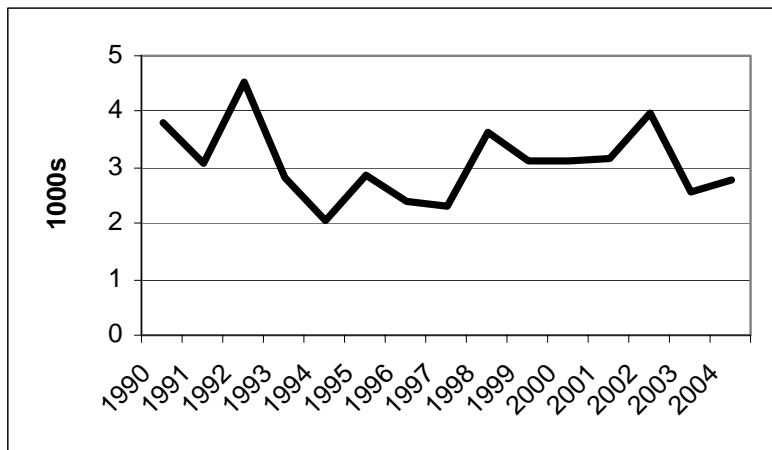
Overall, employment in the fishing industry is quite variable but there appears to be a long-run downward trend (see Figure 20.2). However, output has increased by an average of 5.6 per cent per annum between 1990 and 2003, which while lower than the average growth for the whole economy is nevertheless respectable. Given the two trends it comes as no surprise that productivity has grown

substantially by just over 12 per cent per annum during that period. It is likely that this productivity growth is largely due to changes in the fishing fleet, where vessel numbers have declined but there has been a significant increase in average size (see Table 20.1).

Fish processing employment has increased by 28 per cent over the period 1991 to 2001 to reach 2,802. However, output did not increase more rapidly than employment so that productivity did not change over that period. Nevertheless, the fact that industrial inputs into fish processing have increased substantially, it appears that the industry is changing towards heavier processing.

The tonnage produced by aquaculture has more than doubled between 1994 and 2002 with a particularly strong increase of tonnage being recorded for shellfish production. However, the average prices received for the output of the sector has decreased so that the real value of output only increased by 50 per cent or 6 per cent per annum which is in line with the performance of the fishing sector at large.

Figure 20.2: Employment in the Fishing Industry (ILO Basis)



Source: CSO QNHS various issues.

Table 20. 1: Fishing Fleet

	1991	2002
Number of boats	1,436	1,376
Total tonnage of fishing fleet (tonnes)	52,993	77,888
Average vessel size (tonnes)	36.9	56.6

Source: CSO Fisheries Statistics.

The most important policy framework for the fishing sector is the Common Fisheries Policy (CFP). The key feature of the CFP is that it restricts catches for a wide range of key species, which have suffered substantial declines in overall stock size and which are under threat from over-fishing. Given dwindling stocks of key species and the consequent quotas, which have by in large been reduced over time, the overall potential for the industry to develop are limited to increasing catches of non-quota species, which

however may not find significant appeal in the market place. The aquaculture sector is not constrained by quotas but rather by environmental considerations which limit the number of suitable sites, both from a visual impact point of view and terms of the impact on wild species. Thus, the development of the aquaculture sector without regarding the potential environmental impact risks damaging the tourism sector which particularly in rural areas relies heavily on the attributes of the natural environment including the key angling species such as salmon and sea trout.

CURRENT ACTIVITY

A range of different measures and sub-measures targeted at the fishing and aquaculture have been implemented as part of the current NDP.

The *Seafood Processing* measure is aimed at growing and sustaining the seafood processing sector by promoting increased value added at an early stage of production, ensuring optimal utilisation of raw material supplies and developing companies with the strength to become internationally competitive. The *Seafood Marketing* programme is aimed at enabling the industry to take advantage of the buoyant market for seafood products, through market research and the improvement of the marketing capabilities of seafood processors. In line with the recommendations on tourism marketing it can be argued that this measure is justified if targeted at the SMEs in the sector. While SME's are important in the sector there are important differences between this sector and the tourism sector in that in this case companies will need to market their own product rather than market the attributes of Ireland as a tourist destination. Thus, the benefits of marketing are captured by firms directly. The processing measure is only justified if finance for the sector was for some reason unavailable. This is unlikely to be the case if a proper business case can be made. Thus deadweight is likely to be high.

The aim of the *Sea Fisheries Development* priority is to modernise the fleet of vessels while at the same time encourage vessel decommissioning. These aims are clearly conflicting since on the one hand, vessels numbers are to be reduced in order to adjust the fishing effort downwards while on the other hand, a measure is in place that aims to renew and modernise the fleet to among other aims increase operational efficiency. While the adjustment to fishing effort is justified since this contributes to the environmental goal of stock preservation, simultaneously increasing the operational efficiency of the remaining fleet is likely to undo any benefits gained from the other measure. The *Renewal and Modernisation* measure, in common with other measures aimed directly at the private sector, may be subject to substantial deadweight. Overall, this priority does not make a significant contribution to national economic development.

The *Fisheries Harbours/Gaeltacht-Island Harbours* measure, which was supported under the regional Operational Programmes as part of the local infrastructure priority was split into three sub-measures.

First, the *Fisheries Harbour Improvement* sub-measure aimed to provide support for the development of fisheries port infrastructure and ancillary facilities such as ice plants, auction halls and landing facilities. As these facilities are eminently excludable they are not pure public goods and as such public support is difficult to justify on classic economic grounds. However, since many of these harbours are located in remote peripheral regions and thus make a contribution to rural development, there is some value to continuing some public funding. However, the industry should be asked to make a contribution towards the provision of the infrastructure and ancillary facilities.

The *Gaeltacht/Island Harbours* sub-measure can be justified on rural development grounds since it increases access to the remote Gaeltacht areas and the islands of the western seaboard. In most cases the local communities are unlikely to be able to finance this work, which benefits not just locals but also improves access for visitors, which will help in the development of tourism. However, where the level of utilisation of these resources is high contributions to the improvement and maintenance work on those facilities should be sought.

The *Aquaculture* sub-measure provides grants for private sector investment in aquaculture. While it covers collective facilities, it is not easy to see what market failure the *Aquaculture* measure addresses, especially as this measure appears to be expensive and there are clear private sector returns so that these are likely to suffer from deadweight.

RECOMMENDATIONS

The prospects for the fishing sector are limited as stocks of the key species are limited and quotas apply. While non-quota species may offer an opportunity for expansion, these stocks are also limited and indeed these species may not find a ready demand in the market place. As with almost all commercial activities, public subsidisation is difficult to justify except with reference to rural development and some limited market failures.

The measure that passes not only the economic rationale of market failure but also supports rural development is the Gaeltacht/Island harbours development. The adjustment of fisheries effort is also justified, but as another sub-measure is in place that appears to counteract the objectives of this measure one has to question further investment. The modernisation of the fishing fleet and the development of aquaculture measures lack economic rationale. Finally, there may be a limited role for support for marketing provided it is aimed at the SME sector.

Table 20.2: Financial Recommendations

Measure	Recommendation	2006 (€million)	2007- 2013 Average (€million)
Services for Agricultural & Rural Development	Same	10.4	10.4
General Structural Improvement	Reduce	63.8	30.0
Alternative Enterprises	Reduce	9.5	6.0
Forestry	Reduce	13.0	5
Fishery Harbours, Gaeltacht and Islands	Same	12.4	12.4
Fishery Harbour Infrastructure	Reduce	21.4	10.0
Aquaculture Development	Reduce	13.5	6.0
Fisheries Supporting Measure	Reduce	2.9	2
Renewal & Modernisation of the Fishing Fleet	Reduce	1.6	0
Adjustment of Fishing Effort	Same	19.0	19.0
Total		186.012	106.3

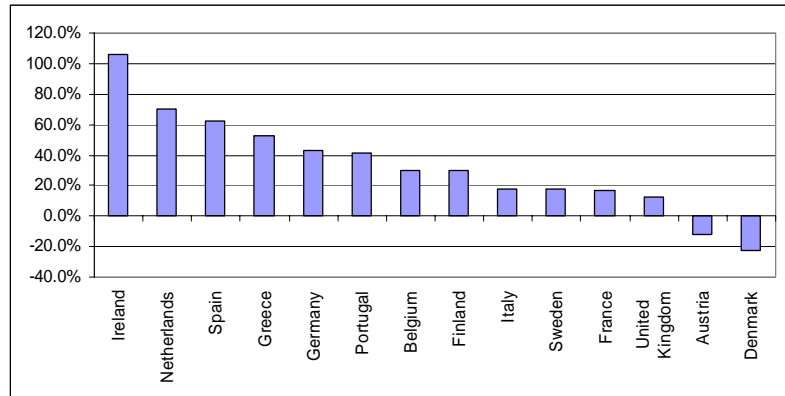
Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5.

20.5 Tourism

Tourism is a major internationally traded service. As such it contributes to the export performance of the economy. An important aspect of the nature of the tourism sector is that it can provide an important stimulus to the economy of the more remote rural parts of the country where the range of alternative economic activities is more limited compared to urban centres. Thus, tourism can play an important role in regional development. In Ireland, where tourists are likely to visit for the overall experience of the countryside, people and heritage, developing the industry in a sustainable manner is important.

The nature of the industry makes precise quantification of the contribution of this sector difficult since some of the activity of the sector could be classified into other sectors and since there are significant input-output linkages to other sectors. Notwithstanding these difficulties it is possible to sketch out some important trends in the industry.

Employment in hotels and restaurants has increased by 13,200 between 1998 and 2005, which equates to an annual average growth rate of just under 2 per cent. Compared to the national employment growth of over 4 per cent across all sectors over the same period this performance is quite modest. Of course this comparison does not shed light on the output of the sector, which given the measurement issues indicated above might, best be measured in terms of numbers of visitors from abroad and their expenditure in Ireland. As Figure 20.3 shows, Ireland expanded bed capacity by 100 per cent in a decade and a half, which far exceeded the expansion in all other EU countries. Over the same period visitor numbers increased by 114 per cent, suggesting that over that period occupancy rates must have been increasing. Of course, the time period chosen in this comparison is relatively long. Consequently, it is also useful to consider developments in the recent past.

Figure 20.3: Change in Bed Capacity Between 1990 and 2004

Source: Own calculation using data from the Eurostat *New Cronos* database.

According to CSO data visitor numbers have increased on average by 2.5 per cent per year over the period 1998 to 2004 while tourism expenditure has increased by 2.1 per cent per annum in real terms over the same period.¹⁰⁴ These statistics suggest that the tourism sector is not going through a particularly dynamic period, which is a marked contrast to the performance of the sector internationally. For example, in all of Europe tourist arrivals grew by almost 4 per cent per annum between 1995 and 2004. This signals heavy competition and falling market share for the Irish tourism sector. A further indicator of the modest performance of the tourism sector comes from the balance of payment statistics, which identify tourism exports. They have grown by just 2.9 per cent per annum between 1998 and 2004, which compares badly to an annual growth rate of 40.0 per cent for business services.

Overall, then the recent performance of the sector has been relatively poor when compared to many other sectors. Falling market share is likely to have many reasons. These include lack of cost competitiveness, opening-up of more exotic destinations and poor product development relative to key competitors. While some of these factors are at least to a large extent out of the control of the sector, many of the relevant issues relate to failings within the industry.

The exceptional performance of the Irish economy has resulted in high non-traded inflation which impacts heavily on the tourism industry since many of these internationally un-traded services make up a significant component of tourist consumption.¹⁰⁵

¹⁰⁴ This figure refers to total expenditure by overseas visitors and is derived using data from the CSO Database Direct service. The price deflator used is the harmonised CPI.

¹⁰⁵ They are un-traded in the sense that they have to be consumed within Ireland.

TOURISM POLICY REVIEW GROUP REPORT

In 2003 a major review and strategy of the tourism sector was published (Tourism Policy Review Group, 2003). It highlighted that tourism had been one of the most important and successful indigenous sectors of the economy. It also noted that growth in the industry had slowed over recent years. The industry is particularly important since it is broadly based and contributing to the activity in many sectors.

In general the prospects for the sector worldwide are expected to be very positive with substantial growth in tourism arrivals predicted. What the report did not point to is the fact that growth in Europe is expected to fall short of that of other regions, a view that is supported by recent research (see Papatheodorou and Song, 2005).

The assessment of the sector concluded that the industry is strong but at a turning point, in the sense that it faces a major competitiveness challenge. The report pointed to falling margins and unused capacity, which could affect future investment. It highlighted the urgent need for investment in transport infrastructure and greater investment in human resource development.

The report accepted the reduced role of public finance in the industry and asserted that a successful tourism industry will be self-reliant in future. This will require a new strategy to be followed, which has the following key components:

- Clear vision of where the industry wants to go.
- An understanding of the forces impacting on the industry.
- Establishment of challenging targets.
- Enhanced capability to innovate.
- Implementation framework.

CURRENT ACTIVITY

Under the current NDP a number of measures have been implemented that address issues in the tourism sector. These are scattered in a number of Operational Programmes depending on the target areas. As some of these are addressed elsewhere this section concentrates on the remaining measures. These are *Tourism Product Development and Tourism Marketing*.

The *Tourism Product Development* measure is part of the Regional Operational Programmes and has a number of aims including the development of major tourist attractions, special pursuit interests, tourism, environmental management, angling and marine tourism. The initial slow progress of this measure has been addressed, but this itself does not provide sound evidence that there will be a high return to the investment.

The second measure relates to tourism marketing, which was funded under the Productive Sector OP. In general the marketing programme was aimed at addressing a market failure in that it was specifically aimed at SMEs where there is a likelihood, due to their

small size, that firms are not able to market their products internationally. Thus, there is justification for continued funding of the measure. With regard to tourism, the fragmented nature of the sector still argues for public intervention in marketing.

One new area of investment, which is proposed by the Department of Arts, Sports and Tourism, is the development of a large convention centre. It is argued that this will have significant impact as it would attract large numbers of visitors who currently do not come to Ireland as the major conventions are held in other countries with better facilities. This could help existing suppliers of accommodation increase their bed-occupancy rates.

RECOMMENDATIONS

Tourism Product Development

As was highlighted above, the performance of the sector is relatively modest and in this respect one could reasonably argue that product development is needed in order to achieve greater competitiveness and growth. However, one could also argue that if the prospects of the sector are poor, spending scarce public resources on developing products, the demand for which is going to be low, is not warranted. In general it is not clear why the State should support the product development in any sector directly. The market failure that might justify such involvement centres on the preponderance of many small and medium-sized enterprises in the sector, which on their own may not be able to develop the tourism product. It is this lack of co-ordination between small enterprises that should be the focus of public intervention. Rather than making available resources for the development of a particular product, the enterprises in particular areas should be incentivised to develop their shared tourism product on a collaborative basis. This will result in a significantly higher return from any public investment, which in any case should be matched by resources from the main beneficiaries minimising deadweight.

It should be noted here that in Chapter 23 we recommend substantial investment in sports and art infrastructure, which apart from serving the domestic market will also have an important spillover effect for tourism. In order to maximise the benefits of that investment, the facilities provided or improved through this investment should be incorporated into product development strategies.

Tourism Marketing

It is recognised that the industry already spends substantial resources on marketing their product. Nevertheless, since the marketing measure addresses a market failure it can be justified. However, efforts need to be made to reduce this market failure which arises by encouraging the SME's in the industry to organise themselves better. In order to encourage this and minimise deadweight, matching funds for the marketing measure should be

sought from the SME segment of the industry, which would have the added benefit of increasing the overall budget available for marketing. It is recognised that given the substantial and positive North-South co-operation on marketing such changes may not be straightforward, but since the proposal is not to cut the total funds available for marketing but rather change the sources of where the funding comes from these changes should be possible without breaking binding agreements with the Northern partners.

Convention Centre

The development of the convention centre in Dublin may have a high return. However, this needs to be assessed through a thorough cost-benefit analysis. As capacity constraints in the construction sector are likely to exist going forward and with continuing high demand for infrastructure and housing, not just from the public sector but also from the private sector, this development should not receive high priority. However, once the major infrastructural projects are coming to an end this project may prove attractive. Consequently, some preliminary planning should be carried out so that this facility will be well integrated with the new transport infrastructures in Dublin.

Table 20.3: Financial Recommendation

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Tourism Marketing	Reduce	40	30
Tourism	Reduce	5	2
Tourism and Recreational Angling	Reduce	1	0
Total		46	32

20.6 Enterprise/ Industry Development

While the success of the Irish economy over the last fifteen years owed much to Foreign Direct Investment (FDI), the indigenous sector also plays an important role in the Irish economy. Attracting internationally mobile investment across the world to Ireland is likely to become more difficult for a number of reasons. First, with globalisation and continuing reductions in trade barriers, market access is becoming less important as a determinant for FDI. This implies that international competition for FDI is increasing. Second, as the Irish economy has grown substantially over the last decade and a half, cost competitiveness, particularly with regard to wage levels, has diminished. Finally, as FDI predominates in some sectors, these sectors are particularly dependent on developments such as tax laws and macroeconomic fundamentals in competing countries, which are outside the control of the Irish Government. Given these developments, industrial strategy should aim at developing a more diverse portfolio of enterprises, by developing indigenous enterprises, while still seeking to attract quality multinational employers.

A variety of other supports have been provided either for specific sectors (food sector, film industry), types of enterprises (micro-enterprises) or geographic areas (Gaeltacht). Again the rationale for such interventions must be that they address specific market failures.

CURRENT ACTIVITY

As part of the supports for indigenous industry marketing is a key priority in the current NDP. The rationale for this is based on the high proportion of SMEs among indigenous businesses, which may not have developed adequate marketing expertise. This is likely to be a particular problem in more peripheral regions where market access is already more difficult due to their location. In addition to the general marketing measure and the sector specific measures on tourism and the seafood sectors, there is a specific focus on the food sector, for which the same rationale ought to apply implying that the focus must be on SME's since larger enterprises should have the resources and capabilities to carry out their own marketing.

Apart from marketing the priority also supports the development of SME's by improving their in-company strategic planning capabilities by facilitating a review of operations and the adoption of efficiency enhancing work practices. Furthermore, financial support for enterprises through equity participation and Seed and Venture Capital Funds has been provided to aid business development and facilitate expansion. In the case of indigenous industries the venture capital measure performed well. Since highly risky projects may exhibit positive externalities there are some arguments for enhancing this sub-measure. Regional Networks, which are aimed at building the capacity of firms, were supported. Networking encourages knowledge transfer between businesses and diffusion of best practice increasing competitiveness and growth. Finally, Dedicated Support Services at a sectoral level such as the Crafts Council was aimed at increasing specific skills.

The stimulation of entrepreneurship through support for the micro-enterprises is practiced in many countries. The rationale is that all firms start small and, particularly in rural and peripheral parts of the country, the number of firm start-ups is low thus limiting the potential economic growth. The *Micro-enterprise* measure aims to support micro-enterprises through selective financial interventions. This will support employment, albeit at a very small level, and could help in diversifying the enterprise structure of the regions. As business start-ups require some entrepreneurial skills the measure also aims to develop these skills through targeted training programmes and mentoring. Overall, the micro-enterprise measures were performing well both in financial and physical terms. However, the overall impact of this measure is likely to be small. Finally, specific sub-measures targeted at indigenous industry in Gaeltacht areas through financial support and the provision of land and buildings have been in place. Support for land and buildings

produces a very low return and was eliminated elsewhere. Support under this measure should be ended whereas the financial grants should be maintained.

Apart from getting support under the current NDP, the *Film Industry* sector was also funded through the tax system. Thus, the sector has received substantial funding. Having provided incentives for the “infant” industry, total public provision should be less generous moving forward. As the stimulus has been given to the industry to get it started it is time to phase it out. Further support for the industry should be part of broad support for cultural activities. The industry should then compete against other cultural activities to attract future funding. If, as is indicated by the Department of Arts, Sports and Tourism, the film industry requires indefinite capital support and incentivisation, support for this industry should be seriously questioned, since this industry will absorb resources that could be used by other industries that will not need ongoing support, resulting in substantially higher returns. The key issue is not whether an industry achieves a net return but how this return compares to other industries. This approach, providing a more competitive environment for support, is in character with the recommendations we have made for other measures in this and other chapters.

While prospects for the attraction of significant FDI may have diminished somewhat over recent years, this source of investment continues to play an important role. FDI was supported under the current NDP through Capital Grants, Employment Grants, Equity Participation, and R&D capability grants. The focus of the *Capital Grants* is aimed particularly at regional development especially in Objective 1 regions, by funding further expansion of existing firms and attracting new ones. *Employment Grants* are particularly relevant for internationally traded services firms which require considerably less capital investment than manufacturing firms. As with the indigenous sector the State can also participate in equity terms in multinational businesses, which is particularly useful in emerging sectors where investment is risky but may have particularly high returns in the long run. Finally, in keeping with the general aim of increasing research and development effort, *R&D Capability Grants* have been available in order to encourage existing multinational enterprises to upgrade the operations carried out in Ireland. This appears to be an important measure since basic manufacturing is unlikely to have a long-term future in Ireland as the cost structure for such activities disimproves. Thus, these activities need to be replaced with higher level strategic activities.

Most sub-measures under FDI did not perform well during the years 2000 to 2002. An exception is the sub-measure on capital grants. There may be several reasons for this. Concerning R&D, it can be shown that foreign-owned companies do most of their research in the home country. Second, the Irish national innovation system may be too limited, so that the companies do not avail of grants. Therefore, it could be better to reduce the research grants under FDI and raise the funds for other grants or to support

networks on R&D between foreign owned and indigenous industries. It is questionable whether employment grants are useful when the economy is close to full employment.

RECOMMENDATION

The recommendations for funding under the next NDP are shown in Table 20.4. The development of enterprises, both foreign and indigenous is vital for the success of the Irish economy. Addressing market failures and putting in place strategic measures will continue to be of high priority. However, as the potential for deadweight is particularly high in private sector activities caution needs to be exercised and sufficient controls built into schemes. In relation to grants to multinational enterprises, safeguards related to employment creation and plant survival have been applied for some time, which is likely to ensure reasonable value for money. Similarly, equity and venture capital schemes, if targeted correctly, are likely to address financing problems in emerging sectors, while allowing the State to profit from the success of any project. In general targeting is important. In the indigenous sector support should be focused particularly on SMEs.

Table 20.4: Enterprise/Industry Development

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Seafood Processing	Reduce	2.0	1
Food Agricultural Products	Reduce	9.0	5
Film Industry	Reduce	15.5	0
Seafood Marketing	Merge – reduce	1.9	0
Food Sector Marketing	Merge – reduce	5.0	0
Industry Marketing	Merge - reduce	11.0	0
Marketing	New	0	10 + industry contribution
Micro-enterprise	Merge	33.4	0
Gaeltacht Areas	Merge	27.7	0
Indigenous Industry	Merge	55.6	0
Industry Development	New (unchanged funding)	0	120
Foreign Direct Investment	Same	98.5	98.5
Indigenous Industry/Foreign Direct Investment		0	0
Total		259.6	234.5

21. HEALTH

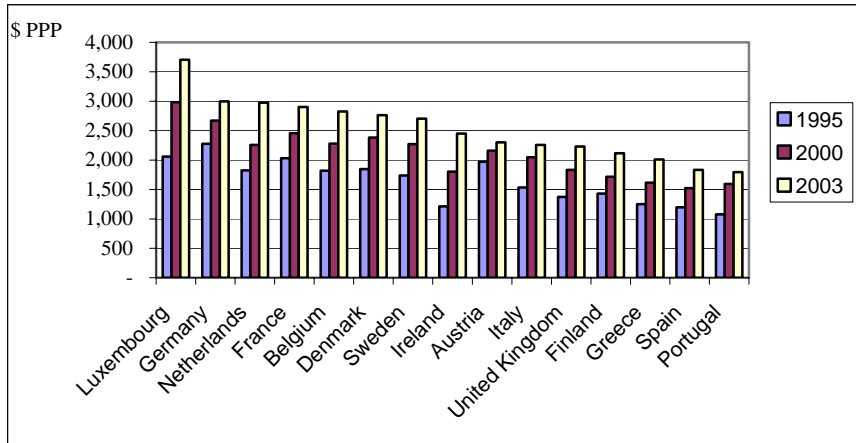
As in all developed countries, healthcare is an important area of Government intervention and the public sector is the major healthcare provider in Ireland. Government policy as set out in the 2001 health strategy entitled *Quality and Fairness: A Health System for You* emphasises the wider concept of health that covers the State of physical, mental and social well-being and not just the absence of illness or disability. The aim of policy is to promote health gain through alleviation of illnesses and disability and other measures that improve the quality of life. Furthermore, covering other related aspects, the strategy aims to promote social gain, including the quality of life of carers, dependents, the elderly and children.

The health system has been subjected to substantial reforms over recent years. Healthcare provision was the responsibility of the eight regional health boards starting in 1970, with the Department of Health having been responsible for the development and execution of health policy. Since 2005 the Health Boards have been abolished and replaced by the Health Services Executive (HSE), which is charged with managing the health service as a single entity, while policy remains the responsibility of the Department of Health and Children. The bulk of capital spending in the area is the responsibility of the HSE.¹⁰⁶

A substantial proportion of expenditure in the health area is current expenditure, which in the strict sense does not constitute an investment. However, as an important output of the health system is intended to be the improvement of health, one could nevertheless make the case that even the current expenditure has investment qualities.

Healthcare expenditure in all developed countries is increasing rapidly. This is clear from Figure 21.1, which also provides a comparison of health expenditures across EU countries. While per capita expenditure in Ireland for 2003 is close to the OECD average, a number of countries have substantially higher expenditure. Nevertheless, Ireland has achieved the fastest growth rate of health expenditure of the EU countries and, if the trend is continued, will be close to the top per capita expenditure (excluding Luxembourg) in 2007. It should also be noted that almost 80 per cent of the total expenditure is public expenditure which is slightly above the EU average.

¹⁰⁶ The Health Services Executive controls approximately 96 per cent of public capital expenditure on healthcare.

Figure 21.1: Total Health Expenditure Per Capita Expressed in \$ PPP

Source: OECD Health Data 2005.

However, expenditure does not necessarily translate into positive health status indicators and good healthcare outcomes. Nolan and Nolan (2004) show that in a comparison for these indicators with other developed OECD countries, Ireland did not perform well. For example, in terms of health status indicators, life expectancy, birth weight and infant mortality, Ireland ranked just 14th out of 22 countries. In terms of factors influencing these health status indicators, such as road traffic accidents, alcohol and tobacco consumption, sulphur-dioxide emissions and immunisation rates, Ireland ranks joint last with Japan. Of course this does not necessarily imply that the health services do not manage to perform well in terms of causes of mortality. However, in this respect Ireland also ranks very poorly. Thus, while Ireland has outperformed most other developed countries in terms of per capita GDP, there remains much ground to be made up in terms of improvements in health status, equity and efficiency (Wiley, 2005).

21.1 Overview of Progress and Lessons

Despite the high proportion of current expenditure in the healthcare area substantial capital investment has also been put in place over the last decade. In this respect the current NDP has made a substantial contribution. The three broad areas that the NDP has contributed to are:

1. Acute Hospitals

This measure was primarily aimed at expanding and improving acute hospital facilities in keeping with health needs. Thus, the investment was aimed at reducing waiting lists and supporting national strategies on cancer and cardiovascular treatment. A second target of this measure, that was not outlined in the original programme complement but has appeared in the recent progress report, is the provision of facilities to support the new nursing degree.

2. Non-acute Continuing Care

The non-acute care measure aims to provide facilities for a range of different groups, including the disabled, elderly, the mentally ill, at risk children, and the wider community. Given the diversity of target groups it is useful to briefly outline the range of facilities that were to be provided under this measure. For example, the measure provides funding for the provision of new Community Nursing Units (CNU), extensions to Community Hospitals, new Day Care Centres and new social centres. This is to provide the additional range of supports required to maintain older people within the community, refurbish/upgrade the existing building stock and provide sufficient specialised services to meet current demands and assist in meeting the projected future growth in demand. Investment in acute psychiatric units in general hospitals was to help eliminate the need for any further acute admissions to old psychiatric hospitals. Furthermore, residential facilities designed to cater for child and adolescent psychiatric in-patients were to be constructed. The main emphasis in relation to childcare and protection was on high support units for out-of-control non-offending children and the upgrading of residential units for homeless children and others who are disadvantaged. Finally, the measure supported the extension, refurbishment and construction of health centres and community care headquarters.

3. Information and Communications Technology (ICT)

Under this measure a range of projects to develop intranet facilities and resource management systems, are supported. Other facilities supported under this measure are integrated IT systems that link various departments within hospitals.

Table 21.1 shows the financial progress of the three measures up to the middle of 2005. In total almost €2.4 billion had been spent to that point. While both the acute hospitals and ICT measures were ahead of target in terms of spending, the non-acute continuing care measure suffered poor financial progress. The pattern of financial progress is also reflected in the physical progress. Indeed the target number of new acute beds was already met in 2002. However, progress on facilities for the disabled appears to have been slow. Similarly, physical progress on health centres and community care headquarters has been slow.

Table 21.1: Financial Progress

Expenditure 2000-2005 €million	% of Forecast %
1,633.40	126.9
538.27	50.4
203.12	114.5
2,369.79	93.6

Source: ESIOP progress report to end June 2005.

21.2 Assessing Acute Hospital Bed Needs

In framing recommendations on investment needs for healthcare it is important to consider future bed needs. This is particularly important since, as was shown above, Ireland has experienced substantial population growth, which is projected to continue. Ideally, future needs projections should form the basis of all recommendations. The focus here is on estimating projections for acute hospital bed capacity; the production of projections for all aspects of the health service is beyond the scope of this study. The report on *Acute Hospital Bed Capacity* published by the Department of Health and Children in 2002 recommended an increase in the hospital bed stock of around 3,000 beds. A range of factors, including changes in population and hospital service utilisation patterns, provide grounds for now revisiting the question of how many hospital beds will be required by the Irish health service up to 2013. At the outset, however, it is, important to note the limitations of the work undertaken on this issue as part of this study. The work is policy neutral so no assumptions are made regarding changes in the way the health system is currently operated. Specifically, it should be noted that the data that drive the results refer to the period 1995-2004, prior to the establishment of the Health Services Executive and the associated changes in management and administration within the Irish system. Questions relating to changes in the geographical distribution of hospital service provision and/or changes in the provision of long-term care or service delivery outside of the acute area have not been addressed for the projections presented here.

No assumptions were made regarding changes to the way the primary/community care system operates or the public/private mix etc. As this study is focused on capacity within acute public hospitals in Ireland, the analysis to date does not address the current or potential future relationship between the public and private sectors in regard to the provision of acute hospital services. While information is available on capacity within the private hospital sector, there is no standardised database available on the utilisation of services within private hospitals. The utilisation data for the public hospital system does include data on the utilisation by private patients in this sector.

The projections are based on a review of the utilisation of beds in acute public hospitals by gender, age and site of care. The data on hospital service use is provided by the Hospital In-patient Enquiry System (HIPE). The HIPE Scheme is a computer-based health information system designed to collect clinical and administrative data on discharges and deaths from acute hospitals in Ireland (HIPE, 2002). Data for the ten year period 1995-2004 have been analysed for this study. Over this period, data on approximately 95 per cent of all discharges from all acute public hospitals have been collected, with the 1995 estimate of total discharges of 608,151 increasing to 984,230 in 2004.

Clearly, demographic projections for the period are key to the estimation of acute hospital bed requirements. In this respect, the

Medium-Term Review (high-growth) population projections formed the basis for the analysis conducted here. The overview of changes in utilisation patterns for acute hospital services show some important developments over the past ten years. Specifically, important variations are observed for the age distribution, day/in-patient status and surgical/non-surgical status. The overall growth in the volume of discharges treated on a day basis rather than on an in-patient basis is particularly significant.

Table 21.2 shows the number of acute hospital beds available for the period 1995-2004 as reported by the Department of Health and Children. According to these estimates, there has been an increase of 1,011 acute hospital beds over this period, representing an 8 per cent rise in the total acute bed stock. The table also shows that occupancy levels have been increasing since 1995 to the point where in 2004 occupancy was estimated at 84 per cent nationally (based on 100 per cent coverage of discharges).

A review of the literature suggests that the approach adopted by researchers at the Manitoba Centre for Health Policy on projecting hospital bed needs for Manitoba could be usefully applied to the Irish context (Stewart and Tate, *et al.*, 2002; Tate, 2005; Finlayson, 2005). For this study, two models for projecting hospital use up to 2020 were estimated. The first model, called “Current Use Projection”, projected future use on the basis of current patterns of use. With this model, data on the current utilisation of acute care beds were used to project the utilisation forward to 2020 based on available projections regarding the age and sex composition of the population. The second model, “Trend Analysis”, was based on analysis of trends in hospital use of the most recent 10-year period. This model involved the identification of trends in hospital use for specified age and sex groupings, which were subjected to statistical regression analysis to enable the extrapolation of trends to 2020. Over the period of the current study, the Canadian researchers who estimated acute bed capacity requirements for Manitoba up to 2020 worked with the ESRI team to estimate acute hospital bed capacity requirements up to 2013 for Ireland.¹⁰⁷ In addition to the Current Use and Trend Models, an additional 6-year Trend Model was estimated.

For the estimation of acute hospital bed capacity requirements for Ireland up to 2013, the Current Use model assumed that future utilisation of acute hospital beds would be similar to that prevailing from 2002 through 2004 and that only the population distribution would change. The 10-year Trend Analysis model considered the trends in hospital use over the period 1995-2004 and assumed that

¹⁰⁷ A detailed description of this collaborative study will be presented in Tate, R., G. Finlayson, L. MacWilliam, M.M. Wiley “Projections for Acute Hospitals Beds in Ireland, 2007-2020”, ESRI Working Paper, 2006, forthcoming. This paper will also present more detailed projections for acute hospital bed capacity requirements to 2020 by category for gender, age, in-patient (surgical and non-surgical) and day.

Table 21.2: Acute Hospital Beds, Bed Days and Occupancy 1995-2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
DoH&C estimate of total acute beds available	12,496	12,520	12,470	12,421	12,437	12,607	12,808	13,076	13,207	13,507
Change in number of beds compared to previous year		24	-50	-49	16	170	201	268	131	300
Available beds adjusted for hospitals in HIPE	12,790	12,821	12,830	12,784	12,787	13,000	13,188	13,454	13,565	13,883
Available bed days for HIPE hospital beds	4,671,548	4,682,870	4,686,158	4,669,356	4,670,452	4,748,250	4,816,917	4,914,074	4,954,616	5,070,766
Bed days reported to HIPE (95% coverage)	3,359,198	3,347,478	3,410,662	3,420,553	3,559,155	3,645,781	3,794,162	3,819,671	3,871,912	4,022,751
Occupancy based on returns to HIPE (%)	72	71	73	73	76	77	79	78	78	79
Bed days reported to HIPE adjusted up to 100%	3,535,998	3,523,661	3,590,171	3,600,582	3,746,479	3,837,664	3,993,855	4,020,706	4,075,697	4,234,475
Occupancy based on HIPE returns adjusted up to 100%	76	75	77	77	80	81	83	82	82	84

Source: Own calculations.

Table 21.3: Projections for Acute Hospital Beds and Capital Expenditure Requirements, 2007-2013

100 Per Cent occupancy	2006	2007	2008	2009	2010	2011	2012	2013	Cumulative Total
Current Use Model Total	13,591	11,552	11,778	12,010	12,259	12,524	12,806	13,100	
Implied Change compared to previous year			226	232	249	265	282	294	1,548
Trend Analysis Model: 10 Year Trend	13,591	11,916	12,287	12,685	13,124	13,605	14,133	14,704	
Implied Change compared to previous year			371	398	439	481	528	571	2,788
Trend Analysis Model: 6 Year Trend	13,591	11,389	11,636	11,903	12,205	12,541	12,914.9	13,325	
Implied Change compared to previous year			247	266.9	301.6	335.6	374.4	409.9	1,935
85 Per Cent occupancy									
Current Use Model Total	13,591	13,591	13,857	14,130	14,422	14,734	15,066	15,412	
Implied Change compared to previous year			266	273	293	312	332	346	1,821
Trend Analysis Model: 10 Year Trend	13,591	14,019	14,455	14,924	15,440	16,006	16,627	17,299	
Implied Change compared to previous year			436	468	516	566	621	672	3,280
Trend Analysis Model: 6 Year Trend	13,591	13,399	13,690	14,004	14,359	14,754	15,194	15,676	
Implied Change compared to previous year			291	314	355	395	440	482	2,277

these trends would continue into the future. Acute hospital bed projections for this model were based on the trends observed combined with changes in the population distribution. The 6-year Trend Analysis model, which was specific to Ireland, was estimated because of a change in the practice of reporting obstetrics over the period of the data used to estimate this model.¹⁰⁸

Summary estimates are presented in Table 21.3 according to the assumption of 100 per cent occupancy and 85 per cent occupancy. It should be noted that current occupancy rates are below 100 per cent, which explains the difference between the current 2006

¹⁰⁸ Specifically, the reporting of obstetrics to the Hospital In-patient Enquiry only became compulsory in 1999 – prior to that time, reporting for these discharges was on an ad hoc basis. Because of this change, the 10-year trend analysis model was found to be severely compromised for females in the age groups 15-24, 25-34 and 35-44 years. The 6-year trend analysis model was estimated to address this problem; the findings of this model are therefore only applicable to females aged between 15-44 years.

available beds and the projected 2007 beds requirement under the 100 per cent occupancy assumption. While it is unrealistic and perhaps even undesirable to expect 100 per cent occupancy, this assumption forms a benchmark against which the implications of other occupancy rate assumptions can be judged.

This analysis shows that over the period 2007-2013, assuming 100 per cent occupancy, 1,548 additional acute hospital beds would be required according to the 'Current Use' model, 2,788 additional beds would be required according to the 10-year Trend Model and 1,935 additional beds would be required according to the 6-year Trend Model. Assuming 85 per cent occupancy over the period 2007-2013, an additional 1,821 acute hospital beds are projected to be required according to the Current Use model, an additional 3,280 beds would be required on the basis of the 10-year Trend Model while the 6-year Trend Model estimated the need for an additional 2,277 beds. The projections for the 6-year trend model are clearly closer to the current use model while those derived from the 10-year trend model are much higher. The 6-year trend model has the benefit of more complete data but the disadvantage of a shorter time period over which to estimate the bed capacity projections.

In order to estimate the financial implications of these projections, approximate costs per bed were supplied by the Department of Health and Children. The DoH&C estimate that, at 2006 prices (including VAT and excluding site purchase costs), the cost of building 'new' acute beds on a green field site approximates €500,000 per bed; building additional beds for an existing hospital may cost closer to €250,000 per bed. Here an even split between Greenfield and extension beds is assumed. The actual cost will vary depending on the type of support facilities required to service the additional beds. The DoH&C cost estimates do not differentiate bed type (day, in-patient surgical, in-patient non-surgical). The estimation of the revenue requirements arising from any expansion in the number of acute hospital beds is outside the scope of this project. Prior to any commitment to capital investment in this area, the revenue implications will have to be thoroughly addressed as they will be considerable.

The capital investment required to provide the additional beds is summarised in Table 21.4. The table clearly shows the implications of varying the assumptions and model on funding requirements. Depending on model and occupancy assumption the average annual funding requirement is between €97 million and €205 million. The 6-year trend and the current use models produce quite similar numbers. As was noted above, the 6-year trend model has benefited from a more comprehensive data set and is therefore preferred. Comparing the funding requirements for the same model under the two different occupancy assumptions reveals the benefits of achieving higher occupancy rates. For the 6-year trend model the difference between the average cost for the 100 per cent and 85 per cent occupancy rates are over €20 million.

Table 21.4: Implied Investment Required (€million)

	2008	2009	2010	2011	2012	2013	Average	Cumulative Total
100 Per Cent occupancy								
Current Use Model								
Total	84.8	87.0	93.4	99.4	105.8	110.3	96.8	580.5
Trend Analysis Model: 10-Year Trend	139.1	149.3	164.6	180.4	198.0	214.1	174.3	1,045.5
Trend Analysis Model: 6-Year Trend	92.6	100.1	113.1	125.9	140.4	153.7	121.0	725.8
85 Per Cent occupancy								
Current Use Model								
Total	99.7	102.4	109.9	116.9	124.4	129.7	113.8	682.9
Trend Analysis Model: 10-Year Trend	163.7	175.6	193.7	212.2	232.9	251.9	205.0	1,230.0
Trend Analysis Model: 6-Year Trend	109.0	117.8	133.1	148.1	165.2	180.8	142.3	853.9

Overall, the model yields very useful results. However, as was noted above a fuller analysis should be carried out in the future.¹⁰⁹ The potential impact on acute hospital bed capacity projections would need to be assessed for a range of issues including:

- policy changes both in the hospital and community care systems;
- the public/private mix within the public hospital system having specific regard to proposals announced in July 2005 to free up 1,000 beds in public hospitals with the development of new private hospitals on the campuses of public hospitals. The implications of planned developments of additional hospitals by the private sector should also be addressed here;
- the geographical distribution of acute hospital services;
- alternative scenarios assuming differing levels of occupancy;
- international best practice in relation to acute hospital service provision.

RECOMMENDATIONS

Health expenditure (current and capital) has been growing at an exceptional pace in recent years. Starting at a relatively low level, Irish public expenditure on health per capita is now amongst the highest in the EU. As in other investment areas, the investment needs are highly dependent on the underlying system. Thus, if efficiencies are achieved then the investment needs are lower. That said, the analysis presented here suggests that the current volume of investment appears to be appropriate given the underlying structure.

¹⁰⁹ It should be noted here that, at the time of writing, the Health Services Executive have established a steering group and a project team and issued a call for tender to undertake a Review of Acute Bed Capacity requirements for Ireland to 2020.

Substantial investment has already gone into the Nursing Degree Programme. Given this high level of expenditure in this area, further investment should be limited.

If one considers the 6-year trend as the most appropriate projection then an average investment of just under €150 million per year will be needed in order to provide the additional beds required. Apart from this investment, upgrading and replacement of non-bed facilities will be necessary. While the precise needs for this are difficult to measure (see our comments below), it seems appropriate that investment of the same magnitude to the additional acute beds will be required.

The non-acute/continuing care measure is of considerable importance from a social inclusion and equality point of view. It can also contribute to reducing pressure on acute hospital beds by ensuring that appropriate secondary care is available for people who no longer need care in acute beds. As was shown in Chapter 9, the number of individuals with a disability has increased. Demographic change also means that by 2013 there will be almost 160,000 more people aged 65 years and over compared to 2006, which will result in an increase in facilities for the elderly.

The *Report of the Expert Group on Mental Health* (2006) calls for substantial extra funding for a new Mental Health Policy. In particular it recommends a programme of capital and non-capital investment in mental health services that is to be implemented in parallel with the reorganisation of mental health services. Progress on this measure was slow under the current NDP, which means that there is even more need to invest going forward.

The ICT measure is important since it facilitates process innovation and should increase productivity. *The National Health Information Strategy* highlights the urgent need to put in place information technology (IT) systems as these are a vital component of a modern health system. Such IT systems include a national integrated personnel and financial management system, systems to manage medical records, laboratory results, disease specific registers (e.g. the cancer register), databases of research, services planning, e-Government and public information. Such systems clearly contribute towards improving the levels of service within the sector and should result in significant productivity improvements.

While significant progress has been achieved in the ICT measure there appears to be a need for continued funding. However, once the investment is in place the level of funding will need to be scaled back. Furthermore, the best system is of little use if the staff operating it do not have the required skills. It is, therefore, important to ensure that staff receive the appropriate training or staff with the required skills are recruited. It will also be necessary to put in place the necessary monitoring of progress on projects.

Table 21.5: Financial Recommendations

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Acute Hospitals (incl. Nursing Degree)	Same	283.9	283.9
Non-acute	Increase	240.7	300.0
ICT and Research	Increase	65.0	90.0
Total		589.6	673.9

Note: The 2006 allocation is based on the figures for the NDP and is not directly comparable with the MACIF used in Chapter 5. The table also excludes expenditure for agencies funded by the Department of Health and Children and expenditure through the Dormant Accounts scheme, which amounted to €47 million.

ACCOMPANYING MEASURES

In making recommendations on acute hospital bed needs the impact of demographic change was taken into account. This analysis, however, was conducted under certain assumptions the impact of which need to be considered in more detail. For example, the analysis focused entirely on beds in acute public hospitals. As private provision is likely to increase due to the tax incentives that are available, total supply may be increasing faster and to a level that is higher than required. Assumptions about utilisation rates and technical change in the sector also need to be considered in more detail. The needs in the acute sector were considered in isolation of the wider sector, particularly primary provision and long-term continuing care provision. Clearly developments in these two sectors may result in reduced demand for acute beds. Finally, the spatial aspects of acute bed demand were not considered. In this respect trends in the regional population need to be considered in finalising policy in this area.

Consequently, a more comprehensive rational decision-making process for the configuration of capital spending in the sector (e.g. achieving the appropriate balance between the acute and non-acute sectors and between residential and community supports) requires a more extended analysis than could be provided as part of this report. Since expanded physical capacity needs to be accompanied by increased operating expenditure, the current expenditure implications of any recommendation need to be factored into the decision model. This is of course dependent on the mix of specialist services. Physical investment must be accompanied by guaranteed current expenditure streams to run the physical facilities.

The key analysis of this chapter considered acute hospital bed needs. It did not consider the resources required to upgrade/refurbish current hospital facilities, or the non-bed investment requirements (equipment). Currently, substantial resources appear to be spent on capital investment other than new beds, including the purchase of new or replacement equipment and maintenance. It is difficult to assess the real need in these areas due to a lack of information. We estimate that this could be in the region of 50 per cent of capital spending in the acute hospitals area. Given the size of the expenditure, this must also be subject to a

rational decision process, which should reflect an assessment of need, so that this investment can be properly planned for.

In our recommendations on acute bed needs we made the assumption that 50 per cent of these would be provided on Greenfield sites, which would be more expensive. Clearly this assumption might not hold up in practice and it will be necessary to assess the degree to which investment needs might include a number of new facilities, either because space for expansion of existing facilities is limited or because the new facilities cannot be integrated properly with the existing facilities.

Experience has shown that delivery of large new facilities in the public health services is relatively slow. In part this reflects institutional factors, but might also reflect shortcomings in other areas. In order to speed up the provision of any new facilities utilising standardised designs should be explored which reduces the time taken to design new facilities and will also reduce costs of such designs. This approach has already been started with respect to schools.

The analysis conducted here did not consider the geographical distribution of acute hospital services. The current geographical distribution of facilities is to a large extent a legacy of the past. While changes might be expensive and subject to considerable debate, the geographical distribution of key facilities should be reconsidered according to changes in the regional distribution of the population and Government policy, especially the NSS. In this respect it appears reasonable to expect the key facilities to be located primarily in the gateways and the hubs identified in the NSS. Otherwise, a spatial mismatch between service availability and the location of the population will reduce efficiencies.

22. CHILDCARE

22.1 Introduction

In Ireland, childcare is often thought of as provision for pre-school children (i.e. those who have not yet entered infant classes in primary school) or for school-age children outside of school hours or during school holidays. State support for the provision of childcare in this sense is relatively new in Ireland, having begun to emerge only in the 1990s. However, childcare is now increasingly thought of as an element within a broader “early childhood care and education” (ECCE) paradigm (NESF, 2005). In this paradigm, the main focus is on the developmental needs of the child, which are thought to evolve through three stages in early childhood, with a fourth post-ECCE stage arising in later childhood:

- Individualised infant care (usually by parents) is preferred as the dominant (though not necessarily sole) form of care in the first year of the child’s life;
- High quality centre-based care becomes more important from ages 1 to 2 years;
- From ages 3 to 5 years, the focus broadens to include an educational as well as a care dimension – this is where early childhood *education* comes in.
- From age 6 years onwards, primary schooling takes over the education function and the care requirement shifts to care outside of school hours and during school holidays.

There is a consensus that none of these elements is adequately provided in Ireland, although improvements are taking place in some (for overviews, see OECD, 2004; NESF 2005; see also below). The traditional practice of providing infant classes for 4 and 5 year-olds in primary schools means that provision for this age group (stage 3 above) is the most widely developed and is funded largely by the state.¹¹⁰ However, there is a concern that because this service is provided within the primary school system and is delivered by primary school teachers, the type of education it entails is overly geared to instruction and cognitive learning and has pupil-teacher ratios that are too high to yield appropriate developmental benefit for 4 and 5 year olds (OECD, 2004). Furthermore, it provides no service for 3-year olds or half of 4-year olds and so misses a large part of the relevant population. Consequently, early childhood education services are in need of development as are the other elements of the ECCE system in Ireland. Additional care

¹¹⁰ About 50 per cent of 4 year olds and virtually all 5 year olds attend infant classes in national primary schools (NESF, 2005).

demands for this group also exist outside of the school day and during school holidays.

RATIONALE FOR STATE SUPPORT

Four main types of justification are given for State support for ECCE:

- Gender equality.
- Child development.
- Social inclusion.
- Support for birth rates.

While market forces will encourage women with high earnings potential to enter paid employment during their child-rearing years, women with lesser earnings potential will not have the same incentives and will therefore be more likely to give up careers and lack independent incomes. Consequently, public interventions towards childcare that are aimed towards those with lower incomes and linked to employment status are justified to help avoid the gender inequality inherent in this outcome.

Children's social and educational development is enhanced by participation in early childhood education in the pre-school years (i.e. at ages 3 or 4 and 5 years) and the lifetime return on investment in such education is high, particularly in the case of disadvantaged children (NESF, 2005). This type of education has high returns but as with other types of education, demand would be sub-optimal without public intervention. This relates primarily to stage 3 referred to above, as for infants in the first year of life child development is best aided by extended parental leave. For 1 and 2 year olds, there is no clear evidence that paid childcare has developmental benefits (except in the case of disadvantaged families) and so the rationale for State support for childcare at these ages rests on grounds other than child development.

Research has shown that support for childcare and development from the first year of life onwards aimed at disadvantaged families helps children overcome the developmental handicaps often associated with poverty and it can enable parents to develop skills through participation in education and training courses or to enhance their incomes through paid employment.

Governments in many developed countries have become concerned about a decline in birth rates to very low levels and the consequences this might have for future social and economic development. As was shown above, this issue is less pressing in Ireland, since birth rates, though much lower than in the past, are at the upper edge of the range for developed countries and when combined with modest inward migration are sufficient to ensure modest population growth for the foreseeable future. Nevertheless, State support for childcare aimed at raising the birth rates might also be thought to have some application for Ireland. However, research results indicate that State support for families with children is not an effective means of influencing birth rates. Rather, the findings suggest that a high level of labour demand, especially with

regard to *women's* employment, is the strongest influence in support of higher birth rates (D'Addio and d'Ercole, 2005). Thus the birth rates argument on its own is not a strong justification for State support for childcare.

While public childcare supports are largely aimed at childcare outside of the home, the perspective of *mothers in the home*, which has been important in influencing policy in Ireland, must also be considered. This perspective rejects the view that State subvention for childcare should be aimed solely at parents in the labour force and argues instead that mothers (or fathers) who wish to stay at home to look after their children themselves are equally deserving of recognition and support from the State. It therefore promotes the view that the State should subvent childcare in a manner that is neutral on the choice facing parents between paying for childcare while working outside the home versus staying at home to provide care themselves.

This stance has important policy implications. As it requires that State support be spread over a wider population of families than would be the case if it were focused on paid childcare alone, it either implies lower spending per child or substantially higher levels of funding requirements. A neutral stance between supporting paid childcare and parent provided childcare is also likely to imply that some of the aims of 'early childhood care and education' (ECCE) outlined above might not be achieved in full. The difficulty of reconciling these cost implications with the desire to be neutral on the basis of paid versus self-provided or unpaid childcare has been at the centre of much of the debate about childcare provision in Ireland over recent years.

22.2 Assessing Progress

Up to 2006, the main forms of State support for childcare were as follows:

1. Capital and current subsidies to childcare providers made available under the Equal Opportunities Childcare Programme (EOCP), 2000-2006. This was the first major programme of public spending aimed at the childcare sector. It was designed to increase the supply and improve the quality of centre-based childcare places and thus responded to the gender equality, labour supply and child development perspectives on childcare. It also included some targeting on the less well-off and thereby aimed to serve the social inclusion rationale.
2. Increases in Child Benefit introduced over recent years, which were justified both on anti-poverty grounds and as a general support for childrearing, were thought of as incorporating an element of subsidy towards the cost of paid childcare. However, Child Benefit increases, insofar as they included a subsidy for childcare, were provided on the basis of the neutrality principle referred to earlier and so were made universally available to all parents, whether or not they made use of *paid* childcare.

3. The traditional provision of infant classes for 4 and 5 year olds in primary schools continued as before. No recent developments in structures or provision of facilities have occurred in this sector to address its limitations as a form of early childhood education referred to earlier.

Of these three supports the first, the EOCP 2000-2006, was the most important new development. It entailed total expenditure of €499.3 million, inclusive of administration, which, based on approvals to end-June 2005, is now expected to deliver 38,000 new childcare places by the end of 2007.¹¹¹ Although the EOCP was formulated under the National Development Plan and thus in principle was focused on capital development (both physical and human), in practice a large proportion of the expenditure was directed towards current costs. As Table 22.1 shows, 38.5 per cent of the expenditure was accounted for by supports for staffing costs. The supports for staffing under the EOCP are currently supporting over 2,300 childcare staff. 'Quality improvement' accounted for a further 18 per cent, and while a proportion of that was directed towards human capital (in the form of training for childcare workers), a substantial proportion was accounted for by administration and regulatory costs, especially those incurred in connection with main institutional innovation introduced to develop childcare, namely the County Childcare Committees. Thus, up to half the expenditure under the EOCP 2000-2006 was for current rather than capital purposes. This is not entirely surprising, since childcare is a labour intensive service in which support for capital costs, no matter how generous, is capable of having only a limited impact on overall costs. However, this feature of the EOCP is important to keep in mind in looking forward to the next National Development Plan, as it reminds us that public support for childcare is as much a question of current expenditure as capital expenditure.

Table 22.1: Expenditure Under the Equal Opportunities Childcare Programme 2000-2006

Measure	€Million	%
Capital grants	204.5	41.0
Support for staffing costs	193.5	38.5
Quality improvement	83.3	16.5
Programme Administration	18.0	4.0
Total	499.3	100.0

Source: Department of Health and Children.

Of the new places established under the EOCP, 57 per cent are sessional/part-time and 43 per cent are full-time.¹¹² This compares with the original target breakdown of 67 per cent sessional/part-time and 33 per cent full time. The survey of 2004 grant

¹¹¹The forecast number of new places based on approvals to end of June 2005 is 38,543 (BMW and S&E Monitoring Committee Reports Autumn 2005).

¹¹² A full-time place is one that provides more than 3.5 hours per day. In reality most of the full-time places provide well over the 3.5-hour minimum.

beneficiaries (ADM, 2005) found that 36 per cent of facilities were operating for 40 hours a week or more. Community providers were less likely to provide full-day services than private providers. Average operating hours per week were 30.7 in the community sector compared to 37.3 in the private sector.

The pattern of opening times has implications for the extent to which parents' participation in employment is facilitated. Overall, 71 per cent of community facilities and 55 per cent of private facilities closed for some period in the summer, with an average closure period (among those who close) of 5.5 weeks. County Childcare Committees are charged with ensuring that provision matches local demands and therefore these patterns may reflect needs. However, the lower coverage of opening times in the community sector versus the private sector (and in rural compared to urban provision) would have to be justified, as there is no a priori reason for expecting different demands from these sets of consumers. In 2004 a requirement that funded services operate for a minimum of 45 weeks was introduced.

QUALITY IMPROVEMENT

Under the quality improvement element of the programme training was provided for childcare workers. Between June 2004 and June 2005, 410 accredited courses were delivered. This ongoing investment in training of childcare personnel is crucial from a child development perspective. Funding was also usefully invested in researching best practice and developing policy recommendations, for example, in the Model Framework on Education and Training and the School Age Childcare Report.

TARGETING/SOCIAL INCLUSION

The Department reports that 60 per cent of successful applicants under the EOCP up to the end of 2004 were from the community and voluntary sector, for which 100 per cent capital grants were available. Targeting on the voluntary and community sector was intended to serve a social inclusion purpose, since that sector operates primarily in disadvantaged areas. Just 32 per cent of facilities provided under the scheme were located in such areas. However, the location of facilities in disadvantaged areas is not a precise targeting mechanism as many poor families live outside disadvantaged areas and services located within disadvantaged areas may be used by families from either within or without the area who are not themselves disadvantaged. Systematic information on the income profile of parents availing of services or on the level of parental contributions to childcare costs is not available. In 2004 only a minority of providers (8.9 per cent) reported that disadvantaged children are given priority access to childcare places, although this may understate the focus on disadvantage since many community-based services are wholly oriented to the socially and economically marginalised. The number of services caring for children of lone parents rose between 2002 and 2004 and

represented approximately 19 per cent of all children attending (according to *Census 2002*, 12 per cent of children under 15 years live in lone parent families). There has also been an increase in the number of services who care for children from the Travelling Community and from ethnic minorities.

A small proportion of community providers charge no fee (6 per cent). Of those providers that charge fees, one-third operate a sliding fee based on parental income (ADM, 2005). There is no central regulation in the setting of fee levels. The Department have noted that funders are now required to collect information on parental income. The Childcare Directorate's plan to require all community sector applicants to put a tiered system of charges in place might improve social inclusion targeting.

While it is recognised that social inclusion objectives are well incorporated into project selection criteria, further improvements in reporting are needed to establish that social inclusion targets are met at the *individual* level. This means measuring the extent to which disadvantaged children are getting access to places and ensuring that subsidies are targeted towards disadvantaged parents for example by adjusting fees according to parental income.

WAITING LISTS

In 2004 half of the grant-aided facilities had waiting lists for childcare places required immediately (ADM, 2005) and 78 per cent had waiting lists for places required in the future. The total number of children on waiting lists was 14,338. While these figures are an imperfect measure of demand they do suggest a significant level of under-supply.¹¹³ The largest waiting list was for the 3-5 year age group. However, greatest demand relative to current provision was for babies under 1 year. In this category there were more children on the waiting lists than actually attending services.

ORGANISATIONAL ISSUES

Over the period of the current NDP significant progress has been made in establishing structures to develop and co-ordinate childcare policy at the local and national level and to manage the EOCP. The County/City Childcare Committees have proved an effective means of encouraging co-operation between the range of childcare providers in local areas and in establishing childcare needs. The recent re-organisation of childcare at the central Government level is to be welcomed as this should lead to an improvement in policy development and delivery and will hopefully reduce the problem of negotiating with multiple funders, which is frequently reported in the community sector (Southside Partnership, 2005).

¹¹³ As noted in the ADM report, a facility has to exist before there is a waiting list so demand in areas with no facilities is not measured, and some children may be on more than one list. We have no current information on waiting lists in unsupported facilities but the Childcare Census suggested lists were just as high in the private sector as the community sector.

LESSONS LEARNED

The key lessons learned from developments in childcare provision to date are:

- State support in this area is primarily a matter for current rather than capital expenditure, but capital expenditure can make a useful contribution, as evidenced by the effectiveness of the EOCP in creating new childcare places.
- The effectiveness of provision to date in serving its social inclusion rationale is unclear since the relevant information is not available. Information in this area needs to be improved and social inclusion targeting reviewed in that light.
- There is unmet demand for existing services, over and above any latent demand that might be uncovered as services develop or become more affordable.
- Only modest progress has been made in addressing the need to improve and expand the provision of early childhood education for 3-5 year olds. While early education was not an objective of the EOCP it has been incorporated into targets for the NCIP.

22.3 Priorities for the Next Plan

Childcare continues to be a high priority for society and the economy, and many difficult questions arise as to the desired level and purpose of future state support in this area. However, most of the issues involved (such as staff training and retention, subsidies towards current costs, targeting of those subsidies on the socially disadvantaged) relate to *current* rather than capital expenditure and, therefore, do not need be resolved in connection with capital expenditure under the next National Development Plan. For capital expenditure purposes, the main question that arises is the likely overall level of future demand for centre-based childcare places, while a further question relates to the need to provide facilities for the future development of early childhood education. We assume here that further issues, such as the availability of after-school care, will be resolved without major capital expenditure on the basis that existing facilities (such as school premises) will be used for this purpose, although expenditure will be needed to improve facilities. If issues related to the use of school premises cannot be resolved, the level of investment would increase substantially and would result in two sets of premises being under-utilised – school buildings outside of school hours and after-school premises during school hours.

The main uncertainty concerning future demand for childcare arises less from the size of the child cohort than from changing patterns of labour force participation among mothers and changing preferences regarding types of childcare. The latter in turn will be strongly influenced by the cost, quality, suitability and availability of

different types of childcare and thus will in part be a consequence as much as a cause of State investment in this area.

According to data from the CSO *Quarterly National Household Survey* in 2002 (Table 22.2), non-parental childcare was used by 42.5 per cent of families with children of pre-school age and by 25.3 per cent of families with children of primary school age. However, most of this care was non-centre-based. In the case of families with pre-school children who used non-parental childcare, only 27 per cent used centre-based care (crèche or Montessori school), while 43 per cent relied on relatives, the majority of whom were unpaid, and 29 per cent relied on individual childminders. Thus, the proportion of all families with pre-school children using centre-based care was only about 10 per cent in 2002.

Table 22.2: Types of Childcare Among Families with Pre-School and Primary School Children, September-November 2002

	Pre-school		Primary	
	Number of Families (000s)	%	Number of Families (000s)	%
Unpaid relative	22.8	31.2	31.1	46.1
Paid relative	8.8	12.0	9.5	14.1
Paid carer	21.5	29.4	21.5	31.9
Crèche/Montessori	19.8	27.1	4.1	6.1
Other	5.4	7.4	2.9	4.3
Total	73.1	100.0	67.5	100
% of families with children in childcare		42.5		25.3

Source: Central Statistics Office, *QNHS* 4th Quarter 2002 Childcare Module.

Note: 'Other' includes after-school facilities, homework clubs, and activity camps.

As indicated earlier, however, this pattern of usage reflected a level of pent-up demand for centre-based childcare places. Just under 20 per cent of respondents with pre-school children indicated that they would prefer alternative childcare arrangements and centre-based care was by far the most commonly cited option¹¹⁴. Amongst those with school age children around 12.5 per cent would welcome alternative childcare arrangements, and among these after-school care was the most popular alternative (24 per cent), followed by paid carers (22 per cent) (CSO, July 2003).

We now set out an illustrative indication of the level of demand for centre-based care that might be expected to emerge by 2012. Since future demand for centre-based childcare will be shaped by many factors which are themselves difficult to predict (including, for example, the cost of childcare relative to after-tax earnings, and preferences for centre-based over other forms of paid childcare), firm predictions on this issue cannot be made. The purpose of the calculations presented here, rather, is to estimate orders of magnitude that would enable us to assess whether the projected

¹¹⁴ Just under half of the group said they would prefer crèche/Montessori compared to 20 per cent who mentioned a paid carer and 10 per cent who would prefer to mind their children themselves.

number of places to be created under the NCIP (50,000) is likely in broad terms to represent under or over-provision.

The projection of demand for centre-based care is arrived at by applying a series of assumptions to a demographic forecast of the size of the child cohort in 2012 as set out in Table 22.3. Column A in this table sets out the demographic forecast by single year of age. Column B presents the assumed percentage of each one-year age-group requiring childcare. For children under the age of one year we assume that the provision of six months paid maternity leave will mean minimal demand for care for those aged under six months, while for those aged 6-12 months, we assume that 40 per cent will require childcare. This is based on research showing that just under 40 per cent of Irish mothers were back in employment one year after the birth (Russell *et al.*, 2006). We apply the 40 per cent rate to half the cohort and add 5 per cent for non-employment related care, thus giving 25 per cent of the whole cohort.

For children aged 1 to 3 years we assume that 65 per cent will require some form of childcare. This assumption is based on current participation rates of 58 per cent among mothers with children under 5 years (CSO, *QNHS* q2 2005), which we assume will increase to 60 per cent. We add a further 5 per cent who may require non-employment related care.

Around half of 4 year olds are in primary school, therefore, the estimate of the proportion requiring care is reduced to 53 per cent. This figure is arrived at by applying the 65 per cent rate to half the cohort and the 40 per cent rate estimated for primary school children (see below) to the other half of the cohort.

For school age children we estimate that 40 per cent will require childcare. We assume an employment rate of 60 per cent among mothers of children in this age bracket based on the *QNHS* figures for the last quarter of 2005 for mothers whose youngest child is aged between 5 and 15 years (*QNHS* q4 2005). We assume one-third will work part-time and that none of this group will require childcare.¹¹⁵ On the basis of these calculations we estimate that in 2012, 367,000 children will require some form of childcare.

The next question is what proportion of these will require *centre-based* care, a question that cannot be answered with any certainty. Here we assume that the combined effect of the greater availability of places and decreasing number of non-employed relatives available to provide informal childcare *will cause the proportion of all childcare that is provided in formal childcare centres to double by 2012 compared to that recorded in the QNHS in 2004*. This assumption also reflects the preference for switching to centre-based provision amongst a proportion of those using informal care noted earlier. *On this basis, we estimate a total demand for 137,000 centre-based places by 2012*. If the forecast number of places based on latest approval

¹¹⁵ The part-time rate among female workers in q4 2005 stood at 32 per cent. The assumption that no part-timer require childcare is likely to under-estimate demand, however, this is counter-balanced by the likelihood that the part-time employment rate is in fact higher than average amongst this group of women.

figures are created (38,000) by the end of 2007 and we add this figure to the 57,000 places counted in the 2000 Childcare Census (see Table 22.4) *this would suggest that an additional 42,000 new places would be required between 2007 and 2012 to reach the 137,000 figure projected here.*

Table 22.3: Projected Number of Centre-based Childcare Places Required in 2012

Age	A	B	C	D	Projected Number of Centre-based Places Required (D*C)
	Projected Number in Cohort (2012) ^a	Assumption re % of cohort requiring childcare ^b	Projected Number Requiring Childcare (B*A)	Assumption re % of Care that is Centre-Based ^c	
		%		%	
< 1 year	70,000	25	17,500	54	9,450
1	69,000	65	44,850	54	24,219
2	69,000	65	44,850	54	24,219
3	69,000	65	44,50	54	24,219
4	68,000	53	35,00	54	19,278
5	68,000	40	27,200	20	5,440
6	67,000	40	26,800	20	5,360
7	67,000	40	26,800	20	5,360
8	65,000	40	26,000	20	5,200
9	65,000	40	26,000	20	5,200
10	58,000	40	23,200	20	4,640
11	59,000	40	23,600	20	4,720
Total			367,350		137,305

^a ESRI Demographic Model.

^b Details of the assumptions underlying these estimates are outlined in the text.

^c For school-age children centre-based care includes after-school care on school premises. These proportions are double those in the CSO childcare module which showed 27 per cent of those using childcare for pre-school children used centre-based options and 10 per cent of those using childcare for primary-school children.

As Table 22.4 shows, the biggest projected increase is for after-school services, which reflects the current low level provision for this age group. As mentioned above, ideally this provision should make use of existing school premises with necessary modifications. Therefore, the capital investment for after-school care should be directed at improving existing infrastructure and will not be as costly as provision for pre-school care. The working group on school age childcare makes recommendations on the appropriate physical environment for after-school care, which should be incorporated into planned expenditure (NCCC, 2005).

Table 22.4: Current and Indicative Figures for Centre-Based Care by Age Group

	Centre-Based Care 2000 Childcare Census	Places in Facilities Funded Under the EOCP Up to Dec 2004 ¹	Projected Centre Based Care 2012
Under 1 years	2,337	1,581	9,450
1 to 2 years	12,515	5,836	48,438
3-6 years	37,619	21,431 ²	54,297
7 to 11 years	4,332 ³	6,552 ⁴	25,210
Total	56,803	35,400	137305

¹ Survey of Beneficiaries 2004. These are not necessarily additional places.

² 2004 figure refers to 3-5 year olds.

³ 2000 figures include 12 year olds.

⁴ 2004 figures refer to 6-14 year olds.

Account should also be taken of the need to expand and improve the provision of early education services for 3-4 year old children, an issue not taken into consideration in Table 22.3. Universal provision as recommended by the NWCI and NESF would increase demand to 98,000 places in 2012 for 3-4 year olds rather than the 43,000 estimated here. The capital implications of this need are unclear, since some of it relates to children who are already accommodated in primary schools and thus would have little requirement for further capital facilities.

Quality of care is a key issue for the future and many of the social inclusion benefits of early participation are conditional upon the quality of care received. Therefore, a high priority must be given to staff training and retention, and to best practice in provision of care and facilities. Reliance on Community Employment (CE) participants as core childcare staff in many community/ voluntary sector facilities is highly problematic in this respect and can result in the most disadvantaged children being cared for by the least qualified workers. The problems with this staffing model have been strongly underlined in a number of recent reports (see Southside Partnership, 2005; OECD, 2002; Childcare Census Report, 2000).¹¹⁶ The *de facto* funding for staffing through CE should be replaced with funding for professional staff, and CE trainees should only be used to supplement core staff.

The Childcare Directorate's proposals to develop training and networking opportunities for childminders are also important for improving quality. Increasing quality will raise the costs of childcare, which needs to be factored into future spending and subsidies.

¹¹⁶ The Childcare Census in 2000 reports that 38 per cent of staff in community sector were either CE or JI schemes, and 17 per cent of staff in privately run centres (DJELR/ADM). More recently the Southside Partnership reported that 52 per cent of childcare staff in the community/voluntary sector were on Community Employment schemes (Southside Partnership, 2005, Figure 10). Not all of these facilities are funded under the EOCP.

NATIONAL CHILDCARE STRATEGY, 2006-2010

In December 2005, the Government announced a new *National Childcare Strategy* to cover the period 2006-2010. The total cost of the plan was projected at over €2.6 billion over the period, of which 86 per cent (€2.276 billion) was accounted for by current expenditure (see Table 22.5). All elements of the programme, however, have implications for what is needed in regard to capital facilities.

The main elements of the programme are as follows:

- An extension of paid maternity leave up to an eventual level of 26 weeks from March 2007, with provision for up to 16 weeks of unpaid leave. This will reduce demand for infant places in centre-based care, but may still leave substantial demand for such places for infants aged from 6 months to 1 year.
- An Early Childcare Supplement of €1,000 per year is to be paid to parents of all children aged up to 6 years. This is the largest expenditure element in the strategy, amounting to €1,677 million over the period. The key feature to note here is that this measure observes the neutrality principle referred to earlier, and thus is provided to parents of all 0-6 year olds rather than just to those who use paid childcare. Therefore, it is only partly intended to provide support towards the costs of paid childcare and, for the total amount of expenditure involved, will have only limited impact as a subsidy in that area.
- A childcare training scheme designed to train 17,000 childcare workers up to 2010. This should improve quality and help ease staff shortages in paid childcare services.
- A National Childcare Investment Programme (NCIP), costing a total of €575 million up to 2010. This is the successor to the EOCP 2000-2006, though with greater provision for involvement by private providers as well as the community and voluntary sector. It is designed to add a further 50,000 childcare places, bringing the total provided under public investment to 91,000. As with the EOCP, a large proportion (38 per cent) of NCIP spending is allocated to current costs. The capital element of the programme, at €358 million over the period, is modest relative to the cost of the overall programme (of which it represents 13.5 per cent), although it is larger than the capital element of the EOCP (which was €203 million).
- A childminding tax relief. A minder who cares for up to three children in her or his own home may earn up to €10,000 from this activity free of income tax. This provides a support to informal childminding, which will have some effect in reducing the demand for centre-based care.

Table 22.5. National Childcare Strategy 2006-2010: Expenditure Measures

Measure	Ongoing Increase over 2005 Base (€m)					Total
	2006	2007	2008	2009	2010	
1. Extended maternity leave	35	78	85	85	85	368
2. Early Childcare Supplement	265	353	353	353	353	1,677
3. Childcare training	2	2	3	3	4	14
4. National Childcare Investment Programme (NCIP)						
Current	2	4	67	70	75	217
Capital	10	20	102	110	116	358
Total	12	24	169	180	191	575
Total current	304	437	508	511	517	2,276
Total capital	10	20	102	110	116	358
Total	314	456	610	621	633	2,634
Additional item: Childminding Tax Relief	3	4	4	4	4	19

Source: Budget 2006.

22.4 Recommendations

For the next NDP the key issue to be considered here is item 4 above, the NCIP, and particularly the €358 million in capital expenditure envisaged under the NCIP. While it is difficult to predict the likely level of demand for centre-based childcare, and the projections we provide here are based on very limited information, the 50,000 additional places which the NCIP is designed to provide would seem to be a reasonable level of provision for new State-supported childcare places.

Our projections could not take account of the number of unsupported places created (or lost) between 2000 and 2006. Further compilation of information from the City and County Childcare Committees on unsupported places is necessary for a better assessment of the level of provision needed at the national level, and the figures presented here should be reviewed in the light of such information. This information will be vital for the effective spatial targeting. In this respect the objectives of the NSS with its focus on the gateways and hubs must be taken into account. This means that investments needed to support the gateways should be accorded a higher priority.

For the period 2010-2013, the focus would need to be broadened to take account of the need to improve and expand early childhood education. Investment in early education targeted at the disadvantaged is included in the education section but is predominantly current expenditure. Additional infrastructure support would be needed to adapt existing school buildings where possible and provide non-school based places. Larger questions about the level and nature of current supports for childcare are equally important but are not a matter to be resolved in the context of the NDP.

CURRENT EXPENDITURE

The National Childcare Investment Programme includes provision for an average annual investment of €54 million in current expenditure over the period 2007 to 2010. While the focus on the

NDP will be on capital rather than current support, here we indicate priority areas for those aspects of current support that have been included in the current NDP. These are:

- Subsidies for current costs to make up for a shortfall in running costs from tapered fees based on parental income.¹¹⁷ Current experience suggests that it would be extremely difficult for many voluntary/community providers to become self sufficient while meeting the social inclusion aims and providing care to the highest professional standard, given the fact that this is a labour intensive sector where staffing costs are a high percentage of overall costs.
- Costs of replacing community employment workers with trained staff as *core* staff members. In 2005 the costs of CE funding for childcare workers was €24.6 million. The costs of substituting other trained workers would be higher.
- Quality improvement/training. The NCIP for 2007-2010 does not currently specify the level of investment in this area but given the focus on child development this should be a priority.

The exact level of current support needed in this area should be estimated in forthcoming expenditure review.

Table 22.6: Recommended Expenditure

Childcare	EOCP Sub-Measures	Total EOCP 2000-2006	EOCP Annual Average	Recommendation	2007-2013 Annual Average Recommend	NCIP ^a 2007-2010 Annual Average
Capital	Capital Grants	204.5	29.2	Increase	86.7	86.7
Current	Staffing Costs	193.5	27.6	Increase		
	Quality Improvement & programme administration	101.3	14.5			
	Total current	294.8	42.1	Increase	(117.0) ^b	54.0
Total		499.3	71.3		203.0	140.7

^a Committed in Budget 2006 (NCIP National Childcare Investment Programme).

^b The increased emphasis on quality, early education, staff training and retention and the likely need for continued staffing subsidies to meet social inclusion objectives all suggest that the ratio of current supports (excluding programme administration costs) to capital supports should be maintained (ratio 1: 1.35). The exact level of current support should be estimated in forthcoming expenditure review.

¹¹⁷ Ideally these should be available to both community providers and private providers who provide for disadvantaged children. This would lead to childcare provision that is less segregated by children's socio-economic background.

23. SPORTS AND ARTS

A high skilled economy needs to provide the facilities that high skilled individuals require. These facilities are important determinants of the quality of life. While this is particularly important in order to retain and attract mobile high-skills workers it is also important for the wider population. It is in these terms that public support for cultural and recreational infrastructure should be evaluated.

A view of sport as a dimension of cultural and recreational life that should be supported by public spending is quite new in Ireland, having emerged only in the late 1990s. The previous NDP did not include significant provision for sport. Yet public spending in the area has grown since the previous NDP was initiated and in 2005 amounted to almost €185 million, of which just over half (€94 million) was for capital purposes.

The types of sport that receive public subsidy in Ireland can be divided into two broad categories:

1. *Active* sports, which centre on recreational or competitive physical activity and where voluntary/community effort plays a major part (as in Gaelic games, soccer, rugby, golf, swimming, athletics, aerobics, walking and hiking, aquatic sports, etc.).
2. *Betting* sports, which consist mainly of horse and greyhound racing, where the main forms of public participation are spectating and gambling and where core activities are mainly commercial in character. The commercial focus of these sports would justify treating them under the heading of industrial or trade policy, and their links with farming and rural life (especially in the case of horse racing) would suggest that they be treated under agricultural or rural development policy. For the present, however, they are dealt with under a sports heading by the Department of Arts, Sport and Tourism, and so are classed under that heading here.

To provide a basis for evaluating public capital expenditure for the two categories, it is necessary first to consider the rationale for public spending on each.

23.1 Rationale for Public Spending on Active Sports

Active sports contribute to a number of socially valuable outcomes:

1. They encourage physical activity in the population and thereby make a major contribution to public health, both physical and mental (Fahey *et al.* 2004, 2005.)
2. They are the context in which a large number of voluntary and community clubs have emerged (approximately 2,200 in the GAA alone) and these clubs are the main arenas in which voluntary activity takes place in Ireland. A recent estimate has suggested that for every four adult people who regularly play active sports, there are three adults who volunteer (Delaney and Fahey, 2005). These sports are thus major generators of community activity and social engagement (or what is now sometimes labelled ‘social capital’) among both young people and adults.
3. Public support and following for teams or individuals competing in local, national and international events are an important dimension of social life and a major basis for the formation and expression of collective identity in modern societies.
4. Active sport generates a significant level of economic activity, which has been valued by a number of estimates as lying in the range of 1-2 per cent of GDP (Delaney and Fahey, 2005).

The social importance of these outcomes does not in itself dictate a particular level of public support. Calculation of the issues involved is difficult, since many of the outputs (such as improved public health) and inputs (such as volunteering) are difficult to measure. In view of the steady increase in population, the rapid development of new housing, the generally underdeveloped state of facilities for physical recreation in many parts of Ireland, there is a *prima facie* case for public support.

On the other hand, there is evidence that inadequacies in sports facilities are not experienced by the public as an impediment to participation in sport (Fahey *et al.*, 2004). There may be particular activities (such as swimming) where a latent demand would be stimulated and met by provision of suitable facilities and where a ‘merit good’ case can be made to justify State support. But it cannot be assumed that this case applies equally across all sports or regions of the country. Furthermore, there are sectors (such as primary schools) where sports facilities clearly are inadequate (Fahey *et al.*, 2005) but which receive only marginal support from existing spending on sport. In sum, therefore, the level and targeting of public spending in this area needs to be well-planned. As the Department of Arts, Sports and Tourism (n.d., p. 6) has stated, it needs to link clearly with other areas of sport and social policy, and to be based on “...sound information and knowledge about relevant issues such as existing facilities, demographic trends, facility demand and usage levels.”

23.2 Rationale for Public Spending on Betting Sports

While horse and greyhound racing industries produce benefits for the rural economy, the positive social outcomes arising from betting sports are fewer and more uncertain than those arising from active sports, and have more to do with a commercial logic than a sporting logic. Betting sports entail no significant physical activity or public health benefit and the voluntary/community dimension is absent. The spectating element is very strong. According to data reported by Horse Racing Ireland and Bord na gCon, there were 1.4 million attendances at horse racing and 1.3 million attendances at greyhound racing in 2004 (in both instances representing a large increase in attendance levels in recent years). While these attendances might have a positive social component, the precise social benefits are hard to define or measure. The level of economic activity generated by horse and greyhound racing is substantial,¹¹⁸ but the existence of market failure that would justify State support for these industries has not been demonstrated.¹¹⁹

The centrality of gambling to these sports is a defining feature. Spectating and attendance at race meetings are strongly connected with gambling, gambling is a large component of the economic activity they generate, and the level of gambling on these sports has risen sharply in recent years. Betting on horse racing is estimated to have more than doubled between 1997 and 2003 (Indecon, 2004) and on-course betting on greyhound racing increased by 321 per cent between 1995 and 2005 (Bord na gCon, 2004). Total off-course betting for 2004 is estimated at €2.3 billion (data provided by Department of Arts, Sports and Tourism), while on-course betting for horse and greyhound racing combined amounted to €362 million (Horse Racing Ireland, 2004, Bord na gCon, 2004). Total betting for 2004 is thus €2.66 billion, which is roughly the equivalent of €1,900 per household.¹²⁰ While public policy might consider it desirable for economic reasons or for the benefit of the rural economy to expand the horse and greyhound racing industries, it is less evident that gambling on sport is a social good that public expenditure should be used to promote.

In view of the above, the rationale for such a level of public expenditure in support of betting sports is at best mixed and its focus on gambling gives it a questionable social value.

¹¹⁸ Indecon's (2004, p. 68) employment estimates are 5,000 direct and 2,700 indirect jobs in horse racing, and 4,200 jobs in on-course and off-course betting, with many of the latter jobs casual or part-time in nature.

¹¹⁹ Economic valuations of the economic costs and benefits of the Irish stallion tax incentive have been carried out (for a review, see Indecon, 2004) but similar valuations of State supports for horse and greyhound racing as referred to below have not been conducted.

¹²⁰ Comprehensive data on winnings paid out and bettings retained are not available. Indecon (2004, p. 65) estimates that total net on-course betting expenditure (i.e. betting retained by bookmakers and the Tote) was between €12-24 million in 2003, which would represent about 5-10 per cent of on-course betting.

23.3 Assessing Progress

The main public spending programmes on sport that come under the responsibility of the Department of Arts, Sport and Tourism are set out in Table 23.1. Included in this table is an indication of the expenditure that the Department has planned for the period 2006-2009, with an approximate breakdown between current and capital expenditure. The first three programmes in the table are concerned with active sports, and the fourth is concerned with betting sports. The fifth programme consists of spending administered through the Irish Sports Council and is concerned with active sports. It is included in the table for completeness. It entails no capital expenditure and is not considered further here.

SPORTS CAPITAL PROGRAMME

This programme provides grant support for sports capital projects to voluntary and community sports clubs, national governing bodies of sport, local authorities, colleges, and primary or second-level schools that submit joint applications with sports clubs. For local facilities, the maximum grant is 70 per cent of the total cost (80 per cent in the case of disadvantaged areas) and for regional or national facilities the level of grant depends on the scale of the facility. Funding is allocated on the basis of applications received. Applications are scored according to a set of criteria designed to reflect the objectives of the programme and ensure a balanced spread of grants by county and sport.

In the period 1997 to 2005 a total of €395 million has been allocated to 4,923 projects under this programme. Expenditure is expected to continue at about €60 million per year.

This programme is broadly justified on the basis of the rationale for public support for active sports outlined earlier. However, a Capital Expenditure Review of the programme for the period 1999-2002 pointed to the need for a strategic approach to planning for sports facilities and a sound information base on existing facilities, facility demand and usage levels (Department of Arts, Sports and Tourism, n.d.). This need has not yet been fulfilled. In 2005, it was decided to conduct a national audit of sports facilities in order to assist with strategic planning but work on this is still in its early stages. The planning basis for this programme is, therefore, inadequate and as it progresses the risk of sub-optimal targeting or excess levels of spending increases. In so far as possible, further spending on the programme should increasingly be linked to need as identified by the audit of sports facilities and in the context of a strategic plan for such facilities.

MAJOR CAPITAL PROJECTS

This programme involves two major once-off projects – Sports Campus Ireland and the redevelopment of Lansdowne Road stadium – that are important elements of Government sports policy. Sports Campus Ireland is expected to enable important spin-off benefits for Ireland to be produced from its potential as an

international training centre in the run-up to the London Olympics in 2012. Public capital expenditure on the two projects combined will amount to €310 million over the next two to three years. *Both projects should proceed as planned.*

SWIMMING POOL PROGRAMME

This is a programme of grant support for building or re-furbishing local authority swimming pools. The programme was closed to new applicants in July 2000, by which time 56 applications had been received. Of these, 18 projects have been completed, 14 are in construction or about to begin construction, and the remainder are being processed.

The rationale for this programme is similar to that for the Sports Capital Programme above, though with the added consideration that swimming is a form of physical activity that can be targeted on population categories that have been identified as priorities from a physical activity point of view (such as older people, inactive women, children). The programme should proceed as at present. Any future development of the programme should be contingent of the finalisation of a strategic plan for sports facilities as referred to in the Sports Capital Programme above.

HORSE RACING IRELAND AND BORD NA GCON

Horse Racing Ireland (HRI) and Bord na gCon (BnagC) are State bodies with responsibility for controlling and developing the horse and greyhound racing industries. HRI and BnagC are funded in part by the Exchequer and in part by income from a range of levies and activities. Exchequer funding is provided through the Horse and Greyhound Racing Fund, which was established by the Horse and Greyhound Racing Act, 2001. In 2004, the Government committed €350 million to the Fund, which is sufficient to sustain financial support to HRI and BnagC at present levels up to 2008.

Annual revenue to the Horse and Greyhound Racing Fund is provided in part by an excise duty on off-course betting. When the Fund was established in 2001, the rate of excise duty was 5 per cent and was sufficient to meet the funding requirement in full. The excise duty was reduced to 2 per cent from 1 May 2002. This led to a shortfall in revenue, which was made up from direct Exchequer sources (in 2005, the betting excise yielded €46.1 million revenue for the Fund and the balance made up directly from the Exchequer was €22.45 million, a ratio of 67:33). The excise duty has been further reduced to 1 per cent in Budget 2006, so that the share of revenue drawn from direct Exchequer sources will be larger in the future.

The level of financial support provided to horse and greyhound racing from this Fund is large, at €68.4 million in 2005. This is approximately one-third of total expenditure on sport administered by the Department of Arts, Sport and Tourism. This funding is allocated on an 80:20 basis between HRI and BnagC (€54.7 million to HRI and €13.7 million to BnagC in 2005). In 2004, income from this source accounted for 66 per cent of total income of the HRI.

The purposes to which expenditure by HRI and BnagC is devoted are varied and are directed more towards current than capital activities. In 2005, 14 per cent of HRI income from the Horse and Greyhound Racing Fund (€7.8 million) was directed towards capital expenditure, while the corresponding proportion for BnagC was 41 per cent (€5.7 million).

Table 23.1: Public Expenditure Programmes on Sport

Programme	Funding Source	Purpose	Expenditure 2005 €million		Capital Expenditure Plans 2006-2009 (Four Years)
			Capital	Current	
1. Sports Capital Programme	National Lottery	Grant support to sports bodies for capital projects	56.8		€60 million per year, subject to annual review
2. Major Sports Capital Projects	National Lottery/ Exchequer	(a) Sports Campus Ireland		1.3	(a) Total €119 million by completion in 2009
		(b) Lansdowne Road stadium re-development	9.5		(b) €191 million grant support (total cost €365 million); completion by 2008
3. Swimming Pool Programme	Exchequer	Grants to local authorities to develop/ refurbish public swimming pools	14		€25 million per year, subject to annual review [assume €80 million over period]
4. Horse and Greyhound Racing Fund	Excise on off-course betting/ Exchequer	Current and capital funding to (a) Horse Racing Ireland and (b) Bord na gCon to support horse and greyhound racing	(a) 7.8	(a) 46.8	(a) €200 million capital development programme 2004-2009, of which €110 million from HRI, of which amount from Horse and Greyhound Racing Fund is unspecified [assume €35 million over period]
			(b) 5.7	(b) 8	
5. Irish Sports Council	Exchequer	Current support for recreational and competitive sport		34.4	
Total 2005			93.9	90.5	
Total 2006-2009					€665 million
Assumed capital expenditure 2010-2013					€235 million
Total capital expenditure 2006-2013					€900 million

On a unit basis, the public subsidy entailed by this level of funding is particularly large in connection with horse racing: it is the equivalent of almost €40 for every person attending a race meeting in 2005 and is €179,000 per meeting. Based on Indecon's (2004) estimates of employment in horse racing, it is an annual subsidy of about €7,000 per job in the sector. This subsidy is over and above the support given to the horse breeding industry by virtue of the tax reliefs in regard to stallion fees. The subsidy per person attending a greyhound race meeting is smaller at just over €10.

As indicated earlier, the rationale for public subsidy to horse and greyhound racing, whether for current or capital purposes, is mixed

and is questionable in some respects. The large *size* of the subsidy, particularly in regard to horse racing, gives rise to more questions about the justification for the programme. Since the Government has made commitments under the programme out to 2008, these commitments should be honoured. *However, it is difficult to see a rationale for an extension of the programme at a similar level beyond 2008 particularly in view of the large share of funding for the programme between now and 2008 that will have to be drawn from general Exchequer sources.* The benefits and rationale for the programme should be stringently evaluated so as to determine what level of public funding is merited beyond 2008 and also to review the forms and levels of public revenues that might be drawn from horse and greyhound racing.

23.4 Priorities for Next Plan

As already described, capital expenditure on sport for which the Department of Arts, Sport and Tourism has reasonably firm plans amounts to €665 million up to 2009, of which almost half is accounted for by two major projects – Sports Campus Ireland and the Lansdowne Road stadium. Both of these are major priorities for sports policy and both are scheduled to be completed by 2009. It is unlikely that other major projects requiring similar levels of public support would follow these. Capital expenditure on sport apart from these two major projects might be expected to continue at levels similar to those at present. However, the planning and information base for this expenditure is underdeveloped and measures that have already been proposed to improve that base (such as the national audit of sports facilities and the development of a national strategy for sports facilities) should be implemented. The precise volume and targeting of future spending cannot properly be determined until that planning base is in place.

The scenario we assume here is that, following completion by 2009 of the two major capital projects already mentioned, the volume of public capital expenditure on sport for the period 2010-2013 will be well below that for the period 2006-2009 but will remain substantial. Here we assume that public capital expenditure on sport for the period 2010-2013 will amount to €235 million in total, which is less than half the size of the programme for 2006-2010.

23.5 Recommendations on Sports Facilities

Plans already in place that cover the period up to 2009 combined with likely levels of activity beyond 2009 give an overall estimate of the total public capital expenditure on sports facilities over the period 2006-2013 of €0.9 billion, with a front-loading of expenditure on the first half of that period (€665 million). Averaged over the eight years of the programme, this is more-or-less the same level of capital expenditure on sport as in 2005.

Our recommendations are as follows:

- (a) overall expenditure of this magnitude over the period 2006-2013 is justified;

- (b) in view of current construction industry constraints, it would be preferable if the front-loading of expenditure on to the first half of the period were reduced and the timing of expenditure adjusted to produce a more even spread over the whole period;
- (c) the planning basis for determining precise levels and targeting of expenditure should be improved. Two relevant instruments have already been proposed by the Department of Arts, Sports and Tourism – a national audit of sports facilities and the development of a strategic plan for sports facilities. These should be implemented and, aside from the Lansdowne Road and Sports Campus Ireland projects, future spending under other aspects of the Sports Capital Programme and the Swimming Pool Programme should be slowed until they have been completed and are available to guide that spending;
- (d) commitments already made to support the horse and greyhound racing industries up to 2008 should be honoured, but support for these industries beyond that date should be based on a rigorous cost-benefit evaluation, taking account both of actual expenditure under the Horse and Greyhound Racing Fund and the tax treatment of on-course and off-course betting that is entailed in the current system.

23.6 Cultural Facilities

ASSESSING THE PROGRESS OF PREVIOUS INVESTMENT

Public investment in good roads and clean water addresses constraints on the economy and the nation's health. But cultural infrastructure also plays an important role in determining the standard of living in a modern society (ESRI, 1999). Therefore, it is desirable to ensure that cultural life should flourish and that the cultural life is inclusive and avoids imbalance between 'customers' and 'suppliers' of the arts.

Public funds raised from taxation have many competing uses and so it is important to determine the rationale for investment in any particular area. Public investment in the arts is usually justified on the grounds that it has 'public good' characteristics and that there would be under-investment if it were left to the private sector; public investment is also justified if it is redistributive by helping low-income groups or other excluded groups (O'Hagan, 1998). It is worth elaborating in more detail the nature and extent of the public goods or 'external benefits' of arts facilities, which would result in under-supply, if the supply of arts facilities were left to the market.¹²¹

¹²¹ It is important to note that while philanthropy is an important source of funding for the arts in North America and to a lesser extent some other EU countries, this is a considerably more limited source of funding in Ireland. This means that the need for public intervention is stronger in Ireland than in many other developed countries.

These three broad justifications, and their sub-heads, are spelt out briefly as:

1. Public Benefits

These include the economic spillover effects, through the encouragement to tourism and attracting foreign business, and the development of national identity, social cohesion/continuity and national prestige; development of social criticism, the ‘mirror of society’, and promotion of experimental and innovative work.

2. Information Failures

“Too few” people choose to patronise the arts so that unaided the arts are not viable. This may sound paternalistic, in that it presupposes that consumers are unable to evaluate the benefits of arts correctly. The counter-argument says that if people have not been exposed to the arts as part of their education then they have not had the opportunity to appreciate them and develop their tastes – if they had the opportunity they would then be able to make choices on the basis of ‘better’ information and would engage in more culture.

3. Distribution Issues

The so-called high arts tend to be patronised by the well-off. Policies to promote equal access and participation by those who are effectively excluded from enjoyment, including policies to help people with disabilities and to help provide a regional spread are thus called for.

23.7 Lessons of Research on Arts Policy

The intended spending of the Regional OPs of the current NDP on Culture Recreation and Sports amounted to €36.3 million in the BMW region and €4.1 million in the South and East region. This relatively low level of investment in arts and culture suggests that they did not rank highly against the major economic opportunities of the NDP. However, funding for arts and culture activities was also provided outside the NDP. The issue of funding for the arts in general is a constant source of debate. In the allocation of funds in the NDP, the arts have to compete with other demands, most of which are making claims to the effect that their activities are ‘intrinsically good’. Provided that the broad principles outlined above are kept in mind, funding of the arts can stand up relatively well.

SUBSIDY PER ‘CUSTOMER EVENT’

Given that public resources have many uses one should consider the usefulness of a particular investment in terms of its opportunity cost. In that sense resources devoted to funding the subsidy per ‘customer event’ are ‘tax-payers’ resources foregone. However, these may be well worth foregoing, if the wider societal experiences

of identity, diversity, continuity and understanding are the result, namely, the public benefits outlined above. The subsidy gives an idea of how much is being paid for these.

It is difficult to estimate the precise subsidy per 'customer event' as it is difficult to disaggregate the data correctly. An approximate figure can be estimated for a subset of the arts, namely, the performing arts (Fitzpatrick Associates, 2004). Here there were 3 million attendances in 2003 and €33 million came from the public sector, giving a subsidy per attendance of €11. Half of this is estimated to be returned to the Exchequer in various forms of taxation, making the net subsidy approximately €5.5 per attendance. However, there may be some tax reliefs to be added to the €5.5 that have not been considered here.

As O'Hagan points out, in so far as there are public benefits, then some, all or more than this can be justified, depending on the value of the public benefits, if one could calculate them. Furthermore, some of the expenditure could also have been targeted at accessibility and at what can be termed broad educational goals.

The manner in which public support is given to the arts is an important issue and determines who benefits. The issue can be best illustrated by the analogy with public support in the form of housing subsidies. It is not a foregone conclusion that the ultimate beneficiary is the recipient of the subsidy, if the subsidy finds itself being 'passed on', as in this analogy to landlords. Recent revelations of the depressed level of incomes in some arts professions in Ireland may reflect just such a reality (Arts Council, 2005a). If there is insufficient demand from 'customers' compared to a rising number of suppliers due to the manner in which subsidies are disbursed, artists' remuneration is likely to become depressed. To overcome this, emphasis needs to be placed on developing a more arts oriented paying public.

The question of comparative levels of State arts' expenditure between countries including Ireland has been addressed in a report by the International Arts Bureau (2000). However, the measurement of State expenditure has to deal with two broad problems. The first is the difference in definitions of 'art' and art disciplines defined in the analysis.¹²² The second is the difficulty of estimating the less visible 'expenditure' via tax reliefs for artists (the artists' exemption) and for donors and availability or otherwise of VAT deductions (the last aspect appears not to have been dealt with in the study). Results must therefore be viewed as broadly indicative. The report found that in 1997 central Government spending on arts through the Department of Arts, Heritage, Gaeltacht and the Islands and the Department of the Environment was £40.2 million. Local

¹²² The definition of arts for the study of comparative State support were: community arts, dance, drama, festivals/other mixed artforms/venues, film production literature support, music, opera, visual arts/public art/ photography, museums and galleries. Excluded was expenditure on libraries, built heritage, mainstream arts education or professional training, and public service broadcasting. Capital expenditure of domestic origin is identified.

Government spending was £3.8 million bringing the total to £44 million.

Indirect public support through tax relief was estimated at £24.4 million.

The report considered that per head public support was near the bottom for EU countries. As a share of GDP, spending on the arts in Ireland was 0.07 per cent, rising to 0.09 per cent when museums were included. This was less than a fifth of the share in Finland and Germany, for example, and about half the share in England. Funding has increased since 1997. Figures for 2003-4 prepared by the Canada Council for the Arts (2005) compares Arts Council Budgets per head. Ireland's budget comes out at three-quarters of that for England, which shows that the position has improved.

Whatever the levels of public funding, capital and current, the major consideration is that there be value for money, balanced attention to the interests of the arts 'customers' and 'suppliers', and efficiency. Arrangement for multi-annual funding is another aspect of efficiency, enabling music organisations to plan ahead with sourcing.

23.8 Investment Priorities for the Next Plan

MAJOR NATIONAL INSTITUTIONS

Several major cultural institutions are considered to be in need of investment to maintain or bring them to the standards expected today. These include the National Museum, the National Library, the Irish Museum of Modern Art, the Chester Beatty Library. The cost is estimated at €340 million over the seven years. Additionally, the Abbey Theatre's estimated €155 million. There is an argument that there is some excess classical performing capacity in Dublin, in the Helix, the funding of which ultimately came from the public purse. This could weaken the case for capacity expansion in Dublin, though it mainly serves to illustrate the difficulties of outreach and management that need to be addressed. Other proposals include:

SPECIAL PROGRAMMES

- The 1916 Centenary Programme is estimated at €16 million.
- The local arts communities' ACCESS Scheme, at €20 million overall, assists the development of integrated arts centres, theatres, museums and galleries as well as arts studios and other creative and performance spaces. With particular emphasis on community-based projects, the scheme is expected to bring about a greater participation in the arts.
- Wexford Opera produces local and wider spillover effects, operates in a competitive market and its building programme is expected to cost €26 million, assuming a contribution of €4 million from private sources.

EFFICIENCY MEASURES

- To exploit economies of scale, the investment of information technology for centralised advance information, marketing and box office within performing arts venues, would be worth supporting. Including the set-up costs, the sum would not be large.
- Other capital projects, such as enhancing stocks (books, digitisation, archives etc.) are costed at between €100 and €140 million. Digitisation will provide national access and world access to the collections of the national collecting institutions.
- There is a further investment that fits the justification for public funding, as a targeted scheme to address misinformation or an externality, such as a management-training subsidy. This is a cultural curriculum support service that addresses the uneven arts provision in schools and the issue of inclusiveness. A scheme has been costed for music education and a four-year programme has been piloted for a year in Donegal. Applying the initial four years of the pilot curriculum support nationally would cost €25 million to be spread over seven years (€3.57 million per year). Further discussion follows here.

INFORMATION LEARNING

Investment in the curriculum support element of the start-up costs of Music Network's proposed *National System of Local Music Education Services* fits the criteria for the NDP (Music Network, 2003). The aim of the full project is to enable Ireland to have the musical, cultural and community life more akin to that of countries with similar incomes that devote more resources to the arts, such as the Scandinavian countries. The project consists of a ten-year programme to develop music education services to address the uneven provision in general education and also in vocal and instrumental tuition. (Other art forms may also have similar proposals.)

The programme works through present administrative and physical structures, but it redefines roles and co-ordinates effort, to address the fact that the most is not being made of current resources. Thus it could be seen as efficiency oriented. The start-up year involves an amount of upskilling of teachers who, for example, have often had to teach several subjects despite not being specialists and having little by way of support. The project would be a systematic approach to including all schools and removing the hit-and-miss experience as to whether or not one's school has a vibrant artistic life.

A priority for the NDP would be that element of the proposal relating to support services for primary and second-level schools. This could deal with the problem of exclusion from appreciating those art forms that are demanding particularly at the early stages, as

discussed above. The start-up expenses of the curriculum support for a pilot scheme have been estimated by Donegal VEC to be €0.111 million, €0.167 million, €0.222 million and €0.278 million in the four years. The benefits of the project, which have been seen in similar schemes, include the help they provide in the development of many skills, and the enrichment they provide to the curriculum with cultural links to other subjects, to the wider community and to lifelong learning.

EXCLUSION

Investment is required in start-up costs of programmes to help persons still excluded. Examples would be the setting up of schemes for OAPs or, indeed, for persons without private transport. The possibilities should be investigated for the introduction of integrated ticketing, or transport schemes, that local groups such as residents' associations, churches and other bodies could be offered as special deals. The improvement or otherwise in genuine accessibility needs to be assessed. The problems that people with a disability have with transport appear not to have been addressed. Investments oriented to learning and exclusion in general have the advantage of regional spread.

Table 23.2: Recommendations on Arts and Culture

Measure	Recommendation	2006 (€million)	2007-2013 Average (€million)
Culture, Recreation and Sports		5.0	
Culture: National Facilities	There is a problem of regional concentration.		
Special Programmes:			5
1916 Centenary	Total = €36 million		
Local arts communities ACCESS Scheme			
Efficiency measures:			15
Central marketing/scheduling; Stock enhancement (including digitization)			
Education:			3.57
Support and up-skill arts/music teachers (<i>National System of Local Music Education Services</i> is being piloted in Donegal).	Four year programme costing €25 million over four years. There is a serious need for schemes that would help to upgrade and even out the quality of the existing arts/music slot in the school curriculum.		
Exclusion:			1
	There are no costings. Use €1 million per year		
Total Culture			99.57

24. SUMMARY AND CONCLUSIONS

24.1 Context

Since 2000, when the current NDP started, a number of important changes have occurred in Ireland. Overall economic growth slowed in the early years of the plan but has recovered so that Ireland continues to outperform most OECD countries. Along with fast growth a change in the sectoral composition of the economy is becoming increasingly evident with services becoming more important. At the same time with increased globalisation the level of international competition in product markets has increased significantly, not least because of the strong performance of emerging economies. While Ireland has continued to attract FDI, competition for such investment has also increased internationally. In this respect the loss of competitiveness has had a significant impact. Continued net immigration, while expanding the labour force, has resulted in significantly higher demand for housing.

24.2 Macroeconomic Implications

The third National Development Plan is currently reaching completion. On the basis of all of the research undertaken to date it is clear that these Plans have made an essential contribution to the transformation of the Irish economy and society over the last fifteen years. Without successive NDPs the economy would have choked from lack of infrastructure, unemployment would still have been a serious social issue and the environment would be under much more serious pressure than is currently the case. The experience of the last three successful NDPs holds some important lessons for the future.

While the overall strategy pursued under successive National Development Plans has been appropriate, with the benefit of hindsight some areas where improvements could have been made can be identified. In the second NDP the level of investment, especially in transport infrastructure, was not sufficiently adventurous. In the current NDP the level of investment in physical infrastructure was, if anything, ramped up too rapidly with significant inflationary consequences. While the stance of fiscal policy under the first two NDPs was supportive of their objectives, under the current NDP fiscal policy has aggravated the inflationary consequences of the investment expenditure. In addition, the supporting measures (e.g. pricing of access to infrastructure) recommended in Fitz Gerald *et al.* (1999) and (2003), which were aimed at obtaining best use out of the new infrastructure, have generally not been implemented. This has reduced the albeit high

rate of return below what might otherwise have been obtained. Finally, in programmes where there has been a major increase in levels of public investment in a short space of time there have in a number of cases been problems with project management.

For the next NDP the strategy remains rather similar to that identified in the *Mid-Term Evaluation* of the current NDP. There is a need to complete the investment in the major primary roads as soon as possible. To provide for sustainable economic development over the coming decades there is a need to invest effectively in public transport serving major urban areas, especially Dublin. Investment in R&D and human capital also remains an important priority. With the achievement of compliance with the EU urban waste water directive there can be some slowdown in investment in that area in the next NDP. Generally, with the economy operating at close to capacity direct supports for the business sector ranging from manufacturing to tourism and agriculture should be phased out.

As identified in Chapter 11, if the NDP is to address the infrastructural needs of the economy effectively a series of supporting measures will be required. Many of these measures were identified in previous reports (Fitz Gerald *et al.* 1999 and 2003) but have not yet been fully implemented. The success of the next NDP will necessitate closer attention being paid to such measures if the best results are to be obtained from the huge planned investment programme.

The analysis in Chapter 5 largely replicates the results from previous such studies suggesting a high rate of return to successful investment in infrastructure, human capital and research and development. Ireland still has a substantial infrastructural deficit to be made up as a result of historically low levels of investment in previous decades and the very high rate of growth experienced over the past decade.

The analysis in that chapter indicates that the planned investment in the next NDP, through relaxing the infrastructural constraint, would allow the economy to grow more rapidly in the next decade. Over the course of the decade after completion of the next NDP the capacity level of GNP would be raised by at least two percentage points and possibly even three percentage points above the level it would be without such investment. The analysis in this chapter also suggests that the rate of return to the State on the investment would be quite high, fully justifying the very substantial commitment of resources.

If the necessary infrastructure could be bought ready-made from a supermarket then the optimal strategy would be to undertake the necessary investment very rapidly. However, the bulk of the infrastructure has to be produced domestically, in particular by the building sector. This means that the more rapid the deployment of new infrastructure the greater the share of national resources that have to be bid away from other sectors of the economy to produce the infrastructure. In Chapter 5 we analyse how large an investment programme the economy is capable of delivering without serious inflationary consequences.

While there is a high rate of return to efficient investment the results presented in Chapter 5 also suggest that the economy will have difficulty delivering the much needed investment at a reasonable cost. While the funding may theoretically be there to close the infrastructure gap rapidly, the economy does not have the ability to produce all the necessary infrastructure over the period to 2013 without squeezing out other important economic activity. This means that any attempt to close the gap too rapidly will seriously raise the cost of the investment, reducing the potential rate of return.

There are two possible responses to this constraint:

Given the likely long-term importance of the proposed infrastructure the best approach would be to use the tax system specifically to reduce private sector demand for the output of the building sector. This would allow the public sector to buy the necessary infrastructure at reasonable cost without putting undue pressure on the tradable sector of the economy. (It might also reduce the risk of a bubble in the housing market.) Even if the building and construction demand were not targeted specifically, a tight fiscal policy would also reduce existing demand pressures in the economy though reducing Government expenditure or increasing general taxation.

The alternative approach, which is assumed in this report, would see the start up of some major projects being postponed by a year or two. This would delay the benefits that would undoubtedly accrue from those investment projects that are delayed. The counterpart to this delay would be significantly lower costs for the economy in delivering the investment. The profile of investment recommended in Chapter 5 in our view provides the best compromise between the urgency of the need for the infrastructure and the importance of maintaining the competitiveness of the economy in the medium term. While a “second best” result, the objective of this delayed phasing of investment over the period 2007-2013 would be that it would ensure that the share of the economy accounted for by the building sector would not increase and would preferably show a gradual reduction towards its long-run sustainable level. The downside of such an approach would be that the economy would not have the benefit of the valuable infrastructure as early as it would under the first of these approaches.

As the first of these approaches (tightening fiscal policy) may not prove generally acceptable, the approach adopted in this report is to recommend an NDP for the 2007 to 2013 period which, while still very ambitious, would be significantly below that envisaged in the Multi-annual Capital Investment Framework (MACIF) published as part of *Budget 2006*. This analysis argues for a slower ramping up of the investment, with more of it taking place after 2010 when there is a higher probability of the economy having slowed down. It also argues for the Government saving the money not spent due to a postponement by running a surplus, so that it would be available post-2010 to finance the higher investment programme even if the public finances had been hit by an economic slowdown.

In terms of prioritisation the analysis suggests that there will be fewer constraints in delivering on the necessary investment in human capital than there will be in the case for investment requiring building and construction. For the infrastructural investment it will be very important to undertake the necessary cost-benefit studies to allow the prioritisation of different projects. This will be especially important in the case of the transport investment to ensure that very large projects are correctly sequenced to produce the maximum return to the economy and to minimise the direct and the indirect costs of delivery.

As shown in Table 24.1, this report recommends a major increase in investment on transport. This should allow the completion of the programme of upgrading the primary road system over the course of the next NDP. It should also allow an ambitious programme of investment in public transport, which should provide for sustainable economic growth beyond the end of the next decade. However, as envisaged by the Minister for Finance, all transport projects should undergo a rigorous cost-benefit analysis, preferably overseen by the Department of Finance. This report recommends a 10 per cent cut in expenditure on social housing, not because such housing does not bring significant social benefits, but rather because the economy does not have the capacity to deliver a higher level of investment without more severe inflationary consequences.

Table 24.1: “Recommended” NDP PCP Expenditure, € millions

	2007-2013, Annual Average at 2006 Prices	
	2006	Recommended
Transport	2,555	3,374
Housing	1,245	1,133
Public Administration	1,029	1,125
Health	645	721
Education	684	858
Enterprise sector	601	521
Agriculture	214	174
Environment	590	497
Total	7,563	8,403

For investment in health infrastructure there is provision for a volume increase for the next NDP. The recommendations in this report would also imply a significant increase in investment in education infrastructure.

In the case of investment in the enterprise sector, including agriculture, it is recommended that expenditure should be cut back over the course of the next NDP. The role of the State is to provide the appropriate context for the business sector to operate, not to provide direct financing. Investment by the business sector should be determined by that sector based on its likely commercial profitability. The same rules should be applied to the energy and telecommunications sectors as to the rest of the business sector – no direct support by the taxpayer. With the economy continuing to run

at capacity over most of the current NDP, the arguments previously advanced for providing direct support for commercial activity are further strengthened.

This report also recommends a significant reduction in investment in environmental infrastructure. This recommended reduction takes account of the fact that the requirements of the EU Urban Waste Water Directive are now nearly achieved. In addition, the cost-benefit analysis to support a continuing high level of investment is not as yet available.

24.3 Horizontal Principles

The NDP will have a number of objectives. Apart from putting in place the investment necessary to maintain national competitiveness within a sustainable budgetary framework, it also has important goals in implementing the National Spatial Strategy (NSS); alleviating poverty and social inclusion; enhancing the All Island perspective; contributing to the Lisbon Strategy; and enhancing environmental sustainability. The five horizontal principles are important in that they contribute to the quality of life within Ireland.

NATIONAL SPATIAL STRATEGY

The last ESRI investment priorities study (Fitz Gerald *et al.*, 1999) highlighted the need for a spatial development strategy in order to target investment appropriately. With the publication of the NSS this important policy gap was filled. However, since the NSS was published after the current NDP the two policy documents were not fully consistent. The *Mid-Term Evaluation* found that while the NDP contributed positively to achieving more balanced regional development, links to the NSS were poor. In particular, the project selection criteria did not reflect the NSS, and there were problems with regard to evaluation as NUTS 3 level data were not available.

It is essential that the next NDP explicitly is targeted at implementing the NSS. The key objective of the NSS, to build critical mass in the gateways and hubs, remains as important as in 2002 as the urban structure in Ireland continues to be weak. With much of the growth in developed economies being urban driven, and with increasing global competition, this poor urban structure could be a serious impediment to the future success of the economy. Of course, the effects of urban sprawl, such as the increase in long distance commuting, also impacts on the quality of life.

Achieving the goals of the NSS requires two actions. First, strong planning needs to be implemented at the national, regional and local levels. This must work to increase densities, while not restricting the supply of development land which would also facilitate some of the major public transport projects planned. Second, project selection throughout the NDP must reflect the NSS priorities. This relates to all programmes and measures and not just to the infrastructure programmes. Thus, for example, the availability of childcare will play an important part in making gateways and hubs attractive to families.

We also recommend a number of specific measures aimed at supporting the NSS, along with urban and rural development:

- A special integrated infrastructure measure to support the NSS should be introduced.
- Urban and village regeneration will play an important role in enhancing the quality of life and improving the built environment in villages and towns. Heritage should continue to be protected.
- Rural development measures need to focus on non-agricultural employment.
- Equity and finance based supports to firms should be covered in one measure rather than three measures.

EQUALITY AND SOCIAL INCLUSION

While the next National Anti-Poverty strategy (NAP), which is being prepared in parallel to the NDP, will be a central strategy of the Government to deal with social cohesion over the medium term, given the wide remit of the next NDP and the longer period over which it will be in operation, this must also reflect the NAP goals.

The *Mid-Term Evaluation* of the current NDP found that existing measures appear to be useful but in some cases should be targeted better. Consequently, we recommend that these be maintained. Apart from better targeting, we also recommend that the equality measure should be broadened, covering not just gender equality, which remains important, but also other equality issues such as disability and race. The last decade has seen a turnaround in the migration patterns with significant immigration into Ireland. Consequently, a sizeable immigrant community has built up and it will be important to ensure that this community be properly integrated into the wider society. Consequently, we recommend that a measure to aid the integration of immigrants should be introduced.

ENVIRONMENT

Given the huge scope of economic activity covered by the NDP it will have a wide-ranging impact on the environment. The channels through which it will impact on different environmental media (water, air etc.) are many.

The underlying purposes of investment in water infrastructure are on the one hand, the provision of clean and safe water and, on the other hand, the protection of public safety and water quality in water bodies. Economic and demographic growth, the implications of the Spatial Strategy, the need to meet national and EU standards, and the exploitation of the benefits of water-related leisure activities (including passive enjoyment on the part of tourists), are drivers of the 'where', 'how' and 'how much' investment is advised.

The next plan will be framed in the context of the Water Framework Directive and it must take account of the likely growth in population over the coming fifteen years.

While not a major factor in expenditure under the NDP, the problem of minimising the generation of solid waste and of disposing of it in an environmentally satisfactory manner has featured in the current NDP and should be a feature of the next NDP.

Another measure under the NDP directly affecting the environment is the investment in promoting energy efficiency. These measures are designed to encourage more efficient use of scarce energy resources and also to minimise the resulting emissions of harmful gases, especially greenhouse gases.

If and when a comprehensive study is carried out on the proposed public transport network for Dublin, the environmental effects will also be examined. The proposal to implement appropriate road pricing in the long term would have important environmental benefits as well as producing much more efficient use of costly transport infrastructure.

The direct effects of a number of key measures in the NDP on emissions of greenhouse gases will be beneficial. However, by facilitating more rapid growth in the economy, resulting in the level of GNP being almost 2 per cent higher than would otherwise be the case in 2020 (Chapter 5), the NDP will have an offsetting indirect effect of increasing emissions of greenhouse gases.

If the investment is to produce a reasonable economic return to society it will be important that the physical planning process changes to promote much denser development around the new public infrastructure network. This, in turn, will produce an environment that is more sustainable in terms of lifestyle.

NORTH-SOUTH

Given the island location and small relative scale of the Irish economy it is essential that strong links be forged between the Irish Republic and Northern Ireland. Such links also support the positive political developments following the Good Friday Agreement.

In considering the priorities for the next NDP it is important to consider what infrastructural investment in Northern Ireland would support development south of the border and how the current Investment Strategy for Northern Ireland (ISNI) reflects these needs. The converse of this is consideration of what investment under the NDP in the Republic could support economic and social development north of the border.

Strong infrastructure links already exist in the area of transport and energy. With regard to the latter further emphasis should be placed on developing an all Ireland electricity market and to ensure sufficient interconnection between the existing two independent systems. This will have benefits both North and South. Substantial progress has been made on major North-South transport routes in the South and the focus now has to turn to the Northern links. Such links are particularly important for Donegal and the gateway of Letterkenny. Other areas where increased co-operation is likely to yield a strong return are in education and R&D and possibly health.

LISBON

The next NDP will build on what has been achieved so far in order to consolidate and improve competitiveness and thereby contribute to the achievement of the Lisbon Strategy. By enhancing the productive capacity of the economy, and especially by addressing key constraints, the next NDP can increase sustainable economic and employment growth. Despite the relative slowdown in economic activity, constraints in the availability of infrastructure and capacity constraints in the building and construction sector, have led to inflationary pressure and damaged the overall competitive position.

The central focus of this study is to address infrastructure bottlenecks and it recommends substantial further investment in infrastructure, particularly in the areas of transport, water services and housing. Investments in other areas such as waste, energy and telecommunications will largely be put in place through the own resources of the service providers, be they State-owned companies or private enterprises.

The recommendations on R&D are to increase resources devoted to this area. Building on investments to date, the aim of our recommendations is to achieve a step change in the level of R&D investment in Ireland over the period of the NDP 2007-2013. Our recommendations envisage substantial increases in public investment in both higher education R&D and support measures for private sector R&D activity. This increased investment in R&D will facilitate innovation and contribute to a strong European industrial base.

24.4 Accompanying Measures

The provision of public investment goods should be met in the most efficient and cost effective way. This requires consideration of the usage of these infrastructures and of related access charges. Determining the optimal level of provision needs to be undertaken in the context of an explicit pricing policy framework. Pricing policy also helps to optimise the use of the substantial endowment of existing public infrastructure. There are other accompanying measures, which also need to be put in place along with investments. The list of desirable accompanying policy components includes:

- Correct pricing.
- Timely delivery.
- Integration with land-use planning.
- Regulation.
- Resource allocation and management.
- Project Selection Criteria, efficient management.

These issues are covered in detail in Chapter 11.

24.5 Microeconomic Priorities

TRANSPORT

Transport remains the highest priority for infrastructural investment. This reflects the strong increase in the demand for transport, which despite significant progress in expanding the transport capacity, has resulted in increasing congestion. The evidence suggests that the return to transport investment, and particularly roads, remains high. It is however important to note that in the absence of proper pricing the market will not result in an efficient level of demand, which would result in calls for a continued high level of investment into the foreseeable future, in excess of the socially optimal level.

Specifically we recommend that the priority accorded in *Transport 21* to the completion of the National Primary route system to standards adequate for predicted traffic volumes is correct.

We propose a reprioritisation of the proposals contained in *Transport 21* in relation to the National Secondary roads, which would better accord with the NSS.

In the context of a review of road classification, we recommend that consideration be given to transfer the responsibility for the busier non-national routes, to the Department of Transport and the NRA.

Fixed line rail projects need to be thoroughly evaluated, considering the potential of all public transport modes. Provided projects pass these evaluations a high priority is accorded to them. In this respect it is important to note that the international evidence suggests that for inter-urban routes rail investment tends to have a lower return than roads investment. Given the relatively low population potentially served by the Western Rail Corridor this project should be scrutinised particularly strongly.

The proposals under *Transport 21* contain significant suburban fixed rail projects. These have a better chance of passing a thorough evaluation than some of the mainline rail projects, since they would serve a larger population. However, the network wide effects of the proposed investment have not been considered and such a study is urgently required.

With regard to public transport in Dublin we recommend that the relevant assets of the Dublin transport network should be transferred to a single holding company. This should include both the rail network and the bus network. That single company would then be able to co-ordinate all services, including ticketing, without having to engage in negotiations with many independent entities.

Port and airport infrastructure should continue to be funded on a commercial basis.

HOUSING

Housing remains an important component of the NDP. The recommendations which follow reflect the unprecedented level of expenditure on housing, giving cause for concern over the dependence of the economy on the housing market. There is also concern about the value for money obtained by the expenditure incurred:

- *Tenure Mix*: A better balance of tenures should be achieved through schemes using the private rented sector, such as the *Rental Accommodation Scheme*. The net result would be a lower level of capital spending for new build, acquisitions and housing maintenance. Consequently, it is recommended that the average annual spend on local authority housing should be reduced in the next NDP compared with the 2006 level.
- *Special Housing Needs*: The spend on social rented accommodation by the voluntary housing sector should be maintained, given its focus on providing rented accommodation for key groups with special housing needs, such as the elderly, the disabled and the homeless.
- *Tenant Purchase Scheme*: The value of housing units sold under the tenant purchase scheme should reflect more closely the market value of the local authority dwellings being purchased outright. If market value is not an option there should be a clawback provision over the first ten years.
- A priority should be to ensure that the Rental Accommodation Scheme (RAS) becomes fully operational as soon as possible.
- *Fair Rents Policy*: A fair rents policy across all social housing tenures, as stated in the Housing Policy Framework and addressing the issue of indexation of rents as part of this package needs to be implemented.
- *Rationalisation of Schemes*: The range of existing schemes and supports and their eligibility criteria need to be restructured in order to deliver a more streamlined set of housing policy interventions with clear objectives, targets and output levels.
- There may be a case for considering whether the Mortgage Interest Supplement Scheme, administered by the Department of Social and Family Affairs, should be included as an instrument of housing policy with all other housing interventions administered by the DoEHLG.
- *Affordable Housing*: A new simpler and streamlined affordable housing scheme for those seeking access to affordable housing for home ownership or renting should be implemented as planned. We recommend a reduced level of spending in the next NDP for non-Exchequer loan finance.
- *Part V*: The housing supply provisions under Part V should be reviewed in order to ensure that they are working efficiently and effectively and that they are not holding up the delivery of housing supply.
- *Public Private Partnerships*: More use of public private partnerships should be made in urban areas for regenerating local authority housing estates and improving the quality of the existing local authority and social housing stock. This would allow a reduction in the overall capital provision for

schemes aimed at improving the quality of the housing stock, most of which is spent on regeneration programmes.

- *Homelessness*: The recommendations from the Government's review of the implementation of its homelessness strategies need to be implemented. Schemes that provide accommodation for groups with special needs are important for tackling social exclusion and it is recommended that the level of expenditure remains unchanged.

WATER

Water and waste water services are largely publicly provided, although a significant proportion of the population has provided a private supply for themselves. It is important to consider the implications of global warming for water abstraction capacity. The projected economic and population growth also needs to be accommodated by investment going forward. In this respect it is important to note that compliance with the EU directive is at this point very high which means that additional investment needs are limited. Furthermore, as investment needs will largely be met through development levies the need for public funds is also reduced. Of course, the provision of infrastructure in the absence of efficient markets risks over-investment. Thus, in the absence of water charges for households, excess demand for water will continue, thus resulting in the need for capacity expansion.

The specific recommendations on water and waste water are:

- *Waste Water*: Compliance with UWWTD stands at over 90 per cent at end-2005, having risen from 25 per cent in 2000 (Fitzpatrick Associates, 2005a). Given this high compliance rate only limited funding will be needed to achieve full compliance.
- *Water Supply*: By end 2005 some 0.666 million population (44 per cent) out of the target of 1.5 million population had been served, leaving a considerable gap. However, the level of public funding needed is moderated by the fact that substantial resources for development related infrastructure are collected as development contributions.¹²³
- *Management and Rehabilitation of Infrastructure*: This activity has yielded high returns in the past and provided that this is still the case, the activity is being rightly stepped up.
- *Infrastructural Support for Expanded Economic Activity*: Growth in population and economic activity call for this to continue. However, economies should be gained from adhering to the NSS by concentrating expansion at gateways and hubs.

¹²³ According to data from the Department of the Environment, Heritage and Local Government development contributions amounted to €546 million in 2005, which constitutes a significant increase over 1996 (€46 million) and 2000 (€110 million) (see <http://www.environ.ie/DOEI/DOEIPol.nsf/wvNavView/Overview?OpenDocument&L#14>).

Realistic payment on the part of all water service users would reduce requirements considerably.

- *Coast Protection and Management*: No evaluation has come to hand on this measure, but as increased erosion is possible with the effects of global warming some investment is likely to be warranted.
- *Rural Water Investment*: Some further investment is required to fill the gap in achieving the last NDP's target.

WASTE

As there is now a much-reduced role for central Government funding of waste management services our recommendations here are limited. There is a momentum building up in the sector in terms of increased diversion of waste from landfill and the delivery of new infrastructure, and this should continue without the need for direct Government intervention.

The aim should be to facilitate the emergence of a commercialised, economically efficient and environmentally responsible waste management sector, not necessarily totally privatised, but exposed to competitive pressures. With environmental externalities internalised (via EPA regulations and enforcement, the landfill levy, and possibly an incineration levy), there should in theory be no need for further public subvention of recycling, composting or related activities.

As a significant proportion of waste is unaccounted for increased resources should be made available for enforcement.

ENERGY

All of the investment in energy infrastructure should be delivered on a commercial basis without any requirement for finance by the taxpayer. The general principle should be that consumers of energy should pay the full economic cost (including negative environmental externalities) of energy. Ireland does not have a comparative advantage in energy. To subsidise energy consumption in any way would lead to an inefficient use of resources. To subsidise consumption in any way would then encourage business to expand into areas where the cost of producing in Ireland is higher than elsewhere, moving the economy away from the sectors where Ireland's long-term competitive advantage lies.

TELECOMMUNICATIONS

The bulk of activity in the communications sector is resourced entirely on a commercial basis. Within the current NDP there is one exception to this in the form of the E-commerce and Communications measure. The aim of this measure is to address gaps in infrastructure to maximise the use of existing shared infrastructure and to drive demand for new services and activities in the sector.

A policy area that has attracted some attention is support for broadband. Broadband constitutes a technology that allows both businesses and individuals to change the way they operate. Overall roll-out of broadband has been slow resulting in relatively low broadband penetration. In an international comparison Ireland ranks second last among EU-15 countries with just Greece having lower availability (Forfás, 2005).

The nature of the technology suggests that the primary gains from broadband are captured by firms and individuals directly so that any externalities are limited. On that basis public intervention would not be warranted. However, the State has an important role as regulator of the sector, especially where there are monopoly elements to the provision of infrastructure.

The spatial distribution of the population in Ireland is such that provision of broadband infrastructure by the private sector in some areas may be slow, and indeed without public intervention some areas may never receive provision. In this case there is a potential market failure which needs to be assessed thoroughly. The fact that a particular area does not have broadband access is in itself not sufficient to warrant intervention if there is no local demand for that service. This point is important since if no demand exists, the resources expended on broadband infrastructure will have been wasted, at least in the short term.

HUMAN RESOURCES

It has been argued that the expansion in educational participation at both second and third level has been one of the main factors underlying Ireland's rapid economic growth during the 1990s (Fitz Gerald, 2000). Forecasts of future skill needs indicate that high skilled occupations will continue to expand over the medium to long term and emphasise the need for continued investment in human capital, and the continuation of high demand for higher education graduates (Sexton, Hughes, McCormick and Finn, 2001; and Sexton, Hughes, Casey, Finn, and Morgenroth, 2004). In a context of ongoing rapid changes in the technology and organisation of production and service delivery, education and skills have come to assume central importance both for macroeconomic performance as well as for the labour market prospects of individuals. Enhancing productivity in the future will require additional investment in research and development and in the expansion of tertiary education, at undergraduate as well as post-graduate levels.

Most studies indicate that early childhood education brings enduring benefits in terms of better school outcomes and enhanced social skills in later life. However, Ireland is below average and lags well behind the leading countries in the proportion of 3-5 year olds in pre-primary education (OECD, 2004, Goodman and Sianesi, 2005).

With regard to primary education investment in physical infrastructure is needed to raise standards. Investment in

programmes to counter social disadvantage and poor educational achievement has a high social return.

Currently just under one-fifth of young people leave school without having completed the upper secondary cycle, as discussed below. This is an unacceptable wastage of human resources and it should become a core objective of the second-level system that every student should complete either a Leaving Certificate or its equivalent (NESC, 2006).

Investment in higher education is essential to support the development of an economy based on learning and innovation. The two priorities in higher education are (1) to maintain a strong stream of well-educated graduates to fill technical and managerial positions in the labour market and; (2) to support the growth of research in higher education institutes, with strong linkages to the private sector. These priorities are reflected in the commitment of greater resources to higher education and in developing the research infrastructure and in providing ongoing support for research.

An additional complementary priority is to widen access to higher education. This includes not only those from disadvantaged socio-economic backgrounds, but also mature students and students with disabilities. Some progress has been achieved in respect of the former two in recent years, but there has been much less progress in improving access for students with disabilities.

Ireland falls well below the leading countries in investment in the ongoing training of employed workers. This, combined with the prospective decline in new entrants to the labour force, suggests the need for increased investment in continuing education and training. There is a strong argument for targeting public investment in continuing education and training on the lower skilled, because they are less likely to participate on the basis of their own resources, and upgrading the skills of the low skilled has the potential to meet skill shortages. Training of individuals with greater endowments of human capital is more likely to be funded by their employers, particularly where the returns to such training, both to employers and employees, may be more apparent.

RESEARCH AND DEVELOPMENT

Our recommendations for investment priorities reflect three main influences. First, the aspirations of the Enterprise Strategy Group (ESG) and Interdepartmental Committee on R&D, which themselves reflect the wider aspirations of the EU Lisbon Agenda. Building on investment to date, these aim to achieve a step change in the level of R&D investment in Ireland over the period of the NDP 2007-2013, and the measures we are suggesting are designed to support this aspiration.

The detailed priorities include:

- A substantial increase in public investment in both higher education R&D and support measures for private sector R&D activity.

- Continuation of most of the current funding mechanisms for R&D and innovation implemented under the NDP 2000-05 (Enterprise Strategy Group, 2004, pp. 65-76).
- A greater focus on commercialisation.
- In order to ensure the best projects get funding we recommend a reduction in funding for R&D ring fenced for particular sectors, while recognising that policy oriented R&D continues to be of high importance.
- We recommend an increase in funding for business led R&D and collaborative efforts.

We suggest one addition to the current portfolio of schemes following a suggestion by the ESG for a specific measure intended to develop innovation networks in Ireland.

HEALTH

As in all developed countries, healthcare is an important area of Government intervention and the public sector is the major healthcare provider in Ireland. Government policy as set out in the 2001 health strategy entitled *Quality and Fairness: A Health System for You* emphasises the wider concept of health that covers the state of physical, mental and social well-being and not just the absence of illness or disability. Despite the high proportion of current expenditure in the healthcare area substantial capital investment has also been put in place over the last decade.

In order to determine investment needs it is important to identify future demand. In this respect a special study of the impact of demographic change on the need for acute hospital beds was carried out. This study showed that assuming an 85 per cent occupancy over the period 2007-2013, between 1,821 and 3,280 additional acute hospital beds are projected to be required. On the basis of some assumptions about the cost of new beds, the projected bed needs will cost between €97 million and €205 million annually, depending on model and occupancy assumption.

Assessing the need for other expenditure is very difficult due to the lack of data and an appropriate resource allocation model. However, given the stated strategy with respect to care of the elderly, the disabled and individuals suffering from mental illness additional non-acute facilities may be appropriate. Similarly in the area of information technology a significant gap remains.

CHILDCARE

State support for the provision of childcare is relatively new in Ireland, having begun to emerge only in the 1990s. However, childcare is now increasingly thought of as an element within a broader 'early childhood care and education' (ECCE) paradigm (NESF, 2005).

Rough estimates calculated as part of this study suggest that 50,000 additional places would seem to be a reasonable level of provision for new State-supported childcare places.

For the period 2010-2013, the focus would need to be broadened to take account of the need to improve and expand early childhood education.

Additional infrastructure support would be needed to adapt existing school buildings where possible and provide non-school based places. Current experience suggests it would be extremely difficult for many voluntary/community providers to become self sufficient while meeting the social inclusion aims and providing care to the highest professional standard. The costs of replacing community employment (CE) workers with trained staff as *core* staff members are an important issue. In 2005 the costs of CE funding for childcare workers was €24.6 million, the costs of substituting trained workers would be higher.

PRODUCTIVE SECTOR

In an economic climate of full employment and overheating of some sectors it is difficult to justify significant intervention in the productive sector. Rather than proposing significant direct subsidisation of productive activities, we expect that the overall business environment will be significantly improved by the investments in the areas of infrastructure, education and training and research and development.

In the past many of the supports have been aimed at sectors which have underperformed and indeed are not expected to increase their share of national output. Such interventions can only be justified if they result in a restructuring of the sector, which improves competitiveness and ultimately the viability of the sector. With regard to primary production there is little evidence that the continued subsidisation can turn around the fortunes of the industry as a whole. Of course, interventions can have a significant positive effect on individual businesses but the benefits of the interventions appear to be largely captured by those businesses, which implies high deadweight. In this respect it is interesting to note that a significant effort has been made by the industrial development agencies to limit deadweight.

Notwithstanding these criticisms some limited supports to the productive sector are recommended. Support to productive sector activities should be limited to areas of clear market failure and should be concentrated on the development of SMEs and for regional development purposes. There should be a shift from supporting underperforming industries towards enabling resources tied up in these industries to move to better performing industries.

CULTURE AND RECREATION

Strategic planning in regard to the Sports Capital Programme and Swimming Pool Programme needs to be improved and, as far as possible, spending on this area should be delayed until an appropriate plan and information base is put in place.

The programme for Major Capital Projects should be implemented in full, though perhaps on a longer timescale than currently planned in view of construction industry constraints.

Because of existing commitments, spending from the Horse and Greyhound Racing Fund should be continued as currently planned to 2008. The rationale for continuing this programme in its present form beyond 2008 needs to be stringently evaluated and would more appropriately be considered as a question for economic policy (under a heading such as industry and trade or agriculture) rather than sports policy.

Arts facilities make an important contribution to the quality of life. Expenditure on major arts facilities should be backed up by a longer term plan ensuring sufficient demand and efficient management so as to maximise the return, and the spatial distribution of investment should reflect the NSS.

BIBLIOGRAPHY

- ADM, 2000. *National Childcare Census Report*. Dublin: Area Development Management Ltd.
- ADM, 2005. "Results of 2004 EOCF Annual Beneficiary Questionnaire," Dublin: Area Development Management Ltd.
- AFFUSO, L., J. MASSON and D. NEWBERY, 2003. "Comparing Investments in New Transport Infrastructure: Road Versus Railways?" *Fiscal Studies*, Vol. 24, No. 3, pp. 275-315.
- AGHION, P. and P. HOWITT, 1992. "A Model of Growth through Creative Destruction", *Econometrica*, Vol. 60, No. 2, pp. 323-351.
- AGHION, P. and P. HOWITT, 1998. *Endogenous Growth Theory*, Cambridge (MA): MIT Press.
- AGRI VISION, 2004. *Agri Vision 2015*. Dublin: Department of Agriculture, Forestry and Food.
- ANSELIN L., A. VARGA, Z. ACS, 1997. "Local Geographic Spillovers Between University Research and High Technology Innovations", *Journal of Urban Economics*, Vol. 42, pp. 422-448.
- ANSELIN L., A. VARGA, Z. ACS, 2000. "Geographic and Sectoral Characteristics of Academic Knowledge Externalities", *Papers in Regional Science*, Vol. 79, pp. 435-443.
- ARCHER, P. and S. WEIR, 2004. "Addressing Disadvantage", Report to the Educational Disadvantage Committee.
- ARESTIS, P. and P.O. DEMETRIADES, 1997. "Financial Development and Economic Growth: Assessing the Evidence", *Economic Journal*, Vol. 107, No. 442, pp. 783-799.
- ARROW, R. and M. KURZ, 1970. *Public Investment, the Rate of Return and Optimal Fiscal Policy*. Baltimore, MD: Johns Hopkins University Press.
- ARTS COUNCIL, 2005a. *Socio-Economic Conditions of Theatre Practitioners in Ireland*, report by Hibernian Consulting.
- ARTS COUNCIL, 2005b. "Partnership for the Arts, Arts Council Goals 2006-2010", www.artscouncil.ie
- ARTS COUNCIL, 2005c. "Partnership for the Arts in Practice 2006-2008", <http://www.artscouncil.ie/future/docs/practice.pdf>.
- ASCHAUER, D., 1989. "Is Public Capital Productive?", *Journal of Monetary Economics*, Vol. 23, pp. 177-200.
- ASHENFELTER, O., C. HARMON, and H. OOSTERBEEK, 1999. "A Review of Estimates of the Schooling/Earnings Relationship, with Tests for Publication Bias," *Labour Economics*, Vol. 6, No. 4, pp. 453-70.
- ASHWORTH, K., J. HARDMAN, W.C. LIU, S. MAQUIRE, S. MIDDLETON, L. DEARDEN, C. EMMERSON, C. FRAYNE, A. GOODMAN, H. ICHIMURA, and C. MEGHIR, 2001. *Education Maintenance Allowance: The First Year. A Quantitative Evaluation*. London: Department for Education and Employment.
- ATKINS, 2000. *National Water Study*. Dublin: Department of the Environment, Heritage and Local Government.
- BACON, P. AND ASSOCIATES, 2004. *A Review and Appraisal of Ireland's Forestry Development Strategy*. Dublin: Stationery Office.
- BARNETT, W.S., 1995. "Long-term Effects of Early Childhood Programs on Cognitive and School Outcomes", *The Future of Children*, Vol.5, No. 3, pp. 25-50.
- BARRETT, A. and A. BERGIN, 2005. "Assessing Age-related Pressures on the Public Finances, 2005 to 2050" in T. Callan and A. Doris (eds.), *Budget Perspectives 2006*. Dublin: The Economic and Social Research Institute.

- BARRETT, A., A. BERGIN and D. DUFFY, 2005. "The Labour Market Characteristics and Labour Market Impacts of Immigrants in Ireland", *The Economic and Social Review*, Vol. 37, No. 1, pp. 1-26.
- BARRETT, A., T. CALLAN and B. NOLAN, 1999a. "Rising Wage Inequality, Returns to Education and Labour Market Institutions: Evidence from Ireland", *British Journal of Industrial Relations*, Vol. 37, No. 1, pp. 77-100.
- BARRETT, A., T. CALLAN and B. NOLAN, 1999b. "Returns to Education in the Irish Youth Labour Market", *Journal of Population Economics*, Vol. 12, No. 2, pp. 313-26.
- BARRETT, A., J. FITZ GERALD and B. NOLAN, 2002. "Earnings Inequality, Returns to Education and Immigration into Ireland", *Labour Economics* Vol. 9, No. 5.
- BARRETT, A. and J. LAWLOR, 1995. *The Economics of Solid Waste Management in Ireland*, Policy Research Series No. 26., Dublin: The Economic and Social Research Institute.
- BARRETT, A. and F. TRACE, 1999. "The Impact of Agricultural and Forestry Subsidies on Land Prices and Land Uses in Ireland", Policy Research Series No. 35, Dublin: ESRI.
- BARRIOS, S. and E. STROBL, 2005. "The Dynamics of Regional Inequalities", *European Economy Economic Papers*, No. 229. Brussels: Directorate General for Economic and Financial Affairs.
- BARRO, R. J., 1990. "Government Spending in a Simple Model of Endogenous Growth," *Journal of Political Economy*, Vol. 98, No. 5, pp. 103-26.
- BASSANINI, A. and S. SCARPETTA, 2001. "Does Human Capital Matter for Growth in OECD Countries? Evidence from Pooled Mean-Group Estimates," OECD Economics Department Working Paper No. 282.
- BAYINDIR-UPPMAN, T., 1998. "Two Games of Interjurisdictional Competition When Local Governments Provide Industrial Public Goods", *International Tax and Public Finance*, Vol. 5, No. 4, pp. 471-87.
- BELFIELD, C., M. NORES., S. BARNETT and L. SCHWEINHART, 2006. "The High/Scope Perry Preschool Program: Cost-Benefit Analysis Using Data from the Age-40 Followup", *Journal of Human Resources*, Vol. 41, No. 1, pp. 162-190.
- BELTON, V. and T.J. STEWART, 2002. *Multi Criteria Analysis: An Integrated Approach*. Dordrecht: Kluwer.
- BEN-DAVID, D. and M.B. LOEWY, 2000. "Knowledge Dissemination, Capital Accumulation, Trade, and Endogenous Growth", *Oxford Economic Papers*, Vol. 52, No. 4, pp. 637-50.
- BENHABIB, J. and M. M. SPIEGEL, 1994. "The Role of Human Capital in Economic Development: Evidence from Aggregate Cross-Country Data", *Journal of Monetary Economics*, Vol. 34, No. 2, pp.143-173.
- BERGIN, A. and I. KEARNEY, 2004. "Human Capital, The Labour Market and Productivity Growth in Ireland", ESRI Working Paper No. 158. Dublin: The Economic and Social Research Institute.
- BEUGELSDIJK, S. and M. CORNET, 2001. 'How Far Do they Reach? : the Localisation of Industrial and Academic Knowledge Spillovers in the Netherlands', Tilburg University, Center for Economic Research, Discussion Paper No. 47.
- BOOZ, ALLAN, HAMILTON, 2003. *Strategic Rail Review*. Dublin: Department of Transport.
- BOOZ, ALLEN, HAMILTON, 2004. *Greater Dublin Travel Demand Management Study*. Report submitted to the Dublin Transportation Office.
- BORMAN, G.D., J.V. D'AGOSTINO, K.K. WONG and L.V. HEDGES, 1998. "The Longitudinal Achievement of Chapter 1 Students: Preliminary Evidence from the Prospects Study", *The Journal of Education for Students Placed at Risk*, Volume 3, No. 4.

- BORMAN, G. and G. HEWES, 2002. "The Long-term Effects and Cost-effectiveness of Success for All", *Educational Evaluation and Policy Analysis*, Vol. 24, No. 4, pp. 243-266.
- BOUGHEAS, S., P.O. DEMETRIADES and T. MAMUNEAS, 2000. "Infrastructure, Specialisation and Economic Growth". *Canadian Journal of Economics*, Vol. 33, No. 2, pp. 506-522.
- BOVENBERG, A.L., 1989. "The Effects of Capital Income Taxation on International Competitiveness and Trade Flows", *American Economic Review*, Vol. 79, No.5, pp. 1045-64.
- BOYLE, G., T. MCCARTHY and J. WALSH, 1998-1999. "Regional Income Differentials and the Issue of Regional Equalisation in Ireland", *Journal of the Statistical and Social Inquiry Society of Ireland*. Vol. 28, No. 1, pp. 155-99.
- BRADLEY, J. and E. MORGENROTH, 2000. "Celtic Cubs? Regional Manufacturing in Ireland" in D. Duffy, J. Fitz Gerald, I. Kearney and D. Smyth (eds.), *Medium-Term Review 1999-2005*, No. 7, Dublin: The Economic and Social Research Institute.
- BRADLEY, J., T. MITZE, E. MORGENROTH and G. UNTIEDT, 2005. "An Integrated Micro-Macro (IMM) Approach to the Evaluation of Large-Scale Public Investment Programmes: The Case of the EU Structural Funds", ESRI Working Paper, No. 167. Dublin: The Economic and Social Research Institute.
- BRANDER, J. and P. KRUGMAN, 1983. "A 'Reciprocal Dumping' Model of International Trade", *Journal of International Economics*, Vol. 15, pp. 313-321.
- BREEN, R. and S. SHORTALL, 1992. "The Exchequer Costs of Unemployment Among Unqualified Labour Market Participants" in J. Bradley *et al.*, *The Role of the Structural Funds: Analysis of Consequences for Ireland in the Context of 1992*, Policy Research Series Paper No. 13, Dublin: The Economic and Social Research Institute.
- BRESCHI, S. and F. LISSONI, 2001. "Knowledge Spillovers and Local Innovation Systems: A Critical Survey", *Industrial and Corporate Change*, Vol. 10, No. 4, pp. 975-1005.
- BRYANT, D. and K. MAXWELL, 1996. "The Effectiveness of Early Intervention for Disadvantaged Children" in M.J. Guralnick, (ed.), *The Effectiveness of Early Intervention*, Baltimore: Paul Brookes.
- BUCHANON, C. and PARTNERS, 1968. *Regional Studies in Ireland*. Dublin: An Foras Forbatha.
- BÜTTNER, T., R. SCHWAGER and D. STEGARESCU, 2004. "Agglomeration, Population Size, and the Cost of Providing Public Services: An Empirical Analysis for German States", *Public Finance and Management*, Vol. 4, No. 4, pp. 496-520.
- BUTTON, K., 2004. "The Rationale for Road Pricing: Standard Theory and Latest Advances", in G. Santos (ed.), *Road Pricing, Theory and Evidence*, Amsterdam : Elsevier.
- CALLAN, T. and C. HARMON, 1999. "The Economic Return to Schooling in Ireland", *Labour Economics*, Vol. 6, No. 4, pp. 543-550.
- CANADA ARTS COUNCIL, 2005. *Comparisons of Arts Funding in Selected Countries: Preliminary Findings*. Ottawa: Canada Council For the Arts.
- CANNON, E., 2000. "Human Capital: Level versus Growth Effects," *Oxford Economic Papers*, Vol. 52, No. 4, pp. 670-676.
- CARLIN, W., A. GLYNN and J. VAN REENEN, 2001. "Export Market Performance of OECD Countries: an Empirical Examination of the Role of Cost Competitiveness", *The Economic Journal*, Vol. 111, pp. 128-162.
- CASSIMAN, B. and R. VEUGELERS, 2002. "Complementarity in the Innovation Strategy: Internal R&D, External Technology Acquisition, and Co-operation in R&D", EARIE Annual Conference, September Madrid.

- CENTRAL STATISTICS OFFICE, 2005. *Regional Population Projections 2006-2021*. Dublin: Central Statistics Office.
- CENTRAL STATISTICS OFFICE, 2004. *Population and Labour Force Projections 2006-2036*. Dublin: Central Statistics Office.
- CHILDCARE DIRECTORATE, 2005. *Ex-Ante Evaluation National Development Plan 2007-2013 Childcare Paper*, Dublin: Department of Justice Equality and Law Reform.
- CHOUDHRI E. U. and L. SCHEMBRI, 2002. "Productivity Performance and International Competitiveness: An Old Test Reconsidered", *Canadian Journal of Economics*, Vol. 35, No. 2, pp. 341-362.
- CICCONE, A., 2002. "Agglomeration Effects in Europe", *European Economic Review*, Vol. 46, pp. 213-227.
- CICCONE, A. and R. HALL, 1996. "Productivity and the Density of Economic Activity", *American Economic Review*, Vol. 86, No. 1, pp. 54-70.
- COASE, R., 1960. "The Problem of Social Cost", *Journal of Law and Economics*, Vol. 3, pp. 1-44.
- COE, D.T. and R. MOGHADAM, 1993. "Capital and Trade as Engines of Growth in France", *IMF Staff Papers*, Vol. 40, No. 3, pp. 542-566.
- COMBAT POVERTY AGENCY/NAPS UNIT DSFCA, 2002. *Pilot on Social Inclusion Indicators*, Report to the Monitoring Committees of the Regional Operational Programmes, Dublin: Combat Poverty Agency.
- COMPETITION AUTHORITY, 2005. *Decision COM/108/02*, 30th August 2005. Dublin: Competition Authority.
- COOKE, P. and L. LEYDESDORFF, 2006. "Regional Development in the Knowledge-based Economy: the Construction of Advantage", *Journal of Technology Transfer*, Vol. 31, pp. 5-15.
- CORNES, R.C. and T. SANDLER, 1996. *The Theory of Externalities, Public Goods and Club Goods* (Second edition), Cambridge: Cambridge University Press.
- COSTA, A.X., S.A. RIDLEY, A.K. SHAHANI, P.R. HARPER, V. DE SENNA, M.S. NIELSEN, 2003. "Mathematical Modelling and Simulation for Planning Critical Care Capacity", *Anaesthesia*, April, Vol. 58, No. 4, pp. 320-327.
- COTE, A., 1994. "Exchange Rate Volatility and Trade: A Survey", Bank of Canada Working Paper No. 94-5.
- COUGHLIN, C., C. J. TERZA and V. ARROMDEE, 1991. "State Characteristics and the Location of Foreign Direct Investment within the United States", *Review of Economics and Statistics*, Vol. 73, No. 4, pp. 675-683.
- CSF EVALUATION UNIT, 1999. *Ex-Ante Evaluation of the National Development Plan, 2000-2006*.
- CENTRAL STATISTICS OFFICE (CSO), *National Income & Expenditure Accounts*, various years.
- COSTELLO, S., 2004. *Future Post-primary Arrangements in Northern Ireland*. Belfast: Department of Education Northern Ireland.
- CULLEN, B. and L. WALKER, 2000. "The Department of Education and Science's 8 to 15 Early School Leaver Initiative", Dublin: Children's Research Centre, Trinity College Dublin.
- CURTIS, J., 2005. "Anaerobic Digestion: Benefits for Waste Management", Agriculture, Energy, and the Environment, Discussion paper by the Strategic Policy Unit of the EPA, January.
- D'ADDIO, A. C. and M. M. D'ERCOLE, 2005. "Trends and Determinants of Fertility Rates", OECD Social, Employment and Migration Working Papers No. 27. Paris: Organisation for Economic Cooperation and Development.

- DALHUSEN, J., R. FLORAX, H. de GROOT and P. NIJKAMP, 2003. "Price and Income Elasticities of Residential Water Demand: A Meta-analysis", *Land Economics*, Vol. 79, No. 2, pp. 292-308.
- DAVIES, S. and M. HALLET, 2002. "Interactions between National and Regional Development", HWWA Discussion Paper No. 207.
- DEARDEN, L., C. EMMERSON, C. FRAYNE and C. MEGHIR, 2005. "Educational Subsidies and School Drop-out Rates", Institute for Fiscal Studies Working Paper WP05/11.
- DECOSTER, C., N.P. ROOS, K.C. CARRIERE, S. PETERSON, 1997. "Inappropriate Hospital Use by Patients Receiving Care for Medical Conditions: Targeting Utilization Review". *Canadian Medical Association Journal*, Vol. 157, No. 7, pp. 889-896.
- De la FUENTE, A., 1996. "Inversion Publica Y Redistribucion Regional: El Caso De Espana En La Decada de Los Ochenta", Barcelona: (Papers de Treball 50.96).
- DELANEY, L. and T. FAHEY, 2005. *The Social and Economic Value of Sport in Ireland*, Books and Monographs No. 180, Dublin: The Economic and Social Research Institute in conjunction with the Irish Sports Council.
- DENNY, K., C. HARMON and S. REDMOND, 2000. "Functional Literacy, Educational Attainment and Earnings: Evidence from the International Adult Literacy Survey", Institute for Fiscal Studies, Working Paper 00/09.
- DEMETRIADES, P. O. and K.A. HUSSEIN, 1996. "Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries", *Journal of Development Economics*, Vol. 51, No. 2, pp. 385-409.
- DEPARTMENT OF ARTS, SPORT AND TOURISM (n.d.) *Expenditure Review of Sports Capital Programme 1997-2002*. Dublin: Department of Arts, Sports and Tourism.
- DEPARTMENT OF EDUCATION AND SCIENCE, 2005a. *Retention Rates of Pupils in Second-Level Schools: 1996 Cohort*, Dublin: Department of Education and Science.
- DEPARTMENT OF EDUCATION AND SCIENCE, 2005b. *Statistical Report 2003/2004*. Dublin: Stationery Office.
- DEPARTMENT OF EDUCATION AND SCIENCE, 2005c. *DEIS – Delivering Equality of Opportunity in Schools: An Action Plan for Educational Inclusion*, Dublin: Department of Education and Science.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2004. "Taking Stock and Moving Forward", in *Regional Planning Guidelines for the Greater Dublin Area 2004-2016*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2004a. *Irish Bulletin of Vehicle and Driver Statistics, 2004*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2004b. *The National Urban Waste Water Study*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2005. *Housing Policy Framework – Building Sustainable Communities*, Dublin: Department of the Environment, Heritage and Local Government.

- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2005. *Local Authority Assessment of Social Housing Need*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2005. *Review of the Construction Industry 2004 and Outlook 2005-2007*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2005. *Circular WTR: 04/05, Policy guidance pursuant to section 60 of the Waste Management Act, 1996 (as amended)*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2006. *Review of the Implementation of the Government's Integrated and Preventative Homeless Strategies*. Dublin: Department of the Environment, Heritage and Local Government.
- DEPARTMENT OF FINANCE, 2005. *Guidelines for the Appraisal and Management of CSF Evaluation Unit, (1999) Ex-Ante Evaluation of the National Development Plan 2000-2006*. Dublin: Stationery Office.
- DEPARTMENT OF HEALTH AND CHILDREN, 2001. *Quality and Fairness: A Health System for You*. Dublin: Stationery Office.
- DEPARTMENT OF HEALTH AND CHILDREN, 2002. *Acute Hospital Bed Capacity, A National Review*, Dublin: Government Publications Office.
- DLUHOSCH, B., 2000. *Industrial Location and Economic Integration: Centrifugal and Centripetal Forces in the New Europe*, Cheltenham UK: Edward Elgar.
- DKM, 2004. *Economic Evaluation of Water Supply and Waste Water Projects – Cost-Benefit Analysis Methodology Paper*. Dublin: Department of the Environment, Heritage and Local Government.
- DOWNS, A., 1992. "Stuck in Traffic", Washington DC: Brookings Institution.
- DOWNS, A., 2004. "Still Stuck in Traffic", Washington DC: Brookings Institution.
- DUBLIN TRANSPORTATION OFFICE, 2001. *A Platform for Change A Transportation Strategy for the Greater Dublin Area*. Dublin: Dublin Transportation Office.
- DUFFY, D., J. FITZ GERALD and I. KEARNEY, 2005. "Rising House Prices in an Open Labour Market", *The Economic and Social Review*, Vol. 36, No. 3, Winter, pp. 251-272.
- DUGGAL, V. G., C. SALTZMAN and L. R. KLEIN, 1999. "Infrastructure and Productivity: A Nonlinear Approach", *Journal of Econometrics*, Vol. 92, No. 1, pp. 47-74.
- DURANTON, G. and D. PUGA, 2005. "From Sectoral to Functional Urban Specialisation", *Journal of Urban Economics*, Vol. 57, No 2, pp. 343-70.
- DYER, J.E., P.C. FISHBURN, R.E. STEUER, J. WALLENIS and S. ZIOTS, 1992. "Multi Criteria Decision Making, Multiattribute Utility Theory: The Next 10 Years", *Management Science*, Vol. 36, No. 5, pp. 645-654.
- EDQUIST, C., 2004. "Systems of Innovation – Perspectives and Challenges" in J. Fagerberg, D. Mowery and N. Richard (eds.), *Oxford Handbook of Innovation*, Oxford: Oxford University Press.

- el AGRAA, A. M., 1997. "UK Competitiveness Policy vs. Japanese Industrial Policy", *Economic Journal*, Vol. 107, No. 444 pp. 1504-17.
- EIVERS, E., E. RYAN and A. BRINKLEY, 2000. *Characteristics of Early School Leavers*, Dublin: Educational Research Centre.
- EIVERS, E., G. SHIEL, R. PERKINS and J. COSGROVE, 2005. *The 2004 National Assessment of Reading*. Dublin: Educational Research Centre.
- ELLISON, G. and E. L. GLAESER, 1997. "Geographic Concentration in U.S. Manufacturing Industries: A Dartboard Approach", *Journal of Political Economy*, Vol. 105, No. 5, pp. 889-927.
- EDUCATIONAL DISADVANTAGE COMMITTEE, 2005. *Moving Beyond Educational Disadvantage*, Dublin: Department of Education and Science.
- EDUCATIONAL DISADVANTAGE FORUM, 2003. *Educational Disadvantage Forum: Report of Inaugural Meeting*, Dublin: Educational Disadvantage Committee.
- ENTERPRISE STRATEGY GROUP, 2004. *Ahead of the Curve: Ireland's Place in the Global Economy*. Dublin: Forfás.
- ENVIRONMENTAL PROTECTION AGENCY, 2003. *National Waste Interim Report*, Johnstown Castle: Environmental Protection Agency.
- ENVIRONMENTAL PROTECTION AGENCY, 2004. *National Waste Report 2004*. Johnstown Castle: Environmental Protection Agency.
- ENVIRONMENTAL PROTECTION AGENCY (EPA), *National Waste Database*, various years. Johnstown Castle: Environmental Protection Agency.
- ENVIRONMENTAL PROTECTION AGENCY, 2005. *National Waste Database 2004*, Dublin: EPA.
- ERC, 1998. *Early Start Preschool Programme: Final Evaluation Report*. Dublin: Educational Research Centre.
- EUROPEAN COMMISSION, (with INAG), 2001. "Water Pricing: Conceptual and Theoretical Issues" in S. Scott, *Pricing Water: Economics, Environment and Society*, Office for Official Publications of the European Communities.
- EUROPEAN COMMISSION, 2003. "Raising EU R&D Intensity", Brussels: European Commission.
- EUROPEAN ENVIRONMENT AGENCY, 2005. *The European Environment – State and Outlook 2005*. Copenhagen: European Environment Agency.
- EXPERT GROUP ON FUTURE SKILLS NEEDS, 2004. A Model to Predict the Supply and Demand for Researchers and Research Personnel in Line with Ireland's Strategy for Contributing to the European Research Area 3 Per Cent Initiative. Dublin: Forfás.
- EXPERT GROUP ON MENTAL HEALTH POLICY, 2006. *Vision for Change: Report of the Expert Group on Mental Health Policy*, Dublin: Department of Health and Children.
- FAGERBERG, J., 1996. "Technology and Competitiveness", *Oxford Review of Economic Policy*, Vol. 12, No.3, Autumn, pp. 39-51.
- FAHEY, T., R. LAYTE and B. GANNON, 2004. *Sports Participation and Health Among Adults in Ireland*. Books and Monographs, No. 178, Dublin: ESRI in conjunction with the Irish Sports Council.
- FAHEY, T., L. DELANEY and B. GANNON, 2005. *School Children and Sport in Ireland*, Books and Monographs No. 182, Dublin: ESRI in conjunction with the Irish Sports Council.
- FARMER, R.D., J. EMAMI, 1990. "Models for Forecasting Hospital Bed Requirements in the Acute Sector". *Journal of Epidemiological Community Health*. Dec. Vol. 44, No. 4, pp. 307-12.
- FERNALD, J. G., 1999. "Roads to Prosperity? Assessing the Link between Public Capital and Productivity", *American Economic Review*, Vol. 89, No. 3 pp. 619-638.

- FERNANDEZ, E., B. JUNQUERA and C.J. VAZQUEZ, 1996. "Government Support for R&D: The Spanish Case", *Technovation*, Vol. 16, pp. 59-66.
- FINLAYSON, G.S., D. STEWART, R.E. TATE, L. MACWILLIAM, N. ROOS, 2005. "Anticipating Change: How Many Acute Care Hospital Beds Will Manitoba Regions Need in 2020?", *Canadian Journal of Aging*. Spring; 24 Suppl 1, pp.133-40.
- FINN, J.D., S.B. GERBER, C.M. ACHILLES, and J. BOYD-ZAHARIAS, 2001. "The Enduring Effects of Small Classes", *Teachers' College Record*, Vol. 103, pp. 45-83.
- FINN, J.D., S.B. GERBER, and J. BOYD-ZAHARIAS, 2005. "Small Classes in the Early Grades, Academic Achievement and Graduating from High School", *Journal of Educational Psychology*, Vol. 97, No. 2, pp. 214-223.
- FISCHER M. M. and A. VARGA, 2003. "Spatial Knowledge Spillovers and University Research: Evidence from Austria", *Annals of Regional Science*, Vol. 37, pp. 303-322.
- FITZ GERALD, J., 2000. "Ireland's Failure-And Belated Convergence", ESRI Working Paper No. 133. Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., 2004. "An Expensive Way to Combat Global Warming: Reform Needed in EU Emissions Trading Regime", in D. McCoy, D. Duffy, A. Bergin, and J. Cullen, (eds.), *Quarterly Economic Commentary*. Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., 2005. "The Irish Housing Stock: Growth in the Number of Vacant Dwellings", in D. McCoy, D. Duffy, A. Bergin, S. Garrett, Y. McCarthy (eds.), *Quarterly Economic Commentary*, Spring, Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., 2006. "Lessons from 20 Years of Cohesion", chapter in S. Mundschenk, M. Stierle, U. Stierle-von Schutz, and I. Traistaru (eds.), *Competitiveness and Growth in Europe: Lessons and Policy Implications for the Lisbon Strategy*, Cheltenham: Edward Elgar.
- FITZ GERALD J. and O. KEEGAN (eds.), 1993. *The Community Support Framework 1989-1993: Evaluation and Recommendation for the 1994-1997 Framework*. Report prepared for the Department of Finance in association with DKM Economic Consultants, G. Boyle, NUI Maynooth, B. Kearney and A. Conway. Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., I. KEARNEY, E. MORGENROTH and D. SMYTH, 1999. *National Investment Priorities for the Period 2000-2006*. Policy Research Series No. 33, Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J. and B. NOLAN, 2002. "Earnings Inequality, Returns to Education and Immigration into Ireland", *Labour Economics*, Vol. 9, No. 5.
- FITZ GERALD, J. C. MCCARTHY, E. MORGENROTH and P. O'CONNELL, 2003. *The Mid-Term Evaluation of the NDP and Community Support Framework for Ireland 2000-2006*, Policy Research Series, No. 50, Dublin: The Economic and Social Research Institute, October.
- FITZ GERALD, J., A. BERGIN, I. KEARNEY, A. BARRETT, D. DUFFY, S. GARRETT and N. MCCARTHY, 2005. *Medium-Term Review: 2005-2012*, No. 10. Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., M. KEENEY, N. MCCARTHY, E. O'MALLEY and S. SCOTT, 2005. *Aspects of Irish Energy Policy*, Policy Research Series No. 57. Dublin: The Economic and Social Research.
- FITZ PATRICK ASSOCIATES, 2004. *Economic Impact of the Professional Performing Arts in Ireland*, Report prepared for Theatre Forum.

- FITZPATRICK ASSOCIATES, 2005a. *A Review of the National Development Plan Investment in Water and Waste Water Services During the 2000-2006 Period*. Dublin: CSF Evaluation Unit.
- FITZPATRICK ASSOCIATES, 2005b. *Review of the Implementation of the Government's Integrated and Preventative Homeless Strategies*, Dublin: Department of the Environment, Heritage and Local Government.
- FITZPATRICK ASSOCIATES, 2005c. *Implementing the NSS: Gateways Investment Priorities Study*. Dublin: Department of the Environment, Heritage and Local Government.
- FITZPATRICK ASSOCIATES, 2006. *Review of the Implementation of the Government's Integrated and Preventative Homeless Strategies*, Dublin: Stationery Office.
- FLYVBJERG, B. and N. BRUZELIUS, 2003. *Megaprojects and Risk*, Cambridge: Cambridge University Press.
- FORFÁS, 2004. *Building Ireland's Knowledge Economy – The Irish Action Plan for Promoting Investment in R&D to 2010*, Dublin: Forfás.
- FORFÁS, 2005a. *Science Foundation Ireland: The First Years 2001-2005*. Report of an International Evaluation Panel, October, Dublin: Forfás.
- FORFÁS, 2005b. *Business Expenditure on Research and Development – 2003/04*, Forfás, April, Dublin: Forfás.
- FORFÁS, 2005c. *Survey of R&D in the Higher Education Sector, 2004*, Dublin: Forfás.
- FORFÁS, 2005d. *Skill Needs in the Irish Economy: The Role of Migration*, Expert Group on Future Skill Needs, Dublin: Forfás.
- FOX, R., 2003. "Participation of the Employed in Education/Training 2002" in *The Irish Labour Market Review 2003*. Dublin: FÁS.
- FUTAGAMI, K., Y. MORITA and A. SHIBATA, 1993. "Dynamic Analysis of an Endogenous Growth Model with Public Capital," *Scandinavian Journal of Economics*, Vol. 95, No. 4, pp. 607-625.
- GANGL, M., W. MÜLLER and D. RAFFE, 2003. "Conclusions: Explaining Cross-national Differences in School to Work Transitions" in W. Müller and M. Gangl (eds.), *Transitions from Education to Work in Europe*, Oxford: Oxford University Press.
- GANNON, B. and B. NOLAN, 2004. *Disability and Labour Market Participation*. Dublin: The Equality Authority.
- GIANNETTI, M., 2002. "The Effects of Integration on Regional Disparities: Convergence, Divergence of Both?" *European Economic Review*, Vol. 46, pp. 539-657.
- GLEESON, J., A. CLIFFORD, T. COLLISON, S. O'DRISCOLL, M. ROONEY and A. TUOHY, 2002. "School Culture and Curriculum Change: the Case of the Leaving Certificate Applied (LCA)", *Irish Educational Studies*, Vol. 21, No. 3, pp. 21-44.
- GOMBY, D.S., 1995. "Long-term Outcomes of Early Childhood Programs: Analysis and Recommendations", *The Future of Children*, Vol. 3, No. 5, pp. 6-24.
- GOODBODY ECONOMIC CONSULTANTS, 2005. *Review of Area Based Tax Incentive Renewal Schemes*, Dublin: Goodbody Economic Consultants.
- GOODMAN, A. and B. SIANESI, 2005. "Early Education and Children's Outcomes: How Long do the Impacts Last?", *Fiscal Studies*, Vol. 26, No. 4, pp.513-548.
- GORBY, S., S. MCCOY and D. WATSON, 2006. *2004 Annual School Leavers' Survey of 2002/2003 Leavers*. Dublin: ESRI/Department of Education and Science.
- GREENWOOD, J. and B. JOVANOVIC, 1990. "Financial Development, Growth and the Distribution of Income", *Journal of Political Economy*, Vol. 98, No. 5, pp. 1076-1107.

- GROSSMAN, G. M. and E. HELPMAN, 1991. *Innovation and Growth in the Global Economy*, Cambridge MA: MIT Press.
- GUELLEC, D. and B. VAN POTTLESBERGHE, 2004. "From R&D to Productivity Growth: Do the Institutional Settings and the Source of Funds of R&D Matter?", *Oxford Bulletin of Economics and Statistics*, Vol. 66, No. 3, pp. 353-378.
- GUSTAVSSON, P., P. HANSSON and L. LUNDBERG, 1999. "Technology, Resource Endowments and International Competitiveness", *European Economic Review*, Vol. 43, No. 8, pp. 1501-1530.
- HALL, R. E. and C. I. JONES, 1999. "Why Do Some Countries Produce so Much More Output per Worker than Others?", *Quarterly Journal of Economics*, Vol. 114, No. 1, pp. 83-116.
- HALLET, M., 1997. "National and Regional Development in Central and Eastern Europe: Implications for EU Structural Assistance", EU-DG-2 Economic Paper 120, Brussels.
- HANUSHEK, E. and D. KIMKO, 2000. "Schooling, Labour-Force Quality and the Growth of Nations," *American Economic Review*, Vol. 90, No. 5, pp. 1184-1208.
- HARPER, P.R., 2002. "A Framework for Operational Modelling of Hospital Resources", *Health Care Management Science*, August, Vol. 5, No. 3, pp. 165-173.
- HARVEY, B., 2003. "Mid-term Review of the National Development Plan: Review and Proposals on Strengthening Social Inclusion Indicators" paper prepared for the Combat Poverty Agency, Dublin: Combat Poverty Agency.
- HEA 2004. *Review and Prioritisation of Capital Projects in the Higher Education Sector*. Dublin: Higher Education Authority.
- HEALTH SERVICE EXECUTIVE, 2006. *Children's Health First*, Dublin: HSE.
- HOLLAND, S., 1979. *Rutland Street*. Oxford: Pergamon Press.
- HONOHAN, P. (ed.), 1997. *EU Structural Funds in Ireland: A Mid-Term Evaluation of the CSF 1994-1999*, Policy Research Series, No. 31, Dublin: The Economic and Social Research Institute.
- HIPE UNIT, 2002. *Hospital In-patient Enquiry, Activity in Acute Public Hospitals in Ireland 1990-1999*, Dublin: The Economic and Social Research Institute.
- ILEX, 2005. *Regeneration Plan for Derry-Londonderry*. Derry: ILEX Urban Regeneration Company.
- INDECON, 2003. *Mid-Term Evaluation of the Productive Sector Operational Programme*. Report submitted to the Department of Enterprise Trade and Employment.
- INDECON, 2004. *An Assessment of the Economic Contribution of the Thoroughbred Breeding and Horse Racing Industry in Ireland: A Final Report for the Irish Thoroughbred Breeders Association*, European Breeders' Fund and Horse Racing Ireland. Typescript, July 2004.
- INDECON, 2005. *Review of Local Government Financing*, Dublin: Department of Environment, Heritage and local Government.
- INDECON, 2005. *Economic and Social Infrastructure Operational Programme (ESIOP) Update Evaluation 2005*. Dublin: Department of Transport.
- INTERNATIONAL ARTS BUREAU, 2000. *A Comparative Study of Levels of Arts Expenditure in Selected Countries and Regions*. Dublin: The Arts Council.
- JACOBS, J., 1969. "Strategies for Helping Cities", *American Economic Review*, Vol. 59, No. 4, pp. 652-656.
- JONES, C. I., 1995. "R&D-Based Models of Economic Growth", *Journal of Political Economy*, Vol. 103, No. 4, pp. 759-784.

- JORDAN D. and E. O'LEARY, 2005. "The Roles of Interaction and Proximity for Innovation by Irish High-Technology Businesses: Policy Implications" in D. McCoy, D. Duffy, A. Bergin, S. Garrett, and Y. McCarthy (eds.), *Quarterly Economic Commentary*, (Summer). Dublin: ESRI.
- KAIN, J. F., 1999. "The Urban Transportation Problem: A Re-examination and Update" in J. A. Gómez-Ibáñez, W. B. Tye, and C. Winston (eds), *Essays in Transportation Economics and Policy: A Handbook in Honor of John R. Meyer*, Washington, D.C.: The Brookings Institution.
- KELLAGHAN, T., 1977. *The Evaluation of an Intervention Programme for Disadvantaged Children*, Slough: NFER.
- KELLAGHAN, T. and B.J. GREANEY, 1993. *The Educational Development of Students Following Participation in a Preschool Programme in a Disadvantaged Area*, Dublin: Educational Research Centre.
- KELLY, M., 1997. "The Dynamics of Smithian Growth", *Quarterly Journal of Economics*, Vol. 112, No. 3, pp. 939-964.
- KELLY, D. and T. KELLAGHAN, 1999. *The Literacy and Numeracy Achievements of the First Cohort of Early Start Children (1994/95) While They Were in Second Class (1998/99)*. Dublin: Educational Research Centre.
- KING, R. G. and R. LEVINE, 1993a. "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics*, Vol. 108, No. 3, pp. 717-737.
- KING, R. G. and R. LEVINE, 1993b. "Finance, Entrepreneurship and Growth: Theory and Evidence", *Journal of Monetary Economics*, Vol. 32, No. 3, pp. 513-542.
- KNACK, S. and P. KEEFER, 1997. "Does Social Capital have an Economic Payoff?", *Quarterly Journal of Economics*, Vol. 112, No. 4, pp. 1252-1288.
- KRAVIS, I. and R. LIPSEY, 1992. "Sources of Competitiveness of the United States and of Its Multinational Firms", *Review of Economics and Statistics*, Vol. 74, No. 2, pp. 193-201.
- KRUGMAN, P. R., 1980. "Scale Economies, Product Differentiation, and the Pattern of Trade", *American Economic Review*, Vol. 70, pp. 950-959.
- KRUGMAN, P., 1996. "Making Sense of the Competitiveness Debate", *Oxford Review of Economic Policy*, Vol.12, No.3, pp. 17-25.
- LAYTE, R., B. NOLAN and C.T. WHELAN, 2000. "Trends in Poverty" in B. Nolan, P.J. O'Connell and C.T. Whelan (eds.), *Bust To Boom? The Irish Experience of Growth and Inequality*, Dublin: Institute of Public Administration.
- LAYTE, R. and P. O'CONNELL, 2005. *Profiling the Unemployed: An Analysis of the Galway and Waterford Live-Register Surveys*, Policy Research Series No. 55, Dublin: The Economic and Social Research Institute.
- LAYTE, R., H. RUSSELL, P. O'CONNELL, B. MAÎTRE and C.T. WHELAN, 2003. "The Dynamics of Household Joblessness in a Booming Economy", ESRI Seminar Paper. Dublin: ESRI.
- LEE, F. and J. TANG, 2000. "Productivity Levels and International Competitiveness between Canadian and U.S. Industries", *American Economic Review*, Vol. 90, No. 2, pp. 176-179.
- LEWIS, M. and P. ARCHER, 2002. *Further Evaluation of Early Start: Progress Report*. Dublin: Educational Research Centre.
- LEWIS, M. and P. ARCHER, 2003. *Early Start Evaluation: Report on Observation Visits to Schools*. Dublin: Educational Research Centre.
- LUCAS, R., 1988. "On the Mechanics of Economic Development", *Journal of Monetary Economics*, Vol. 22, No. 1, pp 3-42.

- MACKAY, M., 2001. "Practical Experience with Bed Occupancy Management and Planning Systems: an Australian View", *Health Care Management Science*. February, Vol. 4., No. 1, pp. 47-56.
- MACKAY, M., M. LEE, 2005. "Choice of Models for the Analysis and Forecasting of Hospital Beds. *Health Care Management Science*. August, Vol. 8, No.3, pp.221-230.
- MCCLEAN, S., P.H. MILLIARD, 1995. "A Decision Support System for Bed-occupancy Management and Planning Hospitals", *IMA Journal of Applied Medical Biology*. Sep-Dec, Vol. 12, No. 3-4, pp. 249-257.
- MCCOY, S., M. DARMODY, E. SMYTH and A. DUNNE, 2006. *Attendance and Students' School Experiences and Later Life-Chances*. Report to the NEWB.
- MCCOY, S. and E. SMYTH, 2003. "Educational Expenditure: Implications for Equality" in T. Callan, A. Doris and D. McCoy (eds.), *Budget Perspectives 2004*, Dublin: ESRI/FFS.
- McDOWELL, A. and F. RUANE, 2005. "Capacity of Education/Training Programmes to meet Ireland's Skill Requirements" Paper presented to Glucksman Ireland House Workshop on Issues for Ireland's Labour Market Policies, Forfás, Dublin, 10 January.
- McGRATH, R., E. NISHIMURA, P. NOLAN, T. SEMMLER, C. SWEENEY and S. WANG, 2005. *Climate Change: Regional Climate Model Predictions for Ireland*. Johnstown Castle: Environmental Protection Agency.
- MCIVER CONSULTING, 2003. The Report of the Steering Group to the PLC Review. Dublin: Department of Education and Science.
- MILLIARD, P.H., M. MACKAY, C. VASILAKIS, G. CHRISTODOULOU, 2000. "Measuring and Modelling Surgical Bed Usage", *Annals of Royal College of Surgeons*, England. March, Vol. 82, No. 2, pp. 75-82.
- MOLES, R., R. KELLY, B. O'REGAN, J. RAVETZ and D. McEVOY, 2002. *Methodologies for the Estimation of Sustainable Settlement Size*, Johnstown Castle: Environmental Protection Agency.
- MORGENROTH, E., 1999. "Estimated Social Rates of Return to Educational Interventions to Prevent Early Educational Failure". Report to the Department of Education and Science.
- MORGENROTH, E., 2002. "Commuting in Ireland: An Analysis of Inter-County Commuting Flows", ESRI Working Paper No. 144. Dublin: ESRI.
- MORGENROTH, E., 2002. "The Usual Suspects? Factors Affecting the Performance of Irish Regions and Counties", Paper Presented at the Regional Studies Association (Irish Branch) National Conference, "Ireland 2020: People, Place and Space", Bunratty, Co. Clare, April.
- MORGENROTH, E., 2005. "Demographic Transition, Migration and Regional Economic Development in Ireland" in C. Dienel, (ed.), *Abwanderung, Geburtenrückgang und regionale Entwicklung: Ursachen und Folgen des Bevölkerungsrückgangs in Ostdeutschland – interdisziplinäre und vergleichende Perspektiven*. Wiesbaden:VS Verlag für Sozialwissenschaften.
- MORGENROTH, E., 2005. Regional Structural Change and Cohesion in the EU: Policy Implications of EU Enlargement and Policy Recommendations. *EURECO Project Policy Paper*.
- MORGENROTH, E., 2006. "Economic Integration and Structural Change: The Case of Irish Regions" ESRI Working Paper No. 176, Dublin: ESRI.
- MORGENROTH, E. and E. O'MALLEY, 2003. "Regional Development and SMEs in Ireland" in B. Fingleton, A. Eraydin, and R. Paci (eds.), *Regional Economic Growth, SMEs and the Wider Europe*. London: Ashgate.
- MUSGRAVE, R., 1959. *The Theory of Public Finance*, New York: McGraw-Hill.

- MUSIC NETWORK, 2003. *A National System of Local Music Education Services - Report of a Feasibility Study*. Dublin: Music Network.
- NATIONAL ROADS AUTHORITY, 1998. *National Road Needs Study*. Dublin: National Roads Authority.
- NATIONAL ROADS AUTHORITY, 2003. *Future Traffic Forecasts: 2002-2040*. Dublin: National Roads Authority.
- NCCA, 2005. *Proposals for the Future Development of Senior Cycle Education in Ireland*. Dublin: National Council for Curriculum and Assessment.
- NESC, 2004. *Housing in Ireland: Performance and Policy*, Dublin: National Economic and Social Council.
- NESC, 2005. *NESC Strategy 2006: People, Productivity and Purpose*. Dublin: National Economic and Social Council.
- NESF, 2005. *Early Childhood Care and Education*. NESF Report No. 31. Dublin: NESF.
- NESF, 2006. *Creating a More Inclusive Labour Market*. NESF Report No. 33. Dublin: NESF.
- NOLAN, A. and B. NOLAN, 2004. "Ireland's Health Care System: Some Issues and Challenges", Working Paper No. 14. Research Programme on Health Services, Health Inequalities and Health and Social Gain.
- NWCI, 2004. *An Accessible Childcare Model*, Dublin: National Women's Council of Ireland.
- OECD, 1987. *Pricing of Water Services*, report by P. Herrington, OECD Environment Programme, Paris: OECD.
- OECD, 2003. *The Source of Growth in OECD Countries*, Paris: OECD.
- OECD, 2004. *An Overview of Early Childhood Education and Care Systems in the Participating Countries – Ireland*. Paris: Organisation for Economic Co-operation and Development.
- OECD, 2005a. *Education At A Glance 2005*. Paris: Organisation for Economic Co-operation and Development.
- OECD, 2005b. *School Factors Related to Quality and Equity: Results from PISA 2000*. Paris: OECD.
- OECD, 2006. *Education at a Glance*. Paris: Organisation for Economic Co-operation and Development.
- OFCOM, 2006. *The Communications Market: Nations and Regions*. London: Office of Communications.
- OFFICE OF ENVIRONMENTAL ENFORCEMENT (OEE), 2005. *The Nature and Extent of Unauthorised Waste Activity in Ireland*. Johnstown Castle: Environmental Protection Agency.
- OIREACHTAS, 2006. *Planning and Development (Strategic Infrastructure) Act 2006*. Dublin: Stationery Office.
- O'CONNELL, P., 2000. "The Dynamics of the Irish Labour Market in Comparative Perspective" in B. Nolan, P.J. O'Connell and C. T. Whelan (eds.), *Bust to Boom? The Irish Experience of Growth and Inequality*. Dublin: Institute of Public Administration.
- O'CONNELL, P., 2005. *Data Analysis of In-Employment Education and Training in Ireland*, Prepared for the Expert Group on Future Skills Needs. Dublin: Forfás.
- O'CONNELL P., D. CLANCY and S. MCCOY, 2006. *Who Went to College in 2004? A National Survey of Entrants to Higher Education*. Dublin: The Higher Education Authority.
- O'HAGAN, J., 1998. *The State and the Arts: An Analysis of Key Economic Policy Issues in Europe and the United States*, Cheltenham: Edward Elgar.
- O'LEARY, E., 1999. "Regional Income Estimates for Ireland: 1995", *Regional Studies*. Vol. 33, No. 9, pp. 805-814.
- O'MAHONY, P., 1997. *Mountjoy Prisoners: A Sociological and Criminological Profile*. Dublin: Stationery Office.

- O'MALLEY, E., S. SCOTT and S. SORRELL, 2003. *Barriers to Energy Efficiency: Evidence from Selected Sectors*, Policy Research Series No. 47. Dublin: ESRI.
- OFWAT, 2005. *Security of Supply, Leakage and the Efficient Use of Water*, Birmingham: Office of Water Services.
- OUGHTON, C., 1997. "Competitiveness Policy in the 1990s", *Economic Journal*, Vol. 107, (444), pp. 1486-1503.
- OUGHTON C, M. LANDABASO and K. MORGAN, 2002. "The Regional Innovation Paradox: Innovation Policy and Industrial Policy", *Journal of Technology Transfer*, Vol. 27, pp. 97-110.
- PAGANO, M., 1993. "Financial Markets and Growth: An Overview", *European Economic Review*, Vol. 37, No. 2-3, pp. 613-622.
- PAPATHEODOROU, A. and S. HAIYAN, 2005. "International Tourism Forecasts: Time-Series Analysis of World and Regional Data", *Tourism Economics*, Vol. 11, No. 1, pp. 11-23.
- PETERSEN, S.O., 2005. "Post-War Baby Boom Becomes Elderly Boom - Some Consequences For The Hospital Sector In Norway", PCS/I-conference, Ljubljana, October.
- PIERETTI, O. and A. BOURGAIN, 2003. "Competitiveness and Employment in a Small Open Economy", *Journal of Economic Integration*, Vol. 18, No. 2, pp. 391-405.
- PRITCHETT, L., 2001. "Where Has All the Education Gone?," *World Bank Economic Review*, Vol. 15, No.3, pp. 367-391.
- PUMA, M.J., N. KARWEIT, C. PRICE, A. RICCIUTI, W. THOMPSON, M. VADENKIERNAN, 1997. *Prospects: Student Outcomes*. Final Report. Dept. of Education, Washington, D.C.
- REYNOLDS, A.J., B. WOLFE, 1997. "School Achievement, Early Intervention and Special Education", *Focus*, Vol. 19, No. 1, pp. 18-21.
- RIVERA-BATIZ, L. A., and P.M. ROMER, 1991. "Economic Integration and Endogenous Growth", *Quarterly Journal of Economics*, Vol. 106, No. 2, pp. 531-555.
- RODRIGUEZ-POSE, A., 1999. "Convergence or Divergence? Types of Regional Responses to Socio-economic Change in Western Europe", *Tijdschrift voor Economische en Sociale Geografie*, 90, pp. 363-378.
- ROMER, P. M., 1986. "Increasing Returns and Long-run Growth", *Journal of Political Economy*, Vol. 94, No. 5, 1002-1037.
- ROMER, P. M., 1990. "Endogenous Technological Change", *Journal of Political Economy*, Vol. 98, No. 2, pp. 71-102.
- ROOS, N.P., 1989. "Hospital Bed Availability: Developing Accurate Estimates", *Canadian Journal of Public Health*, Mar-Apr, Vol. 80, No. 2, pp 105-9.
- ROY, B., 2005. "Paradigms and Challenges", in J. Figueira, S. Greco, M. Ehr Gott (eds.), *Multi Criteria Decision Analysis. State of the Art Surveys*, New York.
- RUSSELL, H., E. SMYTH and P. J. O'CONNELL, 2005. *Degrees of Equality: Gender Pay Differentials among Recent Graduates*, Books and Monographs No. 184. Dublin: The Economic and Social Research Institute.
- RUSSELL, H., B. HALPIN, M. STRANDH and A. ZIELFE, 2006. "Comparing the Labour Market Effects of Childbirth in Ireland, Sweden, the UK and Germany", ESRI Working Paper No. 170. Dublin: ESRI.
- SAARENHEIMO, T., 1993. "Trade, Human Capital Accumulation and Growth in an Underdeveloped Economy", *Scandinavian Journal of Economics*, Vol. 95, No. 4, pp. 535-557.
- SAINT-PAUL, G., 1997. "Is Labour Rigidity Harming Europe's Competitiveness? The Effect of Job Protection on the Pattern of Trade and Welfare", *European Economic Review*, Vol. 41(3-5), pp. 499-506.

- SALVATORE, D., 2002. "Relative Taxation and Competitiveness in the European Union: What the European Union Can Learn from the United States", *Journal of Policy Modeling*, Vol. 24(4), pp. 401-10.
- SCHMIDT, T., 2005. "Absorptive Capacity – One Size Fits All? A Firm-level Analysis of Absorptive Capacity for Different Kinds of Knowledge", ZEW Discussion Paper 05-72.
- SCOTT, S. and F. CONVERY, 1999. "Cohesion Countries: Experience in Countries on the European Periphery" in K. Schlagemilch (ed.), *Green Budget Reform in Europe - Countries at the Forefront*. Berlin: Springer.
- SCOTT, S. and J. EAKINS, 2001. "Household Income Effects and Implementation Options" in D. McCoy and S. Scott, (eds.), *Green and bear it? Implementing Market-based Policies for Ireland's Environment*, Dublin: The Economic and Social Research Institute.
- SCOTT, S. and D. WATSON, 2006. "Introduction of Weight-based Charges for Household Waste Collection" Paper Presented at the Irish Economics Association Annual Conference, in Bunclody, 28-30 April.
- SCOTT, S., D. WATSON and S. GORBY, 2006. "Effect of Weight-based Charges for Solid Waste Services", Report to the Environmental Protection Agency, Dublin: EPA.
- SEXTON, J.J., G. HUGHES, B. MCCOMICK, and C. FINN, 2001. *Estimating Labour Force Flows, Job Openings and Human Resource Requirements 1990-2005*. FÁS/ESRI Manpower Forecasting Series Report No. 9, Dublin: The Economic and Social Research Institute.
- SEXTON, J.J., G. HUGHES, B. CASEY, C. FINN and E. MORGENROTH, 2004. *Occupational Employment Forecasts by Region for 2010*. FÁS/ESRI Manpower Forecasting Series Report No. 11, Dublin: The Economic and Social Research Institute.
- SLAVIN, R.E. and N.A. MADDEN, 1999. *Success for All/Roots and Wings: Summary of Research on Achievement Outcomes*. Baltimore: CRESPAR.
- SMYTH, E., 1999. *Do Schools Differ? Academic and Personal Development among Pupils in the Second-Level Sector*. Dublin: Oak Tree Press/ESRI.
- SMYTH, E. and D. BYRNE, 2004. *The Potential Supply of Mature Students to Higher Education*. Report to the Higher Education Authority, Dublin: HEA.
- SOLOW, R., 1956. "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, Vol. 70, pp. 65-94.
- SORRELL S., E. O'MALLEY, J. SCHLEICH, and S. SCOTT, 2004. *The Economics of Energy Efficiency: Barriers to Cost-Effective Investment*. Cheltenham: Edward Elgar Publishing.
- SOUTHSIDE PARTNERSHIP, 2005. *The Southside Partnership Community Childcare Research Project: Towards a Model of Best Practice*.
- STEWART D.K., R. TATE, G. FINLAYSON, L. MacWILLIAM, N.P. ROOS, 2002. *Projecting Hospital Bed Needs for 2020*. Manitoba Centre for Health Policy, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba, Canada.
- SWEENEY, J., 2002. "Downscaling Climate Change in Ireland: Some Initial Perspectives on the Regional Impacts". Paper Presented at the Regional Studies Association (Irish Branch) National Conference, "Ireland 2020: People, Place and Space", Bunratty, Co. Clare, April.
- TASKFORCE ON LIFELONG LEARNING, 2002. Report of the Task Force on Lifelong Learning. Dublin: Stationery Office.
- TATE, R. B., 2005. "A Methodology for Evaluating Hospital Bed Need in Manitoba in 2020", *Canadian Journal on Aging*, Volume 24 (Supplement), pp. 141-151.
- TAYLOR, L., 1992. "Infrastructural Competition among Jurisdictions", *Journal of Public Economics*, Vol. 49, No. 2, pp. 241-259.

- TEMPLE, J., 1999. "A Positive Effect of Human Capital on Growth," *Economics Letters*, Vol. 65, No. 1, pp. 131-134.
- TOURISM POLICY REVIEW GROUP, 2003. *New Horizons for Irish Tourism: An Agenda for Action*. Dublin: Stationery Office.
- TRANSPORT RESEARCH LABORATORY, 2002. "Future Year Growth Forecasts for Ireland 2002", Dublin: National Roads Authority.
- TUSSING D., M.A. WREN, 2005. "The Health Report, An Agenda for Irish Health Care Reform". Dublin: The Irish Congress of Trade Unions.
- TYRE, P., N. MURRAY, I. WOLSTENCROFT, A. STEWART, 2002. "Health service capacity modeling", *Australian Health Review* Vol. 25; No. 4, pp. 159-168.
- VERSPAGEN, B., 1999. "Large Firms and Knowledge Flows in the Dutch R&D System: a Case Study of Philips Electronics", *Technology Analysis and Strategic Management*, Vol. 11, pp. 211-233.
- WALSH, B., 2006. "Labour Market Adjustment in the Irish Regions, 1988-2005" in A. Barrett, I. Kearney and Y. McCarthy (eds.), *Quarterly Economic Commentary* (Autumn). Dublin: The Economic and Social Research Institute.
- WATSON, D. and J. WILLIAMS, 2003. *Irish National Survey of Housing Quality: 2001-2002*. Books and Monographs No. 173. Dublin: The Economic and Social Research Institute – in association with the Department of Environment, Heritage & Local Government.
- WEIKART, D., 1996. "High-quality Preschool Programs Found to Improve adult status", *Childhood*, Vol. 3, No. 1, pp. 117-120.
- WEIR, S., 2003. *An Evaluation of Breaking the Cycle: A Follow-up of the Achievements of 6th Class Pupils in Urban Schools in 2003*. Dublin: Educational Research Centre.
- WEIR, S., L. MILIS, and C. RYAN, 2002. *The Breaking the Cycle Scheme in Rural Schools: Final Evaluation Report*. Dublin: Educational Research Centre.
- WHELAN, C., B. NOLAN and B. MAÎTRE, 2006. *Reconfiguring the Measurement of Deprivation and Consistent Poverty in Ireland*, Policy Research Series No. 58. Dublin: The Economic and Social Research Institute.
- WILEY, M. M., 2005. "The Irish Health System: Developments in Strategy, Structure, Funding and Delivery Since 1980" in *Health Economics*, Vol. 14: S169-S186, Wiley Interscience, September.
- WILLIAMSON, 1965. "Regional Inequality and the Process of National Development: A Description of the Patterns", *Economic Development and Cultural Change*, Vol. 13, No. 4, pp. 1-84.
- WORTMAN, P.M., 1995. "An Exemplary Evaluation of a Program that Worked", *Evaluation Practice*, Vol. 16, No. 3, pp. 257-265.
- ZAHRA S. A. and G. GEORGE, 2002. "Absorptive Capacity: a Review, Re-conceptualization and Extension", *Academy of Management Review*, Vol. 27, pp. 85-203.
- ZAK, P. J. and S. KNACK, 2001. "Trust and Growth", *Economic Journal*, Vol.111, No. 470, pp. 295-321.
- ZUCKER, L., M. DARBY and M. BREWER, 1998. "Intellectual Human Capital and the Birth of U.S. Biotechnology Enterprises", *American Economic Review*, Vol. 88, No. 1, pp. 290-306.

APPENDIX 1: PAYING FOR TRANSPORT - TAXES AND CHARGES

The road network in particular is free at the point of use, excepting only a small number of point tolls. The fuel tax, while a user charge, is only tenuously related to the economic or social costs of road use. This means that the congestion externality is not properly charged for, and hence that road space is under-priced, especially in cities. The amount of congestion generated is accordingly in excess of the social optimum. In virtually all economically advanced countries, the policy response has been to subsidise public transport, which results in a situation where all modes of vehicular urban transport are too cheap, especially at peak demand. The result is extensive peak-time congestion, and public demands for capacity expansion to meet peak demand.

Even in the absence of externalities, it is not economically rational to expand capacity to eliminate all peak congestion, especially where peak usage is inadequately priced. To do so liberates currently suppressed demand, and can make the peak sharper, as the peak-spreading effect of current congestion is diluted. Since peak users are not faced with the full economic and social costs they impose, peak demand is not a real indication of the level of activity that should optimally be catered for. Procedures, including cost-benefit-type calculations, which take the existing pattern of demand, or extrapolations there from, as an indication of need to be met, accordingly run the risk of recommending excessive investment in peak-time capacity. An analogy would be a sports stadium proprietor who priced the most attractive fixture of the year at the same price as all others, and who proceeded to expand capacity to meet this supposed level of peak 'demand'. The result would be expensive, but idle, additional capacity, the result of a perverse pricing rule.

In many areas, including components of the transport system, there is resort instead to peak-load pricing, for example in parking charges differentiated by city zone, time of day and day of the week. Transport operators also practise peak-load pricing, through, for example, higher air and train fares at busy times such as Friday or Sunday evening. This peak-load pricing permits operators to avoid the heavy capital and operating costs of idle fleets and crew,

unnecessary outside the relatively infrequent peaks. The same principle applies to the calculation of optimal capacities for transportation infrastructure.

There is, however, a further and important feature of these infrastructures when access is free, or under-priced at the point of use. At peak, when the system is congested, each additional user imposes delay costs on other users, which he or she is not required to take into account. This is the congestion externality, and is distinct from, and additional to, the peak-load pricing question. There are of course other externalities, including atmospheric emissions. Economists have long recommended that the use of transportation infrastructures should be charged on a user-pays basis, with charges reflecting all externalities including peak congestion, a recommendation which has been taken up in only a handful of cities around the world.

The reluctance to embrace user charging for roads has been due in part to concerns about the distributional impact – there would necessarily be winners and losers. But technologies to implement efficiently anything beyond crude approximations such as flat cordon fees, area licenses or point tolls have until recently been unavailable. Technologies which would make highly sophisticated charging systems feasible at affordable costs are now believed to be imminent, involving Global Positioning Systems and smartcards in vehicles. The UK Government has recently announced its intention to explore a nationwide pay-as-you-drive charging system to replace most existing motoring taxes, and Transport Secretary Douglas Alexander has allocated a budget of £10 million for this preliminary scheme design. The debate, according to the Secretary of State, is “...no longer about ‘why road pricing?’, but about how it should be implemented”. The time horizon to implementation in the UK could however be a decade or more. It is worth spelling out in some detail what might be involved if a similar departure were to be contemplated in this country.

The Irish system of taxation on private motoring and on commercial road vehicles has three components:

- Purchase taxes, in the form of the two-rate *ad valorem* Vehicle Registration Tax and Value Added Tax;
- Annual circulation taxes differentiated by vehicle type and size (commonly referred to as ‘Road Tax’; and
- Fuel Excise Duties, differentiated (to a limited degree by fuel type).

The purchase taxes consist of the *ad valorem* Vehicle Registration Tax, paid once on new cars. To the resultant price is added VAT at the standard rate of 21 per cent. This is actually the highest of four VAT categories, the others being the Zero and 13.5 per cent rates and the Exempt status. This is the procedure for the tax calculation. To the pre-tax price is added VAT at 21 per cent. To this is added the VRT¹, at 22.5 per cent of the final price for cars up to 1400cc, at 25 per cent for cars in the range 1401 to 1900cc, and at 30 per cent

for cars of 1901cc and upwards. A new mid-range saloon of 1800cc, costing €25,000 retail, would have the price made up as follows:

Table A1.1: Purchase Tax Build Up on a New Car

Pre-tax Price	€15,496
VAT at 21% of Pre-Tax	€3,254
VRT at 25% of Final Price	€6,250
Final Price	€25,000
Tax as % of Pre-Tax Price	61.3%

Source: Calculated from information on Revenue Commissioners' website.

Total purchase taxes work out at €9,504 for this example, corresponding to a tax mark-up of 61 per cent on the pre-tax price. A portion of this purchase tax should not however be regarded as a tax on motoring, but rather as a part of general indirect taxation. We take this portion to be about 15 per cent, roughly the weighted average rate of VAT on goods and services in general. Thus this particular motorist is paying €25,000 instead of €17,820 (not the tax-free price of €15,496) for the new car, and the motoring component comes out at €7,180 in specific 'motoring' tax under this heading. Over an expected ten-year life for the vehicle, the motoring tax component would work out at €718 per annum out of the €950 per annum total tax take. The rest is deemed to be ordinary, non-motoring tax levied on goods in general.

Annual Road Tax is more straightforward. For cars, the rate at 1001cc is €227, rising to €1,343 above 3 litres. For the 1800cc model assumed above, the annual charge is €484. All of this amount can reasonably be seen as constituting a specific 'motoring' tax.

Finally excise duty on fuel is levied at the rate of €442.58 per 1,000 litres of unleaded petrol, and 21 per cent VAT is then added. Thus unleaded petrol costing €1.05 per litre at the pump has a price built up as shown in Table A1.2.

Table A1.2: Price Build-Up for Unleaded Petrol in Cents

Pre-Tax Price per litre	42.52
Excise per litre	44.26
VAT at 21%	18.22
Final Price	105.0
Tax as % of Pre-Tax Price	59.5%

Source: Calculated from information on Revenue Commissioners' website.

Total tax is 62.48 cent per litre. Again, a portion of this fuel tax should be taken as part of general taxation, rather than as a specific imposition on motoring. We compute the motoring element as 57.28 cent, allowing for a presumed average VAT rate at 15 per cent. The next part of the motoring tax calculation requires an assumption about average annual fuel consumption, and we take this to be 1,500 litres per annum (corresponding to 15,000 kilometres, a modest mileage) for our mid-saloon driver. This would give an annual tax take on fuel which could be regarded as a 'motoring' tax of €859.

The total of all three taxes paid each year by this illustrative motorist comes to €2,371. However, we have chosen to regard the slightly lower figure of €2,061 as corresponding to ‘motoring’ taxes. Motoring lobby groups who draw attention to the substantial tax revenues from these sources tend to quote numbers corresponding to the higher of these two figures, failing to allow for an average VAT rate on cars and fuel. The annual ‘motoring’ tax payment we have calculated for this illustrative motorist needs to be seen in the light of the enormous levels of State expenditure on road construction, maintenance and policing, and there can be no presumption that the overall tax figure is necessarily excessive.

Finally, we need to add a small item as an estimate of direct payments by motorists for road use in the form of tolls and on-street parking charges. (Off-street charges are not relevant.) Total tolls and relevant parking charges we believe now exceed €200 million per annum, with most of this sum collected in the East region. We estimate that €50 per annum would be a reasonable estimate for the illustrative motorist. The overall picture is thus

Table A1.3: Fixed and Variable Charges per Annum, Illustrative Motorist

	€
Total Taxes	2,371
Less element of General Taxation	310
Plus Tolls and Parking	50
Total ‘Motoring’ Payments	2,111
of which Fixed	1,202
Variable	909
% Fixed	56.9%

Source: Derived from Tables 8.2, 8.3, calculations in text.

For 15,000 kilometres this motorist would pay €2,111 per annum, corresponding to a charge of 14.1 cent per kilometre. Thus for a 15-kilometre return daily commute, the motorist pays about €4.32 in motoring taxes. But the largest portion, 57 per cent, is actually fixed taxes, invariant to road use. Moreover, only the tolls and parking fees correspond to a form of peak or congestion charging. Fuel taxes are invariant to time of day, day of week or traffic intensity on the road chosen, and approximate only very poorly to an optimal tax.

Thus while our hypothetical motorist is paying significant taxes and charges, these are either fixed, and thus achieve no policy objective beyond the raising of revenue, or are (aside from the small element of tolls and parking fees) only poorly related to an economic charge for road use. If all of these taxes could be turned into pay-as-you-drive charges, targeted at peak usage of congested routes, the effect on driver behaviour, and hence on peak demand and capacity requirements, could be dramatic.

We recommend that current road tolling plans should be seen as preparatory to the ultimate introduction, subject of course to technical and economic feasibility, of countrywide pay-as-you-drive charges as the principal form of road user charging in Ireland.

Extensive studies on external costs, and the response of road users to the new charges and to the reduced purchase and ownership taxes, would be needed.

This would permit, we believe, the abolition of VRT and of annual vehicle license fees. It is possible that fuel taxes could also be reduced, and that all existing point tolls would become unnecessary. We note that what happens in the United Kingdom is important here – a road charging system in Northern Ireland (NI) would have to interface with the Republic's system, and given the extent of 'fuel tourism', the excise duty regime must pay attention to what is happening in NI. Most importantly, a system of this type would reduce peak demand sharply through bringing private and social costs into line. An immediate result would be a reduction in the capacity requirement of the system, and a move away from the current wasteful provision of capacity to cater for socially sub-optimal traffic peaking.

In their report on demand restraint options, Booz, Allen, Hamilton (2004) consider inter alia a system of traditional cordon charging for Dublin. We believe that a more radical review of emerging technology options would be a valuable supplement to their work.

Those entitled to free travel on public transport (including those aged over 65 years) are not subject to the requirement that their free pass does not operate in the peak. This is the reverse of what is required and we recommend that free travel on public transport at peak be withdrawn.

A further pricing issue concerns workplace parking. Many employers offer free workplace parking to their employees in central Dublin and in other cities and towns. This has not been deemed liable to taxation as a benefit in kind. However, the annual rental for a parking place in some areas of central Dublin is now in the range €2,500 to €3,000. Much lower figures would arise in the suburbs and in provincial cities.

This means that, in central Dublin, the untaxed benefit of a parking space is comparable in value to the benefit of a free mid-range company car. Company cars are of course levied to benefit-in-kind, and we recommend that the same should apply to parking spaces. In the Booz Allen Hamilton report, the option of taxing free parking spaces is discussed alongside the option of a local authority tax on these spaces as if these two policies were alternatives. They are not. The exemption of free parking spaces from BIK is just a tax anomaly, and should be dealt with on that basis. A local authority tax on private parking spaces is a distinct option, which would not arise if a full road pricing scheme were to be applied.

On-street parking is not charged for in some provincial towns. The Department of the Environment, Heritage and Local Government might consider the case for mandatory charging in towns with significant pressure on capacity.

Finally, we appreciate that taxes on motoring are a sizeable component of the tax take, and that issues of revenue protection arise. The long time scale to implementation is another concern, and

raises the question of interim measures. In this regard, there is 'headroom' to raise fuel taxes and cut VRT or the annual license fee, given the higher rates of excise in the UK. However we would caution that fuel taxes are not a good proxy for the external costs.

APPENDIX 2: PROJECT APPRAISAL OF TRANSPORT INVESTMENTS

The Department of Finance guidelines require that a post-project analysis be undertaken whenever a major project is completed. We recommend that a high priority should be given to the prompt completion of comprehensive post-project analyses of all major projects.

Particularly where large once-off projects are concerned, a premium must be placed on whatever lessons can be learned from Ireland's own experience. However, we understand that no post-project analyses have as yet been undertaken, since the requirement to do so is recent. An analysis of Luas is due to commence shortly, and it ought, in order to inform the analysis of future light rail schemes, include a post hoc cost-benefit analysis, as well as a review of the *ex-ante* evaluation studies undertaken on the original light rail schemes during the 1990s. Any lessons available would be invaluable going forward. As soon as practicable, a similar exercise should be undertaken with the Dublin Port Tunnel, in view of the presence of further Dublin Tunnel projects in *Transport 21*.

A2.1 Baseline Traffic Flows are not Optimal

In the project appraisal of urban public transport projects, it is important, in preparing traffic forecasts and other ingredients in the quantification of benefits, to acknowledge the non-optimality, from the social standpoint, of current measures of peak traffic. Thus an approach which measures and extrapolates current road congestion, seeks to eliminate or mitigate it through allocating new rail or other capacity to cater for the resultant traffic levels, is attributing benefit to the reduction of congestion which ought not to be targeted at all. This is the consequence of current mispricing and resultant non-optimality of peak flows. These concerns are not always properly reflected in cost-benefit appraisals.

A2.2 The Compound Project Problem

A further concern revolves around the combination of traffic management and new construction components in transport investment proposals. It is important to understand that any project involving both is now a compound project, either of whose components could be undertaken separately. In particular, since we know that current pricing for peak time road access in particular is too low, and quite likely far too low, demand management measures such as road pricing constitute a policy option which can be seen as an alternative, rather than as a complement, to capacity expansion. This is not to argue that capacity expansion might not prove optimal, even with demand management in place. But the optimal level of capacity provision may be lower, and possibly substantially lower, if vigorous pricing policies are pursued.

Demand management, including in particular road pricing, is an alternative to increasing capacity, including public transport capacity, and all pricing options need to be explored before investment commitments are chosen.

The logical sequence in which to proceed with an economic evaluation in these circumstances is to consider first the component (road pricing) which addresses directly the weakness of current arrangements and the source of congestion, namely under-priced access to the road system. Having designed and modelled a suitable road pricing scheme which accounts for congestion and environmental externalities, and which also serves as a peak-load pricing instrument, the analyst can be more confident that the predicted (and, at peak, lower) traffic flows which result are the ones which it is socially optimal to accommodate. The alternative suburban rail, light rail or bus public transport options should now be evaluated as projects incremental to the road-pricing component. Not to do the analysis in this way runs the risk that the benefits computed for the compound project are erroneously attributed to its elements. A specific risk is that the infrastructure components get credited with benefits, which actually flow from the pricing measures.

Because peak usage of scarce facilities is under-priced, low-priority travel is inadequately discouraged. In Dublin in 2002, the POWSAR data-set derived by the Central Statistics Office from the Census shows approximately 101,000 home-to-work trips into the central area (inside the canals) in the morning peak. Total trips into the central area by all modes in the morning peak are of the order of double this figure. The balance includes of course education-related trips, and there will be some who exit as well as enter the canal cordon area. But it clearly cannot be assumed that only high-priority trips are being made at the peak.

THE COST-BENEFIT TASK

The analytical cost-benefit task to be undertaken in connection with *Transport 21* is daunting, and will need to be adequately resourced. The programme envisages in excess of €30 billion in capital projects,

many of them exceedingly complex and requiring extensive and technically challenging modelling of project benefits. Capital cost estimation has proven difficult with major projects undertaken in Ireland in the recent past, and greater credibility for capital cost estimates will require intensive analytical work too. We believe that the scale of cost-benefit work required to meet the Department of Finance guidelines in connection with *Transport 21* exceeds anything, which has been contemplated in this country up to now.

We are aware that the Department of Transport has engaged advisers who have begun preliminary work on evaluation methodologies. In view of the size and complexity of the evaluation task, we recommend that the Department of Transport should prepare a Project Appraisal Plan for *Transport 21*, detailing the procedures and quantifying the resources that will be required.

The Department of Finance must oversee compliance with its guidelines, not just in connection with *Transport 21* but throughout the Public Capital Programme. The Department of Finance should ensure that it has adequate technical economic resources to oversee compliance with its Capital Appraisal Guidelines.

In the *Mid-Term Review of the 2000-20006 NDP*, we discussed the conduct and quality control of project appraisals, and considered what might be the best institutional arrangements for carrying them out. We drew attention in particular to the difficulties which may arise where appraisals are carried out by project promoters, either directly or by consultants on their behalf.

In order to ensure consistency across the diverse constituents of the Public Capital Programme, and bearing in mind the pressures on Departments and State agencies asked to evaluate projects to which there is already (and arguably premature) political commitment, we favoured a single centralised unit, possibly based in the Department of Finance, charged with the task of undertaking the cost-benefit studies. This remains our advice. If the Government wishes to delegate this function to line Departments or to State agencies, such as, in this instance, the Rail Procurement Agency, the Dublin Transportation Office, Irish Rail or the National Roads Authority, there remains a requirement to ensure comparability and consistency in technical approach and generally to ensure that the studies are technically competent and in compliance with Department of Finance requirements. Thus, even if the conduct of these studies is delegated, the Department of Finance will still need to ensure that it has adequate technical resources in this area. The Department of Finance should also require publication of all such studies, and should consider whether there is a need for an independent peer review system.

CASE STUDY: VALIDATION OF TRAFFIC FORECASTS IN COST BENEFIT ANALYSES FOR THE CORK SUBURBAN RAIL PROJECT

Benefit estimates in transport evaluations depend critically on the assumed traffic and patronage levels. There is an established pattern

of excess optimism about patronage in public transport projects worldwide (see Flyvbjerg *et al.*, 2003). It is accordingly essential that promoter's estimates of future patronage be subjected to critical review.

The Cork suburban rail project included in *Transport 21* would involve:

- A new rail line, along the alignment of an abandoned line, linking Cork's Kent station eastwards to Midleton, a distance of about 21 kms.
- Service improvements on the existing Cork-Cobh line.
- Service improvements on the existing Cork-Mallow service.
- Some new stations intermediate between these points.

At the *2002 Census*, 86 per cent of Cork County (excluding Cork City) households had at least one private car. The following picture of morning peak home-to-work commuting was revealed for Cork County (excluding Cork City).

Table A2.1: Morning Peak Commuting, Cork County, April 2002 Census

Mode	Numbers	as % of Total
Private Motor*	102,450	79.0
Walk	10,434	8.1
Bus and Train	2,947	2.3
Cycle	885	0.7
Other**	12,965	10.0
Total	129,681	100.0

Source: Census Volume "Travel to Work, School and College", Table 87.

* Includes car, motorbike, scooter, lorry, van.

** Mainly work at home.

The existing rail service consists of:

- 22 services per day Cobh-Cork.
- 25 services per day Mallow-Cork.

These frequencies, which include through-trains from Mallow to Cobh as well as trains terminating at Kent, are a considerable improvement, particularly on Mallow-Kent, on what was available until recently.

Cork's Kent station is located approx 1 kilometre east of the city centre. The rail line arriving from Mallow to the North turns East at Kent, and does not penetrate the city centre, nor would it do so under the *Transport 21* investment proposal.

The proposed new line would serve principally Midleton and Carrigtohill. There could be some intermediate stations. Travel patterns of Midleton and Carrigtohill morning peak home-to-work commuters are available from the POWSAR data file, prepared by the CSO from the *2002 Census*. These data show the following pattern (all modes).

Table A2.2: Destinations of Midleton and Carrigtohill Morning Commuters, April 2002

To/From	Midleton	Carrigtohill	Total
Cork City East	504	287	791
Cork City West	156	77	233
Midleton	855	84	939
Carrigtohill	136	238	374
Elsewhere	909	426	1,335
Work at Home	135	56	191
Total	2,695	1,168	3,863

Source: Tabulated from POWSAR, CSO.

Only 640 of the 2,695 morning commuters ex-Midleton had destinations in Cork East or Carrigtohill (both served by the proposed line, although including destinations which are not convenient to it). Ex-Carrigtohill, 371 of the 1,168 morning commuters had destinations in Cork East or Midleton. While the development plans for Cork envisage large population growth rates in both of these areas, it cannot be presumed that most of them will have work destinations convenient to the proposed fixed-line rail investment. The percentage who are in the 'no-car-available' category is already low, and declining.

The consultants Faber Maunsell, in their evaluation of the Cork Suburban Rail project, opted for an Option described as 3b, which would involve the Midleton extension, new stations and higher frequencies. The next table shows the traffic projections on which Faber Maunsell based their cost-benefit calculations.

Table A2.3: Actual and Projected Traffic Flows, Cork Suburban

Year	Cork-Cobh	Cork-Mallow	Total
Actual 1997	440,000	na	na
Actual 2001	447,000	139,000	586,000
'Baseline' 2006	na	na	1,243,000
Forecast 3b 2006	na	na	3,180,000
Forecast 3b 2020	na	na	7,200,000

The Baseline 2006 forecast assumed no service improvements as against 2001. Such improvements have in reality occurred. The 3b forecasts assume the completion of the capital works and rolling-stock acquisition as outlined in the report.

We believe that these traffic forecasts are demanding. It would be advisable to check them against:

- Actual traffic performance in 2006, bearing in mind the service improvements that have occurred, and
- The commuting and place-of-work patterns which will be revealed from the 2006 Census. These POWSAR data will, we understand, become available before the end of the calendar year 2006.

APPENDIX 3: SUPPLEMENTARY INFORMATION ON PUBLIC INTERVENTIONS AND SUPPORTS IN THE HOUSING MARKET

Table A3.1 brings together all of the various schemes and interventions, which are targeted at a broad range of housing needs not met by market provision. The classification uses the five measures, which make up the Housing Priority in the Economic and Social Infrastructure Operational Programme (ESIOP). It also includes schemes not included in the ESIOP to show the full extent of State housing support for those on low incomes. The asylum seekers accommodation scheme provided for in the NDP, which is funded out of current expenditure from the Department of Justice, Equality and Law Reform, is included as Measure 6.

A brief summary of the various public interventions and supports in the housing market follows Table A3.1. The physical output and expenditure provisions for each measure are set out in Tables A3.2 and A3.3.

MEASURE 1: LOCAL AUTHORITY HOUSING MEASURE

The bulk of the capital investment in 2005, almost 50 per cent represented investment in local authority housing. This measure covers the construction and acquisition of local authority housing units and is funded directly through capital grants from the Exchequer augmented by the local authorities internal housing capital receipts, mainly from the proceeds of tenant purchase schemes in the past.

Table A3.1: The Range of Public Interventions and Supports in the Housing Market**Measure 1: Local Authority Housing**

Construction and acquisition of local authority dwellings.

Supplementary Welfare Allowance Rent Supplement and Rental Accommodation Scheme (since July 2004) (+)

Measure 2: Voluntary Housing

Voluntary housing bodies provide housing for rent through Capital Assistance/Capital Loan and Subsidy Schemes,

which include social housing under Part V schemes.

Communal Facilities in voluntary housing.

Measure 3: Improving Access – Affordable Housing

Low cost sites to households approved for local authority or social housing.

Mortgage Allowance Scheme to ease transition from rent to mortgage.

Tenant Purchase Scheme.

Local authority loans for households purchasing under the following schemes:

- Shared Ownership
- 1999 Affordable Housing Scheme

Affordable Housing under 2000 to 2004 Planning and Development Acts – Part V Schemes.

Affordable Housing Initiative under Sustaining Progress.

Measure 4: Housing Stock Improvements

Local Authority maintenance and management of housing stock.

Regeneration Schemes.

A central heating installation programme for the 30 per cent of the LA stock without CH (since 2004).

Disabled Person's Grant.

Essential Repairs Grant for elderly people living in poor housing conditions.

Measure 5: Accommodation for Groups with Special Needs

Provision of traveller accommodation.

Accommodation services for homeless people (+)

Measure 6: Asylum Seekers Accommodation (+).

Note: (+) funded out of current expenditure.

MEASURE 2: VOLUNTARY HOUSING

This measure provides social rented accommodation under two separate schemes: the Capital Assistance Scheme and the Capital and Loan Subsidy Scheme. This accommodation is provided by voluntary housing bodies for low-income households and those with special housing needs, such as the elderly, people with disabilities, the homeless and returning emigrants.

MEASURE 3: AFFORDABLE HOUSING FOR LOWER INCOME HOUSEHOLDS

The second largest funding provision (23 per cent of total) is provided to assist lower-income households meeting certain income eligibility criteria to acquire their own homes. The main schemes originally covered by this measure were the Shared Ownership Scheme and the 1999 Affordable Housing Scheme. Following the introduction of a number of new affordable housing schemes since

the last NDP this measure will now also have to include any expenditure required to facilitate the following schemes:

- Affordable Housing under 2000 to 2004 Planning and Development Acts – Part V Scheme.
- Affordable Housing Initiative under Sustaining Progress.

There are other measures which assist people acquire their own home such as the Mortgage Allowance Scheme, Local Authority House Purchase and Improvement loans, Local Authority low cost housing sites and the tenant purchase scheme. Subsidies for qualifying households that reduce mortgage or rent payments are recouped to local authorities by the DoEHLG.

The vast majority of funding for affordable housing is in the form of non-voted loan finance made available by the Housing Finance Agency (HFA) to local authorities for lending on to borrowers purchasing under the above schemes. According to the estimated outturn in 2005, some €277 million was given out in loans from local authorities last year. The total loan finance available from the HFA in 2006 is €450 million. A number of lending institutions started to offer mortgage finance for affordable housing applicants in 2005, thereby potentially reducing the demands on the Housing Finance Agency. Other institutions are expected to follow.

MEASURE 4: HOUSING STOCK IMPROVEMENTS

Funding under this measure goes towards the conservation and improvement of the local authority housing stock and privately owned housing estates with particular emphasis on those most in need, including the disabled and the elderly. It includes the operation of the Disabled Persons and Essential Repairs Grant Schemes plus the Special Housing Aid for the Elderly. There has been significant increase in investment in the refurbishment and redevelopment of the existing local authority stock due to the inclusion of schemes like the regeneration of Ballymun.

MEASURE 5: ACCOMMODATION FOR GROUPS WITH SPECIAL NEEDS

The objectives of this measure are to ensure that the housing needs for the homeless and travellers are met in a manner appropriate to their needs. The PCP provides for a capital provision of €45 million for travellers. There is a separate current expenditure provision of €50 million for the homeless.

Table A3.2: Physical Indicators of Progress 2000-2005

	2000	2001	2002	2003	2004	2005e	Cumulative 2000-2005e
Local Authority Housing							
Completions (including regeneration units)	2,204	3,622	4,403	4,516	3,539	4,209	22,493
Part V Acquisitions	0	0	0	75	135	203	413
Other Acquisitions	1,003	1,400	671	381	836	715	5,006
Voluntary & Co-operative Housing (1)	951	1,253	1,360	1,617	1,607	1,350	8,138
Improvement Works in Lieu of Re-housing	123	108	164	151	140	121	807
Extensions to LA Houses	153	187	199	203	178	194	1,114
Casual Vacancies (2)	2,854	3,004	3,122	3,795	3,445	3,500	19,720
Total Social Rented Provision	7,288	9,574	9,919	10,738	9,880	10,292	57,691
Affordable Housing	1,369	2,015	2,802	2,839	2,265	2,756	14,046
<i>of which</i>							
Shared Ownership	1,190	1,611	1,686	998	798	730	7,013
Mortgage Allowance	93	132	188	229	233	207	1,082
1999 Affordable Housing	86	272	882	1,524	860	857	4,481
Part V Affordable Acquisitions	0	0	46	88	374	962	1,470
Total Social and Affordable Provision	8,657	11,589	12,721	13,577	12,145	13,048	71,737
Sales under Tenant Purchase Scheme	1,844	1,411	1,195	1,567	1,652	1,738	9,407
Number of Sites Sold	98	188	141	112	87	124	750
Groups with Special Housing Needs:							
Traveller Specific Units Provided	176	187	214	228	193	na	
Traveller Families removed from roadside	114	76	78	151	187	na	

(1) Including social housing units acquired under Part V.

(2) Houses available for rent from existing stock.

Figures for other acquisitions and regeneration in 2005 are DKM estimates.

A breakdown of the capital investment under each measure is set out in Table A3.3. There is also current expenditure of approximately €164 million in 2005,¹²⁴ which includes a €74 million provision for asylum seekers accommodation from the Department of Justice, Equality and Law Reform.

¹²⁴ Source: Revised Estimates for Public Service, Department of Finance, 2006, Appendix 3.

Table A3.3: Public Capital Investment in Housing Priority (*)

	2000	2001	2002	2003	2004	2005	2006e (2006 PCP)	Average Annual % Change
Measure:								
1. Local Authority Housing	420	671	792	695	704	805	875	+13.9
2. Voluntary Housing	100	145	179	213	185	168	246	+11.0
Capital Assistance Scheme	32	55	78	96	87	81	108	+20.3
Capital Loan and Subsidy Scheme	67	89	100	115	96	86	135	+5.1
Communal Facilities in Voluntary Housing	1	2	1	2	2	2	2	8.8
3. Improving Access to Affordable Housing	186	247	361	495	347	291	508	+9.4
Site Subsidy	5	6	21	28	18	13	28	+22.5
Mortgage Allowance	1	1	1	2	2	3	3	+20.9
Local Authority Housing Loans	181	240	339	465	327	276	478	+8.9
4. Housing Stock Improvements	153	210	256	272	253	243	281	+9.8
Regeneration/Remedial Works	81	125	159	163	173	188	211	+18.5
Private Housing Grants and Subsidies	59	70	80	93	60	40	48	-7.8
Other Housing (e.g. Special Aid for the Elderly)	13	15	17	16	19	16	21	+4.9
5. Groups with Special Needs	15	24	27	29	36	37	47	+19.9
Provision of Traveller's Accommodation	15	24	27	29	36	37	45	+19.6
Childcare Facilities	0	0	0	0	0	0	2	
Total Capital Investment in Housing	874	1,296	1,614	1,704	1,524	1,546	1,957	+12.1
<i>of which investment in Local Authority & Social Housing</i>	621	972	1,178	1,130	1,118	1,214	1,409	+14.3

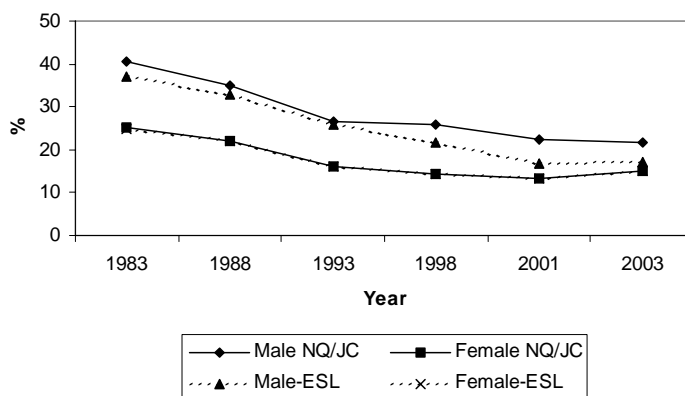
(*)Based on grouping the PCP measures into the five broad measures which make up the Housing Priority.
 Source: Public Capital Programme, 2006 Department of Finance.

APPENDIX 4: EARLY SCHOOL LEAVING: IMPLICATIONS FOR POLICY DEVELOPMENT

A4.1 Prevalence of Early School Leaving

The 1980s and early 1990s showed a rapid increase in the proportion of young people staying on in school to Leaving Certificate level. However, recent evidence has indicated senior cycle completion rates have remained relatively stable since the late 1990s in spite of a range of policy interventions designed to prevent early school leaving (Gorby *et al.*, 2006; Department of Education and Science, 2005a). This paper explores the prevalence of early school leaving along with its causes and consequences. It places Ireland in comparative perspective, highlighting policy interventions which have sought to prevent early school leaving in Ireland and internationally.

Figure A4.1: Prevalence of Early School Leaving



Note: Data refer to ‘initial’ school leavers only, that is, those who left school at or before the age of 21.

Using annual school leavers’ data, two groups of leavers can be distinguished: those who left school before the Leaving Certificate (including both the ‘no qualifications’ and ‘Junior Certificate’) group, and those who left school before the Leaving Certificate but went

on to take an apprenticeship. Figure 1 indicates trends in the prevalence of both groups by gender. Between 1983 and 1993, there was a rapid decline in the proportion of young women and men leaving school before the Leaving Certificate. Female rates of early school leaving stabilise thereafter. However, male rates contribute to decline, especially when apprentices are excluded from the early school leaver group.¹²⁵ From the late 1990s, therefore, apprenticeship has come to play an important role in upgrading the qualifications of young men and reducing the gender gap in rates of early school leaving.

A4.2 Causes of Early School Leaving

Patterns of early school leaving are strongly related to social background; 40 per cent of young people from unemployed backgrounds and almost a fifth of those from working-class backgrounds leave school before the Leaving Certificate compared with a tenth of those from professional and employer/manager households (School Leavers' Survey, 2004). There is also marked variation by parental education with higher levels of school drop-out among those whose parents have primary education only (McCoy *et al.*, forthcoming; Eivers *et al.*, 2000). As might be expected, early school leaving is also significantly related to educational (under)performance. These students tend to have lower reading/numeracy test scores and Junior Certificate exam grades than those who stay on to Leaving Certificate level (McCoy *et al.*, forthcoming).

When asked about the main reason for leaving school early, young people tend to cite school-related factors; 39 per cent did so with 23 per cent citing economic or work factors (Gorby *et al.*, 2006). Early school leavers tend to have more negative attitudes to school, being less likely to see their school life as happy and more dissatisfied with their teachers (McCoy *et al.*, forthcoming; Eivers *et al.*, 2000). Rates of early school leaving are found to vary significantly across schools, even taking into account between-school differences in student intake (Smyth, 1999; Department of Education and Science, 2005a). Drop-out rates tend to be higher in working-class or designated disadvantaged schools and are related to school climate, being lower where there is more positive interaction between teachers and students (McCoy *et al.*, forthcoming; Department of Education and Science, 2005a).

Early school leaving tends to be preceded by a period of recurring absenteeism (Smyth, 1999; McCoy *et al.*, forthcoming), a pattern which can go back as far as primary school level (Eivers *et al.*, 2000). It is also signalled by student misbehaviour at school, with a higher incidence of suspension and expulsion among early school leavers (Eivers *et al.*, 2000).

¹²⁵ Apprenticeship participation has no impact on female rates of early school leaving due to the very small number of women involved.

A4.3 Consequences of Early School Leaving

Educational attainment is strongly predictive of labour market outcomes, both in the initial labour market transition and in adult life. Early school leavers are much more likely to be unemployed, with unemployment levels particularly marked for those who left school without any qualifications whatsoever; over two-thirds of the no qualifications group are unemployed two years after leaving schools, compared with 29 per cent of Junior Certificate and 15 per cent of Leaving Certificate leavers (Gorby *et al.*, 2006). Where early school leavers access employment, they are disproportionately employed in manual jobs and have lower pay levels (Gorby *et al.*, 2006). Such disadvantages persist into adult life with lower employment levels, lower quality jobs, lower earnings and higher poverty rates among those with lower levels of educational qualifications (Layte *et al.*, 2001, 2003; Denny *et al.*, 2000; Smyth and Byrne, 2004). While systematic data on crime and educational attainment are not available, evidence indicates very low levels of educational attainment among those serving prison sentences (O'Mahony, 1997).

As a result of its impact on life-chances, early school leaving has social costs in terms of welfare payments, crime, health and so on, as well as consequences for social cohesion. Morgenroth (1999) estimated potential cost savings of over €14 million (1999 figures) from reducing the level of early school leaving. This estimate does not include health and housing costs which would add to the potential savings.

A4.4 Ireland in Comparative Perspective

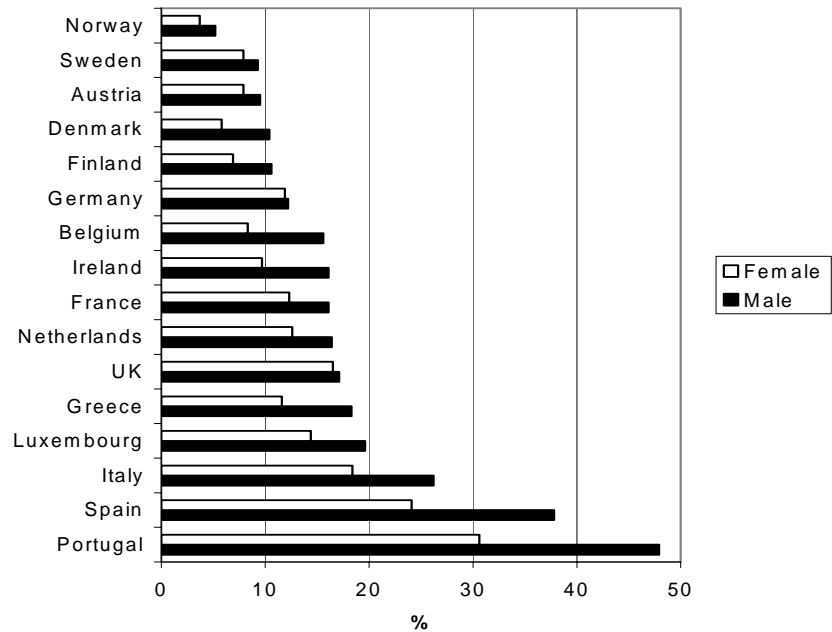
Figure A4.2 indicates the rate of early school leaving in Ireland in 2004 compared to other European countries (the EU-15 along with Norway). The definition of early school leaving is somewhat different from that discussed in the first section, referring to the percentage of the population aged 18-24 years with at most lower secondary education and not in further education or training. Ireland appears around the middle of the distribution. Two groups of countries appear to have significantly lower levels of early school leaving than Ireland: the Nordic countries (Norway, Sweden and Finland) and the dual system countries (Austria, Denmark and Germany).¹²⁶ In Ireland, the disparity between male and female levels of early school leaving is quite high with male rates 1.7 times higher than female rates; this is exceeded only in Denmark and Belgium, countries with very different educational systems from the Irish one.

There is some relationship between levels of per-student expenditure and early school leaving. Spending levels at primary and post-primary level are particularly high in Denmark, Norway, Sweden and Austria (OECD, 2005a), all countries with relatively low levels of early school leaving. However, spending patterns tell only part of the story since expenditure levels for the primary sector are

¹²⁶ It should be noted that rates of early school leaving are lower for males in Germany than Ireland but higher for females.

also high in Luxembourg and Italy, which have relatively high early school leaving rates.

Figure A4.2: Prevalence of Early School Leaving Across European Countries, 2004



There is some relationship between levels of per-student expenditure and early school leaving. Spending levels at primary and post-primary level are particularly high in Denmark, Norway, Sweden and Austria (OECD, 2005a), all countries with relatively low levels of early school leaving. However, spending patterns tell only part of the story since expenditure levels for the primary sector are also high in Luxembourg and Italy, which have relatively high early school leaving rates.

The explanation for cross-national variation appears to relate more to the nature of the educational system. Among countries with lower rates of early school leaving than Ireland, two models can be found: the 'Nordic' model and the 'dual systems' model. The Nordic model (found in Norway, Sweden and Finland) involves a comprehensive system with all students taking the same pathway, at least until the end of compulsory schooling. Underpinned by a strong policy commitment to equity, this policy results in smaller differences between social groups and schools in educational outcomes. Cross-nationally standardised tests such as PISA have indicated relatively high levels of overall performance, but a narrow range of variation in scores, within these countries (OECD, 2005b). The 'dual systems' model (prevalent in Germany, Austria and

Denmark¹²⁷) involves a rigid differentiation into academic and vocational tracks, the latter usually combining in-school education and on-the-job training. This model provides a route to achievement for less academically-oriented students, though it has been linked to more restricted career pathways in the longer term (Gangl *et al.*, 2003).

It is clear that both sets of countries achieve higher levels of school retention through very different routes: one by emphasising the inclusion of all students into a comprehensive system, the other by providing a vocational track for students who might otherwise have been at risk of drop-out. A number of alternative policy interventions have been devised to counter early school leaving (either directly or indirectly) across a range of other educational systems. For the purposes of this paper, I will focus on three sets of interventions: early childhood education, measures designed to promote learning and achievement, and financial subsidies.

A4.5 Early Childhood Education

The use of early childhood education to counter educational disadvantage has its origins in the United States in the 1960s as part of the ‘war on poverty’. One of these interventions, the High/Scope Perry Pre-school Program, involved structured (but child-initiated) learning activities along with weekly home visits by teachers. Children who had participated in the programme had higher school achievements over the ages of 7 to 14 years. Furthermore, benefits from participation persisted into adulthood, with a higher rate of high school graduation, higher earnings, a lower take-up of welfare and a lower crime rate (Wortman, 1995; Weikart, 1996; Gomby 1995). Other inventions, such as the Child-Parent Centers in Chicago, have indicated lower rates of early school leaving among participants along with lower crime rates (Reynolds, Wolfe, 1997; Bryant and Maxwell, 1996). In general, the positive effects of early childhood education are found to increase with length of time in, and earlier entry to, the programme (Barnett, 1995); the benefits of high quality preschool education are particularly evident for disadvantaged and minority groups.

A4.6 Addressing Academic Under- achievement

A second set of interventions have focused on indirectly countering early school leaving by boosting student performance through smaller class sizes and/or initiatives to promote literacy and numeracy. The impact of class size on student performance has been subject to much debate, in part because of the difficulty in disentangling size from class allocation policies (e.g. less academically able students may be allocated to smaller groups). Insights are available, however, from one study in which students were randomly assigned to smaller or regular classes. Project STAR

¹²⁷ In many ways, the Danish system combines elements of the two models with a general track to the end of compulsory schooling and a high degree of differentiation thereafter.

in Tennessee was an experimental intervention to explore the impact of reduced class size (13-17 students) in the early years of primary education. Students in small classes significantly outperformed those in larger classes (22-25 students), an advantage that persisted to the age of 15 years; additional benefits were apparent for those who started in small classes at an earlier age and stayed in small classes for a sustained period (Finn *et al.*, 2001). Students who had been in the smaller classes were less likely to drop out of high school than other students. Among the control group, 76 per cent graduated from high school compared with 88 per cent of those who had been in small classes for four or more years (Finn *et al.*, 2005); the biggest difference was evident for the more disadvantaged students.

The Success for All programme originated in the US but has been adapted for use in schools in other countries. The programme involves intensive reading activities for early grades within schools serving disadvantaged communities along with a strong emphasis on liaison with parents. Significant and substantive positive effects were found for every measure of reading performance across five grades of students. The most positive effects were found in schools which implemented the programme comprehensively over a number of years (Slavin and Madden, 1999). Benefits persisted in the longer term; by the age of 14 years, the participants had better achievement outcomes and lower grade retention (Borman *et al.*, 2002). The evaluations did not explicitly focus on the impact on longer term behaviour, such as high school graduation; however, it might be expected that the reduction in underperformance, especially among initially lower ability groups, would have at least an indirect impact on this outcome.

FINANCIAL SUBSIDIES

The provision of financial support may be seen as one way of discouraging students from dropping out of school. One such initiative in England, the Educational Maintenance Allowance (EMA), involves a means-tested weekly payment (Stg. £30-40) to 16-18 year olds in full-time post-compulsory education in selected pilot areas; the initiative has been extended to a national basis since September 2004. While the initiative is still at an early stage, a positive impact on school retention and attendance has been reported (Ashworth *et al.*, 2001). Dearden *et al.* (2005) indicate a participation rate 4.5 per cent higher in the first year and 6.4 per cent higher in the second year; the impact is found to be stronger for young men, those from the lowest income groups and those who received the maximum payment.

This section has examined some interventions to counter early school leaving in other national contexts; the following section will present an overview of policies adopted in Ireland.

A4.7 Policies to Prevent Early School Leaving in Ireland

Policies to prevent early school leaving must be seen in the context of measures designed to address educational disadvantage more generally. These have included: curricular reform; early childhood education; specific measures to promote school completion; and the targeting of expenditure towards schools serving disadvantaged communities.

(i) CURRICULAR REFORM

The period since the mid-1990s has seen the introduction of two programmes targeting potentially at-risk students. The Junior Certificate School Programme (JCSP) has been "...aimed at those young people who show signs of school failure or early leaving". The emphasis is on cross-curricular work, using teamwork among teachers, basic skills development and personal and social development, along with an individualised record of achievements for students. The programme was taken by 3 per cent of the cohort in 2004. At senior cycle, a new programme, the Leaving Certificate Applied (LCA), was also aimed at students who were not catered for by the traditional academic curriculum. The focus of the programme is to prepare students for adult life with the curriculum consisting of three main elements – general education, vocational education and vocational preparation. Students are assessed on the basis of tasks rather than examinations. Students who take LCA do not have direct access to higher education. The programme was taken by 7 per cent of the cohort in 2004. The impact of JCSP and LCA has not been the subject of systematic evaluation in terms of their net impact on educational outcomes among participants. Case-study evidence (Gleeson *et al.*, 2002) indicates positive perceptions of LCA among both students and teachers but highlights issues around selection into the programme and parity of esteem with the Leaving Certificate Established. A review of the Junior Certificate School Programme by the Inspectorate (Department of Education and Science, 2005) indicated the programme is seen positively by school staff in terms of its effect on students' attendance, motivation and literacy/numeracy skills. However, the report highlighted some areas of concern in relation to the selection of students into the programme, curriculum planning and review, and professional development support for teachers.

(ii) EARLY CHILDHOOD EDUCATION

Levels of early childhood education provision in Ireland are relatively low by comparison with other European countries (OECD, 2005a). The best known example of an early intervention programme in the Irish context is the Rutland Street project. This involved a structured, cognitive programme for 3 to 4 year olds over a two year period, supplemented with activities to involve parents (Holland, 1979). By the end of the programme, participants showed an increase in their intelligence scores and an improvement in measures of pre-school readiness. There was some 'fading' in score

levels on transfer to primary school but a gap in favour of participants was still evident. This difference did not translate into advantages in school performance since the experimental group performed no better on an English reading test than the control group at the age of eight (Kellaghan, 1977). However, longer-term benefits were evident with an improvement in school retention. Participants were more than twice as likely as non-participants to take the Group Certificate and three times as likely to take the Intermediate Certificate. Furthermore, just under one-tenth of the participants took the Leaving Certificate compared with none of the control group (Kellaghan and Greaney, 1993).

The Early Start Programme, informed by the Rutland Street experience, was introduced to cater for 3-4 year olds in disadvantaged areas. The programme covers a very small proportion of the overall cohort with just 2 per cent of entrants to Junior Infants classes in primary schools transferring from Early Start classes (Department of Education and Science, 2005c); €3.6 million was allocated to early education in 2004. Evaluation of the first cohort of children to take part in the programme indicated no gains among participants in cognitive and language behaviour. However, primary school teachers were more positive about participants in measures of school-readiness, such as ability to concentrate, maturity and adaptation to classroom procedures (ERC, 1998). A follow-up of children into second class indicated no significant differences in literacy and numeracy scores (Kelly and Kellaghan, 1999). The absence of an effect has been attributed to the lack of standardisation of activities between centres and the less intensive nature of in-service training in the first year of the project. Subsequent research indicated a change over time in the way Early Start has been implemented, with more emphasis on language and cognitive development along with greater parental involvement (Lewis and Archer, 2002, 2003). However, it is not clear yet whether these changes have impacted on outcomes among participants.

MEASURES TO PROMOTE SCHOOL COMPLETION

These measures have taken two forms: a national agency to address student attendance and funding for schools to develop their own policies to promote retention. The Educational Welfare Act of 2000 raised the legal school leaving age to 16 years of age (with a requirement to complete three years of junior cycle education) and provided a statutory basis for the new National Educational Welfare Board (NEWB), a regularisation and development of pre-existing school attendance services. The activities of the Board, established in 2002, are designed to monitor and promote student attendance within the primary and second-level sectors; €6.5 million was allocated to NEWB in 2004. The operation of the Board has not been evaluated to date. However, this area is likely to be crucial to preventing early school leaving since currently one in five second-level students, and one in ten primary students, miss more than 20 days of school a year.

The School Completion Programme replaced the earlier 8-15 Year Old Early School Leaver Initiative (ESLI) and the Stay-in-School Retention initiative. It focuses on young people aged 4-18 years who are at risk of leaving school early and covers 300 primary and 112 second-level schools (with a budget of €23.5 million in 2004). Selected schools are provided with funds to develop appropriate intervention strategies (such as in-school and after-school supports) to support 'at risk' young people. The School Completion Programme has not yet been subject to systematic evaluation. An evaluation of the 8-15 year old Initiative had indicated modest progress in young people's outcomes (as assessed by teachers and group-workers), including academic outcomes, attendance and social interaction/behaviour; however, a substantial number of young people made little or no gains (Cullen and Walker, 2000).

**A4.8
Targeted
Expenditure
on
Disadvantaged
Schools**

Measures to target additional expenditure at schools serving disadvantaged communities cover both primary and second-level education. These initiatives (including Breaking the Cycle, the Disadvantaged Areas Scheme, and Giving Children an Even Break) involve the provision of extra funding per pupil along with additional teacher allocation for schools which are designated 'disadvantaged' in terms of their student profile. In 2004, €49.9 million was allocated across these schemes with a further €15.7 million allocated to the Home-School-Community-Liaison Scheme, designed to increase co-operation between schools, parents and community agencies. An evaluation of the Breaking the Cycle Scheme indicated that principals and teachers in designated disadvantaged schools were relatively positive about the scheme. However, there was no evidence of improved reading and maths scores among students in these schools and variable results in relation to other outcomes (such as student attitudes, attendance and behaviour) (Weir, Milis and Ryan, 2002a, 2002b; Weir, 2003). Explanations for the lack of a direct impact on student performance have been advanced, including the lack of systematic interventions to address reading and numeracy as well as the persistence of low expectations among teachers, parents and students (Archer and Weir, 2004). The direct impact of targeting expenditure on early school leaving patterns in schools serving disadvantaged communities has not yet been assessed.

To date, there has been little systematic evaluation of the cumulative impact of such policies on educational disadvantage in general and on early school leaving in particular. However, a number of issues have been raised by commentators (Educational Disadvantage Committee, 2005; Educational Disadvantage Forum, 2003; McCoy and Smyth, 2003). First, it is not clear to what extent the schemes cover all 'disadvantaged' students; by allocating expenditure on a school basis, a number of 'at risk' students may be excluded from interventions. Second, it is not clear whether the scale of additional funding is sufficient to make up for pre-existing

resource differentials due to significant differences between schools in their socio-economic profile. Evidence from the United States indicates that positive discrimination in terms of school funding is associated with improved student achievement but the improvements are not sufficient to close the achievement gap between high- and low-income students (see, for example, Borman *et al.*, 1998; Puma *et al.*, 1997). Third, provision has been criticised for fragmentation in terms of agencies, coverage and delivery; in particular, the criteria to identify schools has differed across schemes and there has been a lack of co-ordination across measures designed to achieve similar outcomes.

In a response to a review of measures to combat educational disadvantage, a new scheme, DEIS (Delivering Equality of Opportunity in Schools), was launched in 2005. DEIS is designed to provide an integrated approach covering pre-school to second-level education; it will be phased in over five years and involve additional expenditure of €40 million per year on full implementation. A new system for identifying schools for targeting is being drawn up; fewer schools (640 primary and 200 second level) will be targeted in the scheme than in pre-existing measures for schools serving disadvantaged communities (though the policy document refers to some supports for other schools). Among other dimensions, it is expected to include measures to improve literacy and numeracy levels and to enhance student attendance and retention (Department of Education and Science, 2005c). It is obviously too early to assess the potential impact of this new scheme. The integration of measures and services is to be welcomed as existing provision had been fragmented. The increase in resources to the targeted schools may go further to reducing the disparities between less and more advantaged students. However, while there is a good rationale for providing additional funding for schools with a very high concentration of young people from disadvantaged backgrounds,¹²⁸ a number of 'at risk' students attend other schools so provision should take this into account.

A4.9 Priorities for the Future

It is difficult to assess the overall effect of interventions designed, either directly or indirectly, to reduce the level of early school leaving. Overall rates of early school leaving have tended to plateau since the late 1990s;¹²⁹ there has been some continuing reduction in the rates for males, largely through post-school apprenticeship participation, but rates for females have remained stable. In the face of a range of interventions, the rate of early school leaving has plateaued rather than declined. It should be acknowledged, however,

¹²⁸ The social class mix of the school has a direct impact on school drop-out and student performance, over and above the effects of individual social background (Smyth 1999; McCoy *et al.*, forthcoming).

¹²⁹ It is now acknowledged that the National Anti-Poverty Strategy target of 90 per cent leaving at upper secondary level by 2006 will not be met.

that these measures had been introduced in a period of rapid employment expansion, which is likely to have acted as a 'pull' out of school for many young people.

On the basis of international and national evidence, a number of factors would appear to be key to improving school retention in the future:

- High quality pre-school education: This has been found to have positive long-term benefits for young people (especially those from disadvantaged backgrounds) in terms of school completion, among other factors. US research has indicated the benefits of such provision far outweigh the costs. The NESF (2005) has indicated that universal, high-quality provision for 3 year olds would cost €136 million per annum. Alternatively, more targeted provision, focusing on children from disadvantaged backgrounds, may be more cost-effective.
- School improvement: Any measures designed to prevent early school leaving will be unsuccessful unless they are underpinned by improvements at the school level. Currently, there is a significant gap in the reading performance of students in disadvantaged and non-disadvantaged schools, a gap that widens over the school career (Eivers *et al.*, 2005). Given the strong link between underperformance and school drop-out, interventions to improve literacy and numeracy are key aspects of preventing early school leaving. These interventions should be allied to specific learning support for at-risk pupils. Performance is not the only issue, however, since school climate (in the form of interaction between teachers and students) has a significant influence on early school leaving. School development planning (through the School Development Planning Initiative) should seek to promote a positive school climate to underpin specific measures to increase retention. Measures to facilitate greater student and parental involvement in schools are also likely to enhance student engagement and retention.

In spite of measures to target schools serving disadvantaged communities, overall per-student expenditure levels are lower in Ireland than in the OECD as a whole at both primary and secondary levels (OECD, 2005a). Further efforts to provide additional targeted resources early on in young people's schooling career are crucial in order to prevent later problems.