

Infrastructure  
Priorities for Enterprise  
July 2011

# Table of Contents

Executive Summary	2
<b>1. Introduction</b>	<b>4</b>
<b>2. Infrastructure investment priorities for enterprise</b>	<b>7</b>
2.1 Introduction	7
2.2 Key priorities by infrastructure category	8
2.3 Key priorities by city region	14
<b>3. Cost neutral policy/regulatory priorities</b>	<b>16</b>
3.1 Waste	16
3.2 Energy	17
3.3 Telecommunications	17
3.4 Transport	18
3.5 Water	19
3.6 Cross-infrastructure priorities	19
<b>4. Reduce the cost of infrastructure delivery</b>	<b>20</b>
4.1 Reducing planning delays	20
4.2 Reducing the cost of buying land	21
4.3 Improving public procurement	22
<b>5. Longer term infrastructure priorities</b>	<b>22</b>
5.1 Ensuring future connectivity to meet enterprise needs	22
5.2 Encourage adaptation to global warming	23
5.3 Develop a more sustainable transport system	23

## Executive Summary

Ireland's recovery and future economic growth depends on the ability of businesses to trade successfully in increasingly competitive global markets. The availability of a competitively priced world class infrastructure (energy, telecoms, transport, waste and water) and related services is critical to support enterprise development. While Ireland has made significant investment in infrastructure in recent years, further investment is required to ensure that our infrastructure can support economic recovery and enterprise growth.

The Department of Public Expenditure and Reform (DPER) is currently undertaking a comprehensive review of capital expenditure for the period 2012-2016. While this paper focuses on infrastructure investment priorities, it should be noted that other elements of capital expenditure are critical enablers of enterprise growth and development. The Department of Jobs, Enterprise and Innovation and Forfás, in cooperation with the enterprise agencies will be providing a detailed submission on the non-infrastructure elements of the capital review. It will explain in detail why continued support for the work of the enterprise agencies is essential to ensure that Ireland remains at the forefront of the competition for foreign direct investment and to facilitate the growth and development of Ireland's export sector. In addition, the paper will note that sustained investment in the science, technology and innovation programmes operated by Science Foundation Ireland and other agencies will be essential to underpin growth in Ireland's exporting sectors now and into the future

This paper builds on previous inputs on infrastructure investment priorities and other Forfás infrastructure policy work. We have also worked closely with Enterprise Ireland and IDA Ireland to identify within the reduced infrastructure allocation the key priorities for enterprise and to provide a strong rationale for why they should be frontloaded. The identified priorities reflect the suite of infrastructure developments required to underpin sustainable export growth both nationally and regionally (section 2)<sup>1</sup>:

- *Communications:* From an enterprise development perspective, the timely delivery of advanced broadband services in key urban centres is the top infrastructure priority. The widespread availability of advanced broadband infrastructure and services is essential to realising future growth potential in existing and emerging sectors<sup>2</sup>.
- *Water:* Although Ireland has made substantial investment in water and waste water infrastructure in recent years, further investment is required to address expected water and waste water capacity deficits in a number of key urban centres (Dublin, Galway, Athlone, Letterkenny, Mallow and Wexford).
- *Transport:* There are a number of bottlenecks around the country that if addressed will allow the full benefits of the significant investment in road and other infrastructures already made to be fully captured. These include the completion of

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<sup>1</sup> While this paper sets out infrastructure investment priorities for enterprise, sustained levels of investment in the enterprise element of the capital programme will be required to underpin employment and export growth. Forfás recommendations relating to the essential capital investment required to support the work of the Development Agencies and investment in science, technology and innovation are set out in detail in a separate paper.

<sup>2</sup> Advance broadband services have speeds of at least 100 Mbps, are symmetrical, and have low latency.

the Cork and Galway ring roads and two sections of the Atlantic Corridor (Gort-Tuam and Croom-Mallow) which will improve mobility of people and goods in and between Ireland's main regional cities. Improving public transport in the main cities is critical to enhance mobility for all transport users.

There is also significant scope for Government to improve infrastructure capacity and services without the need for Exchequer investment by addressing policy and regulatory barriers (Section 3). Policy and regulatory actions to incentivise private investment are particularly important in areas like waste and energy, which do not receive direct public sector funding. While the focus of the capital review is primarily on immediate infrastructure investment priorities, given the time lag in delivering infrastructure priorities, we also need to consider longer term investment to support future enterprise growth and job creation (section 4).

## 1. Introduction

### Overview

The availability of a competitively priced world class infrastructure (energy, communications, transport, waste and water) and related services is critical to support enterprise development, competitiveness and job creation. While Ireland has made significant investment in infrastructure in recent years, further investment is required to ensure that our critical infrastructure can support economic recovery and enterprise growth.

Capital expenditure for the period 2011 to 2016 was reduced considerably in the capital review (July 2010). Further significant cuts in the period 2011-2014 were announced in the National Recovery Plan in November 2010. The Department of Public Expenditure and Reform (DPER) is currently undertaking a review of capital investment priorities for the period 2012 to 2016. Each Government department is required to produce a report on its proposed capital investment priorities for the period 2012-2016. The priorities will be submitted to Government in September to inform the Estimates process.

Among the issues that Government departments have been asked to address when developing their priority investment programmes/projects are the justification for the particular project, how it aligns with the Programme for Government, and how it will support economic recovery, sustainable employment and meet critical economic and social infrastructure deficits.

The paper reviews and updates the development agencies' infrastructure priorities to ensure that the investment projects which can have the greatest impact, in terms of attracting overseas investment and supporting firms in Ireland to trade internationally, are prioritised and frontloaded. It builds on a number of studies that Forfás has completed to assess the ability of various infrastructures (e.g. communications, energy, water and waste) to meet current and future enterprise development needs. This paper provides a high level summary of the studies listed in the bibliography (Appendix 3) which should be consulted where further detail and analysis is required.

In addition, the paper sets out that there is significant scope for Government to improve infrastructure capacity and services without the need for Exchequer investment by addressing policy and regulatory barriers to promote more efficient State investment and greater private sector investment.

The paper is divided into three sections:

- Investment priorities to support enterprise development;
- Cost neutral policy/regulatory priorities to improve infrastructure networks and services; and
- Longer term infrastructure priorities.

### Non-Infrastructure Priorities for Enterprise

It should be noted that this paper focuses on infrastructure investment priorities for enterprise within the Capital Review process. In addition to providing investment in infrastructure, the capital programme allocates funding for enterprise support and development. This investment is central to the Government's economic and employment strategy. For 2012, the current allocation to enterprise amounts to €558 million or 13 per cent of total planned investment. This investment supports the activities of the State's enterprise development agencies: IDA Ireland, Enterprise Ireland, Science Foundation Ireland, County Enterprise Boards, Shannon Development and other enterprise related activity.

As strength in global demand for goods and services returns, so too will opportunities for existing and new Irish firms to develop to meet that demand. The exports, which will drive future economic growth, are likely to be in sectors closely associated with research, development and innovation activities. Programmes supported by this particular element of the capital programme are crucial to achieving and sustaining our return to economic growth through promoting the export potential of enterprise in Ireland. The investment in science, technology and innovation (STI) is a key pillar of stated government policy on growth and jobs, and unlike other areas of capital investment, demands for enterprise supports have not decreased because of the downturn. In addition to continuing support for STI programmes, sustaining investment in the enterprise agencies is essential to ensure that Ireland remains at the forefront of the competition for foreign direct investment and increases the proportion of exports from indigenous companies. The consistently strong performance of Ireland's enterprise agencies evidences the key role they play in creating sustainable employment and facilitating the growth and development of Ireland's export sector. Given the recognised importance of increasing exports to achieve economic recovery in Ireland, continued support for the enterprise agencies constitutes an effective policy tool for pursuing a return to sustainable economic growth.

This investment delivers a particularly high return to the State which includes 300,000 direct jobs, a similar number of indirect jobs, 80 per cent of exports, 40 per cent of national gross value added, €33 billion through payroll, materials and services costs, which represents about 26% of GNP, and three-quarters of all corporation tax. According to the Department of Finance's calculations, the employment intensity of broad capital investment falls within the range of 8-12 jobs for every €1 million invested. The return on investment from enterprise support is a multiple (perhaps four times) of that from other capital investments, even when dead-weight is factored in. Furthermore, assistance is provided only in relation to jobs that are to be sustained over at least seven years, as opposed to the shorter term employment associated with many infrastructure projects.

In addition to supporting existing employment, the proportion of the capital programme allocated to enterprise is central to the Development Agencies' ability to deliver on their ambitious employment targets of over 123,000 between 2011 and 2015. The delivery of these targets will be resource intensive and will require a sustained commitment in terms of capital and current funding. They cannot be achieved without the bedrock investments in STI to build research strengths in strategic areas.

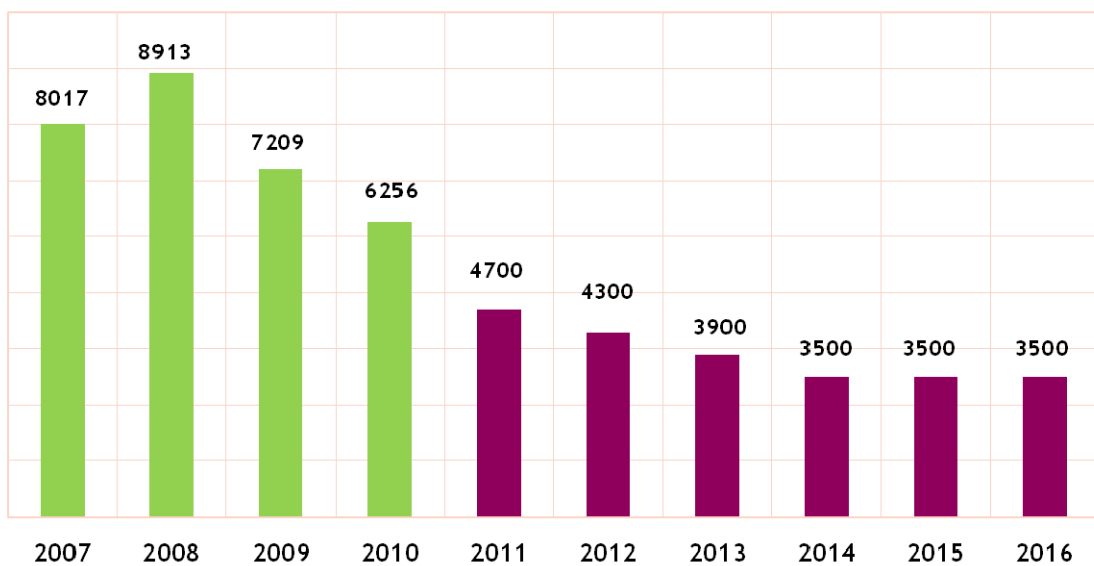
While this paper sets out infrastructure investment priorities for supporting the growth of exports from foreign and Irish owned firms, sustained levels of investment in the enterprise element of the capital programme will be required to underpin employment and export growth. Forfás recommendations relating to the essential capital investment required to support the work of the Development Agencies and investment in science, technology and innovation are set out in a separate Department of Jobs, Enterprise and Innovation paper.

## 2. Infrastructure investment priorities for enterprise

### 2.1 Introduction

Capital expenditure has declined significantly since 2008; almost €9 billion was invested in infrastructure in 2008, however just over half that amount will be invested in 2011 (Figure 1). Capital investment is to decline further over the capital review period, falling to €3.5 billion per annum from 2014 to 2016. Between 2008 and 2011, approximately 40 per cent of capital investment was allocated to transport and environmental projects (Figure A1 in Appendix 1).

Figure 1: Total Capital Expenditure (2007-2010) and Capital Budgets (2011-2016) (€m)



Sources: Department of Finance, Department of Public Expenditure and Reform.

Among the main criteria considered by the agencies (Forfás, Enterprise Ireland and IDA Ireland) to identify the immediate infrastructure priorities to support enterprise growth and job creation are:

- *Needs of key exporting sectors:* We focus on infrastructure projects that will have greatest impact in supporting enterprise to trade successfully in global markets. Ireland's export performance has proved resilient during the recession, particularly in the chemicals, medical technologies, ICT and food and drink sectors. Services exports also continue to grow and accounted for 45 per cent of Irish exports in 2010. We need to prioritise infrastructure investment in advanced broadband services, transport, water and energy to enable Ireland to build on its strengths in key existing sectors and to exploit opportunities in new emerging sectors;
- *Prioritising key urban centres:* Capital investment prioritisation should be consistent with the objectives of the National Spatial Strategy (NSS) and in particular the development of the gateways. Ireland will only be successful if we build up key centres and regions that have the critical mass to compete internationally. Given

the pressures on Exchequer funds, it is important from an enterprise development perspective that we prioritise investment in key urban centres where it will have greatest impact. Piecemeal improvements scattered across the country will lead to suboptimal returns on very scarce resources.

- *Leveraging previous investment:* There has been significant investment in economic infrastructure over the past 15 years, particularly in roads, public transport, water/waste water and energy - for example, Ireland invested €8 billion to develop a world class motorway network that links all the main cities to Dublin. However, gaps remain. Many of the priority projects identified by the agencies will address such gaps and allow us to capture the full benefits of the significant investments already made.

### Box 1: Contribution of Development Agency-Assisted Clients

#### Contribution of Agency-Assisted Clients

- Over three quarters of Ireland's exports of goods and services in 2010 were by agency assisted client companies;
- Agency-assisted companies operating in Ireland provided almost 300,000 direct jobs, a similar number of indirect jobs, 80% of exports, 40% of national GVA, €33 billion through payroll, materials and services costs, which represents about 26% of GNP, and three-quarters of all corporation tax.

## 2.2 Key priorities by infrastructure category

### 2.2.1 Advanced broadband services

From an enterprise development perspective, the timely delivery of advanced broadband services in key urban centres is the top infrastructure priority. The widespread availability of advanced broadband infrastructure and services is essential to realising future growth potential in existing and emerging sectors<sup>3</sup>. It will also play a key role in supporting the growth of small business, capturing opportunities for productivity and innovation, supporting regional development, enabling greater public sector efficiency and marketing Ireland as a location for ICT-intensive FDI and R&D projects. In addition, it will signal to the international community that our commitment to the knowledge economy is a reality.

Forfás believes that as an interim step to achieving the EU Digital Agenda targets for 2020<sup>4</sup>, Ireland should seek to have an advanced broadband infrastructure comparable with our key competitors in all towns with a population greater than 1,500 (61 per cent of population), delivering speeds of at least 100 Mbps, that are symmetrical and have low latency.

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<sup>3</sup> Advance broadband services have speeds of at least 100 Mbps, are symmetrical and have low latency.

<sup>4</sup> The Digital Agenda Targets specify that by 2020 all EU citizens should have access to broadband speeds of 30 Mbps and that 50 per cent of European households should be subscribed to services of 100Mbps or higher.

While the advanced broadband needs of ICT-intensive enterprises are generally well met in the large urban centres, businesses, particularly SMEs, outside the main urban centres have significantly less choice and less access to good quality services.

The optimal solution is that the communications market players, public and private, undertake the necessary investment within the context of a supportive policy and regulatory framework with Government addressing areas of market failure. Given the scale of the investment required, it is accepted that there is likely to be market failure, particularly outside of the main urban centres. We need to act now to ensure that Ireland can provide advanced broadband networks and services on a par with competitor countries and the actions required are set out below.

Section 3 sets out a range of proposals to improve the investment environment for next generation broadband. The Programme for Government proposes that '*...NewERA will co-invest with the private sector and commercial semi state sector to provide next generation broadband to every home and business in the State*'. The contribution of the Exchequer will be dependent on the degree to which the private sector can deliver on the State's targets. It is essential that the State advances on this initiative quickly. In particular, the State needs to:

- make a firm commitment to providing or sourcing the funds required to achieve the goals set out in the Programme for Government, and set objectives and targets to ensure the timely delivery of advanced broadband services. The level of funding required will depend on the degree to which the market players can invest and how the deployment of advanced broadband infrastructure is phased;
- quickly develop an implementation plan which would include mapping existing telecommunications networks and concrete investment plans and identifying deficits;
- design a competition/process for a collaborative approach with the industry players (private and/or commercial semi-state) to determine the level of market interest. This competition/process, mirroring earlier State interventions to support investment in international, regional, city and rural broadband networks, should be time-limited to demonstrate the State's seriousness in meeting its ambitious broadband goals; and
- progress with a State asset collaboration approach using the existing state telecommunications infrastructure, if the competition/process is not successful in leveraging investment from the market players to support the State's broadband objectives and targets.

There are a number of interim measures that need to be progressed to ensure that Ireland's main urban centres can support economic growth:

- Extend the existing metropolitan area networks (MANs) in Cork and Waterford to meet existing enterprise needs in key IDA industrial sites not currently connected to those MANs;

- Build additional MANs in a small number of outstanding NSS centres; namely Tuam, Castlebar, Ennis, Shannon, and Mallow; and
- Mandate the provision of ducting as part of all State infrastructure development programmes, such as roads, water network upgrades and sewage programmes<sup>5</sup>. For example, in spite of the funding cuts, significant investment to upgrade the water networks in many urban centres is planned to reduce the current high levels of leakage. This provides an ideal opportunity to install ducting in these centres in a cost effective manner.

### 2.2.2 Water and Waste Water

The provision of adequate and affordable water and waste water services is crucial to ensure the sustained growth and development of enterprise in the main urban centres. Access to secure and competitively priced water supplies, at appropriate quality levels, is core to the delivery of these services.

Although Ireland has made substantial investments in water and waste water infrastructure in recent years, further investment is required to address water and waste water capacity deficits in a number of key urban centres. Forfás reviewed water and waste water supply and demand in all NSS centres in 2008. Based on an analysis of demand and supply, we identified the following priorities<sup>6</sup>:

- Additional water and waste water treatment capacity required in Dublin;
- Additional water and waste water treatment capacity in Galway;
- Additional water and waste water treatment capacity required in Athlone;
- Additional water and waste water treatment capacity required in Letterkenny; and
- Additional waste water treatment capacity required in Wexford town and Mallow.

Reducing the high leakage levels that exist in many NSS centres needs to be the first course of action taken by local authorities, as it will increase the volume of water available to meet demand without necessitating significant capital investment in new water treatment capacity. In this context, no Exchequer funds should be allocated to provide additional water treatment capacity to any urban centre until action plans to reduce leakages to an acceptable level are implemented.

### 2.2.3 Transport

As an island, national and international transport connectivity is critically important in an increasingly globalised economy. Access to markets is one of the key factors for companies in deciding where to locate. There have been significant improvements in transport capacity and connections nationally, notably the completion in 2010 of the motorway network from Dublin to the five main cities on the island. The improvements in our transport infrastructure

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<sup>5</sup> Civil construction works typically represent up to 80 per cent of the total roll-out costs of access networks.

<sup>6</sup> Forfás, Assessment of Water and Waste Water Services for Enterprise, 2008, [http://www.forfas.ie/media/forfas080902\\_water\\_waste\\_water.pdf](http://www.forfas.ie/media/forfas080902_water_waste_water.pdf).

are reflected in data from the IMD on the perception of distribution infrastructure, which shows a significant improvement in Ireland's performance between 2005 and 2011 (Table 1). However, Ireland continues to lag competitor countries - in 2011 Ireland ranked 26<sup>th</sup> of the 59 countries benchmarked (31<sup>st</sup> in 2010).

**Table 1: Perception of Distribution Infrastructure 2005-2010 (Score 0-10)**

	2005	2006	2007	2008	2009	2010	2011
Ireland's score	4.48	4.93	4.90	5.96	6.75	7.24	7.96

Source: IMD World Competitiveness Yearbook 2010

### *Road network*

Connectivity between Dublin and the main cities has improved significantly with the completion of the motorway network. This has improved access to the main air and sea ports, not just for companies located in the main cities but also for those in urban centres located on or close to the motorway network.

Firstly, the agencies endorse the three planned priority road projects that are to be progressed by public private partnership (PPP) this year. It is important that these projects are initiated as quickly as possible:

- Newlands Cross interchange - this is the last outstanding element of the motorway from Dublin to Cork/Limerick;
- N17/N18: Gort to Tuam - this will improve access from Limerick to Galway and from the surrounding hinterlands (including south Mayo) to the motorway network; and
- M11/N11: Gorey to Enniscorthy and New Ross by-pass - this will improve access to and within the south east, including access to Rosslare Europort, which is important for ro-ro services to/from Ireland<sup>7</sup>.

Completing the Atlantic corridor from Galway to Waterford remains an important medium term priority to support sustained economic growth and job creation. However, given the constraints on capital expenditure, the Development Agencies have prioritised a number of short sections along the corridor where there are particular bottlenecks that, if addressed, will lead to significant benefits.

- Completion of the Cork and Galway ring roads and the Gort-Tuam and the Croom-Mallow section of the Atlantic corridor will reduce local bottlenecks and improve mobility of people and goods in the Galway-Limerick and Cork-Limerick catchment areas. They will also improve access to Cork and Shannon airports and Shannon-Foynes and Cork ports for the south west, mid west and west regions.

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<sup>7</sup> Fourteen per cent of Ireland's ro-ro freight traffic went through Rosslare Europort in 2010 - 84 per cent went through Dublin Port

These and other immediate road priorities for the development agencies are outlined in more detail in Table 2.

**Table 2: Transport Priorities for Enterprise**

Project	Scheme	Rationale
1.	N6 Galway City outer by-pass (12 km)	<ul style="list-style-type: none"> <li>▪ Relieves bottlenecks in Galway, allowing full benefits of previous investment to be captured, also removes bottleneck on the Atlantic Corridor;</li> <li>▪ Enhances access and eases congestion around Galway - links industrial area east of city to residential areas in the west; and</li> <li>▪ Improves access from the wider hinterland to the motorway network and to air and sea ports in Dublin and elsewhere.</li> </ul>
2.	N22 Cork Northern Ring Road and N25 Cork South Ring	<ul style="list-style-type: none"> <li>▪ Cork has a significant and diverse enterprise base and well developed cohort of export oriented companies in the pharmaceuticals, food and ICT sectors in particular;</li> <li>▪ Completes ring of Cork city, allowing full benefits of previous investment to be captured, and removes bottleneck on the Atlantic Corridor;</li> <li>▪ Enhances traffic movement for people and goods around Cork city by removing remaining bottlenecks; and</li> <li>▪ Improves access from other parts of the south and south west to Cork city, to the motorway network and to air and sea ports in Cork and Dublin.</li> </ul>
3.	N28 Ringaskiddy/Cork (13 km)	<ul style="list-style-type: none"> <li>▪ Facilitates better access to/from the important pharmaceutical concentration at Ringaskiddy, improving mobility of people and goods; and</li> <li>▪ Improves access to port facilities in Ringaskiddy and allows for future port developments (e.g. deep water port).</li> </ul>
4.	N20 Mallow/Croom (40 km)	<ul style="list-style-type: none"> <li>▪ Relieves a key bottleneck on the Atlantic Corridor, which improves the Limerick-Cork section and improves mobility of people and goods between two key regional centres;</li> <li>▪ Improves access to air and sea ports in Cork and Shannon /Limerick; and</li> <li>▪ Links the hinterland effectively to the large urban centres of Cork and Limerick and to the motorway network and access to Dublin air and sea ports.</li> </ul>
5.	N22 Macroom/Ballyourney by-pass (22 km)	<ul style="list-style-type: none"> <li>▪ Removes bottleneck at Macroom/Ballyourney and enhances connectivity between Tralee/Killarney and Cork city, and access to Cork air and sea ports;</li> <li>▪ Improves access on a key tourism route for the SW region.</li> </ul>

In light of the constraints on the road programme budgets in the medium term, it is critical that the improvements in the road network are not over-specified and reflect current and future needs. In particular, consideration should be given to using, for example, 2+1 carriageway (as was done on the 16 km stretch of the N2 Clontibret-Castleblaney) rather than dual carriageway/motorway to upgrade the road network between key regional urban centres<sup>8</sup>.

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<sup>8</sup> Sweden has 1,500 km of 2+1 carriageway.

### *Public transport*

Improving public transport in the key urban centres is critical to improve mobility for all transport users. A selective continued investment in the options (as between bus and rail) with the highest economic and social returns, based on a full cost benefit analysis, to improve public transport in the key urban centres, particularly Dublin, Cork, Galway and Limerick, is required.

### *International connectivity*

Good international air and sea access coupled with effective internal connectivity is a key factor in mitigating the impact of Ireland's peripheral location in the eyes of potential investors and overseas customers. While air and sea access infrastructure is generally not funded directly from public capital expenditure budgets, public policy has a key role to play in ensuring that the private sector invests in a timely manner to ensure the current and future needs of enterprise are met (see section 3).

### **2.2.4 Energy**

While energy infrastructure is not funded directly from public capital expenditure budgets, public policy has a key role to play in ensuring that the private sector invests in a timely manner to ensure the current and future needs of enterprise are met (see section 3).

### **2.2.5 Waste**

While waste infrastructure is generally not funded directly from public capital expenditure budgets, public policy has a key role to play in ensuring that private sector invests in a timely manner to ensure current and future needs of enterprise are met (see section 3).

### **2.2.6 Using intelligent infrastructure developments to improve infrastructure competitiveness**

The delivery of intelligent infrastructure offers significant competitiveness benefits for the economy in terms of increased productivity and reduced costs. With significantly reduced capital budgets, it is vital that we get maximum value for money from existing physical infrastructure networks and that we leverage the significant investments made over the past 15 years. The application of technology to infrastructure assets can play a substantial role in additional raising revenues for capital investment, reducing the burden on the Exchequer and freeing up scarce capital resources to use to greater effect elsewhere.

In Ireland, a range of smart infrastructure projects have been undertaken or are in development. The capital expenditure review for the period 2012-2016 provides an opportunity to capture the benefits offered by technological development. In this context, Forfás' forthcoming report on intelligent infrastructure proposes a number of policy actions. Forfás recommends that the capital expenditure review explicitly outline the potential for

intelligent infrastructures to maximise the value of existing infrastructure and its potential to enhance the value of future investments<sup>9</sup>.

In addressing infrastructural deficits, there is a need, where possible, to utilise management and operational solutions rather than capital intensive investment solutions. Smart technologies are ideally suited to help resolve many of Ireland's pressing infrastructure problems. Intelligent infrastructure offers innovative solutions to address issues such as a congested capital city with limited potential to build new roads, excellent but highly variable renewable energy resources and an extensive water distribution network with high levels of leakage. Another benefit of smart applications is the role they play in avoiding or mitigating system failures. This is particularly difficult to capture in return on investment calculations, as they do not take into account either the reliability of the system or the possibility of rare but substantial shifts in the operating environment.

Given the importance of managing future investments to ensure the highest potential return, it will be important that all public infrastructure providers take into consideration the potential for intelligent infrastructure to address or to assist in addressing infrastructure deficits. In Australia, under the Infrastructure Australia strategy, infrastructure proposals must explicitly address the intelligent infrastructure dimension<sup>10</sup>. Forfás recommends that the potential for intelligent infrastructure to substitute or complement traditional capital investment should be required as part of the capital appraisal process in Ireland.

### 2.3 Key priorities by city region

Cities are increasingly seen as the drivers of national economic growth and competitiveness, particularly in modern knowledge-based economies. The majority of the population, businesses, jobs, innovation systems and higher education institutions are concentrated within our cities and their hinterlands. They are hubs of international trade, transport and communications and have emerged as magnets for talent and investment. Improving the competitiveness of the main cities will benefit their wider hinterlands. It is therefore critical that we continue to invest in the development of our main cities and ensure that they have the world class infrastructure required to be successful international cities. This view is supported by the work of the National Competitiveness Council<sup>11</sup>.

#### *Dublin*

Dublin is Ireland's only city of international scale, with over one million residents and a significant number of international linkages. Although Dublin accounts for almost half of national GDP, we should not be complacent about its position as an internationally competitive location. While it is by far, Ireland's largest and most densely populated urban area, at an international level Dublin is a small city on the margins of northwest Europe. Its continued success is critical for the performance of the entire economy.

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9 Forfas, Intelligent Infrastructure - Delivering the potential competitiveness benefits and enterprise opportunities, Forthcoming

10 Australian Government/Infrastructure Australia, Getting the fundamentals right for Australia's infrastructure priorities, June 2010.

11 National Competitiveness Council, Our Cities - Driver of National Competitiveness, 2009.

There has been significant investment in infrastructure to and within Dublin, notably the motorway network linking the other main cities to Dublin and its air and sea ports, the Dublin Port Tunnel and the upgrade of the M50. In addition, significant investment has been made in Dublin's public transport network in recent years and the city has benefited from improved water and waste water facilities. In view of Dublin's pivotal role in driving national growth and prosperity, a strong focus on maintaining and enhancing Dublin's attractiveness as a location to do business in and to live and work in is essential. The specific immediate priority projects that need to be progressed are:

- Newlands Cross interchange to complete the motorway network to the south;
- Additional water and waste water treatment capacity to meet the future needs of the city's population and enterprise base; and
- Improvements in public transport to reduce traffic congestion and costs, and increase productivity and labour mobility. Decisions on which public transport projects to progress should be informed by rigorous multi-criteria ex ante analysis.
- In the longer term, the Eastern Bypass and the Leinster Orbital Route corridor are priorities. While these cannot be advanced in the short term, a degree of advanced planning would aid their delivery in the future.

### *Cork*

Cork is one of Ireland's most strategically important locations for enterprise activity. It has a diverse enterprise base and well developed cohort of export oriented companies in the pharmaceuticals, food and ICT sectors in particular<sup>12</sup>. In addition, it has been identified by the agencies as a location of significant growth potential; for example, there are three IDA strategic sites in the Cork area (Ringaskiddy, Carrigtwohill East and Carrigtwohill West)<sup>13</sup>.

There has been significant investment in road access to and within Cork (M8 to Dublin and the ring road which has improved mobility within the city and access from the south west to the motorway network). Other infrastructure improvements include the opening of a new rail-line from Cork to Mallow and hourly train services to Dublin. The specific projects that need to be progressed to remove outstanding road access bottlenecks and allow Cork and Ireland to capture the full benefits of previous investments are:

- Complete the Cork South Ring Road and Northern Ring Road;
- Upgrade the N28 Ringaskiddy/Cork;
- Upgrade Croom to Mallow (N20 Limerick to Cork); and
- Macroom/ Ballyvourney by-pass (N22 Cork/Killarney).

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12 Forfás, Regional Competitiveness Agenda: Realising Potential - South, January 2010.  
<http://www.forfas.ie/media/forfas100121-Regional-Competitiveness-Agendas-SouthWest.pdf>

13 The other IDA strategic sites are in Galway (2), Waterford/Kilkenny (2) and Dundalk (1).

### *Galway-Limerick region*

Galway and Limerick are important locations for enterprise activity. The medical devices sector is the most significant employer in the Galway region and has recorded strong growth over the past decade. Internationally traded services activities, in particular ICT services, are also making an increasing contribution to enterprise activity in the Galway-Limerick region. The Galway region also has a strong entrepreneurial culture with the highest proportion nationally of established entrepreneurs and early stage entrepreneurial activity<sup>14</sup>. In addition, it has been identified by the agencies as a location of significant growth potential; for example, there are two IDA strategic sites in the Galway area (Oranmore and Athenry)<sup>15</sup>.

There has been significant investment in road access to and within Galway and Limerick, including the M6/M7 to Dublin and the upgrade of the Limerick to Galway road (as far as Gort). Both Limerick and Galway have received significant funding through the water services investment programme to facilitate improved water services and waste water capacities. The specific projects that need to be progressed to remove outstanding road access bottlenecks, address water and waste water capacity shortages and allow Ireland to capture the full benefits of previous investments made in the region are:

- Complete the Gort to Tuam road (M18/N18);
- Complete the Galway city outer by-pass; and
- Upgrade Croom to Mallow (N20 Limerick to Cork);
- Increase water and waste water treatment capacity in Galway.

## 2. Cost neutral policy/ regulatory priorities

A number of policy and regulatory actions can significantly improve infrastructure networks and capacity without any cost to the Exchequer. Policy and regulatory actions to incentivise private investment are particularly important in waste and energy given that these areas do not receive direct public sector funding.

### 3.1 Waste<sup>16</sup>

In its most recent analysis of waste infrastructure and its ability to meet current and future enterprise needs, Forfás noted that:

- The creation of policy and regulatory certainty in the waste sector to incentivise private investment in waste infrastructure is critical to ensure the future needs of enterprise are met. In particular, the issue of the potentially conflicting role of the local authorities as service or infrastructure provider and as regulator of the sector needs to be addressed; and

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<sup>14</sup> Forfás, Regional Competitiveness Agenda: Realising Potential - West, January 2010. <http://www.forfas.ie/media/forfas100121-Regional-Competitiveness-Agendas-West.pdf>

<sup>15</sup> The other IDA strategic sites are in Cork (3), Waterford/Kilkenny (2) and Dundalk (1).

<sup>16</sup> Waste Management in Ireland: Benchmarking Analysis and Policy Priorities, 2010.

- The coordination of regional waste management plans at national level to attract investment in waste infrastructure in a way that maximises potential economies of scale, competition and enables the market to pass on the benefits to businesses and householders through lower charges and better services.

### 3.2 Energy

Forfás and the National Competitiveness Council have outlined a number of policy actions that would improve the efficiency of the energy market<sup>17</sup>:

- Significant expansion of the transmission grid is planned over the next decade to support the renewable energy targets and regional enterprise development. Given the significant reduction in demand, Grid 25 investment plans need to be reviewed and investment deferred where necessary. The cost of electricity network investment is passed through directly to electricity customers (business and residential).
- In view of the technical and cost implications of putting high-tension cables underground, cables must continue to be placed overhead if Ireland is to restore its energy cost competitiveness and ensure security and reliability of electricity supply.
- Unbundling of the ownership of the transmission grid from ESB Networks and its transfer to Eirgrid needs to be completed.
- It is critical that the appropriate supports are put in place to promote and develop enterprise opportunities in renewable energy. However, energy is an important input to the entire enterprise base; therefore, we need to find a way to support the development of the renewable energy sector without adversely affecting the competitiveness of the wider enterprise base and Ireland's attractiveness as a location to do business. Government action to support the development of the renewable energy sector should focus on reforming the regulatory and planning framework. A range of practical barriers remain (e.g. foreshore licensing issues; delays in getting grid connections) to developing renewable energy operations<sup>18</sup>.

### 3.3 Communications

The following recommendations are discussed in more detail in the 2010 Forfás report, Ireland's Broadband Performance and Policy Actions<sup>19</sup>.

- *Pro-Investment Regulation:* We need to ensure the regulatory framework incentivises investment, promotes competition and reduces roll-out costs. The key actions required are to:
  - Ensure an appropriate return on investment for private operators to incentivise investment;
  - Ensure wholesale access to a range of advanced products to promote competition at the retail level. ComReg has set out the principles that will apply to ensure

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17 National Competitiveness Council, Statement on Energy, 2009

<http://www.forfas.ie/publication/search.jsp?ft=/publications/2009/Title,4737,en.php>

18 See 'Progress Report on the implementation of the recommendations of the report of the High Level Group on Green Enterprise', March 2011. <http://www.forfas.ie/publications/2011/title,7602,en.php>

19 <http://www.forfas.ie/publication/search.jsp?ft=/publications/2010/Title,5376,en.php>

wholesale access to next generation products and services, however, it is essential that specific obligations and remedies are put in place in a timely fashion to promote competition at the retail level;

- Enable infrastructure sharing between telecommunication operators as a means to lowering roll-out costs while maintaining competition at the service level; and
  - Examine the potential for tax incentives to be developed or extended to encourage private investment in communications infrastructure.
- *Infrastructure Planning:* Planning policy has a key role to play in supporting the roll-out of advanced broadband infrastructure. The planning measures that Ireland needs to progress include:
- Mainstreaming access to public ducting for fibre deployment and mandating the provision of ducting as part of all State infrastructure development programmes;
  - Mandating the installation of open access ducting in all new developments (residential and commercial); and
  - Reducing the costs of building access networks - e.g. harmonising local authority fee structures and processes.
- *Demand Stimulation:* Supply side measures alone will not be sufficient to capture the full benefits offered by advanced broadband services. The economic literature highlights that those countries/ companies who capture the productivity gains also need to invest in ICT, human capital and organisational change. The State has a key role to play in stimulating demand for advanced telecoms services:
- The State sector should use its position as a leading purchaser of advanced broadband services to underpin demand aggregation strategies and support infrastructure investment;
  - Ireland needs to make better use of ICT across government (e-Government; e-Health; e-Education) to improve the efficiency and effectiveness of public services and make them easier to access for citizens and businesses; and
  - By creating conditions, which encourage enterprises to invest in ICT, skills development and organisational change in order to exploit the opportunities arising from advanced broadband services the State can help drive demand.
  - The State can provide incentives to end users to encourage take-up: Other countries are using various mechanisms (e.g. financial incentives, tax relief) to stimulate demand for advanced broadband services.

### 3.4 Transport

- Serious consideration needs to be given to the introduction of congestion charges in key urban centres to facilitate better use of road infrastructure and increased mobility. Charges should vary according to time of day or location, an approach

that has been used successfully in London, Oslo and Stockholm<sup>20</sup>. The main purpose of charging variable fees is to ensure that road users attach a value to using the road network and consider congestion costs when making decisions. In addition, the revenues collected from the congestion charges could be a useful source of revenue for enhancing public transport in our main urban centres.

- Reform the regulatory framework for public transport, particularly in urban bus services to promote competition and ensure quality services in terms of routes served and frequency of service.
- The implementation of integrated ticketing across existing public transport services is still outstanding.

### 3.5 Water<sup>21</sup>

- Move to a national or river basin district basis for the planning and provision of water services to maximise potential economies of scale, both in the building of infrastructure and the delivery of services.
- Adopt a long term strategic approach to water services policy and planning at national level to ensure the efficient delivery of adequate, competitively-priced and quality water services in the context of growing demand and the likely effects of climate change.
- Manage demand for water with an emphasis on conservation, loss reduction, metering and an economic charge for water to domestic users.

### 3.6 Cross-infrastructure priorities

In addition to the specific policy/regulatory actions highlighted above, there are also a number of cross-infrastructure issues that need to be addressed to improve the efficiency of infrastructure delivery:

- **Support the coordinated delivery of infrastructure:** A more integrated approach to infrastructure planning is required to promote improved efficiency, effectiveness and competitiveness at minimum cost. In previous submissions to the Department of Finance, Forfás made a series of recommendations on potential coordination measures for infrastructure. Forfás recommends
  - an enhanced role for the Inter-Departmental Committee on Economic Infrastructure ;
  - the development of integrated utility agencies with a national remit (e.g. a state telecommunications entity, the NRA to develop strategic infrastructure corridors, a single national water company), and/ or;

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<sup>20</sup> The Netherlands has been considering a generalised system of per-kilometre tolls on its road network, using GPS technology and charging additional fees for using congested areas and for using the network during peak times. Source: OECD, Meeting infrastructure needs in Australia, 2010.

<sup>21</sup> Forfás, Assessment of Water and Waste Water Services for Enterprise, 2008  
<http://www.forfas.ie/publication/search.jsp?ft=/publications/2008/Title,1361,en.php>

- an enhanced role for local authorities in coordinating the delivery of multiple infrastructure within their areas (e.g. broadband ducting).

### 3. Reduce the cost of infrastructure delivery

Recent falls in the costs of infrastructure projects reflect the difficult economic environment rather than structural improvements in Ireland's cost competitiveness. A range of issues increase the costs of delivering infrastructure, whether through planning delays, institutional inefficiencies or financing difficulties. The Irish Academy of Engineering report on the cost effective delivery of essential infrastructure, which was supported by Forfás, outlines a series of policy actions to enable more efficient infrastructure delivery<sup>22</sup>. It is vital that actions to reduce planning delays and improve the efficiency of the public procurement process are progressed. Key recommendations from the Academy are outlined below.

#### 4.1 Reducing planning delays

A number of key infrastructure projects have encountered major delays in obtaining the necessary permits and consents to allow construction to commence. This has resulted in significant cost increases and may have threatened the viability of some projects. The challenge is to make the approval system much more effective so that it can deliver greater certainty of outcome in a consistent, timely and transparent manner, while protecting rights to fair process.

##### *Academy Recommendations:*

- For major infrastructure projects, consent should only be required from one authority to allow construction to proceed. That authority should be responsible for managing the necessary inputs from other State bodies. For example, it is possible to obtain permission from An Bord Pleanála for a complex wind project within six months while it can take two or three years before a foreshore licence is granted to allow construction to proceed.
- The authority responsible for approval to construct should also be responsible for environmental impact assessments (EIAs), with all relevant parties providing their inputs to the competent authority as part of the assessment. Currently a single project may require its environmental assessment to be appraised by several authorities as part of different consent processes, each with a different timescale and some with no time limits. For example, some proposals require review of the EIA by An Bord Pleanála, the Department of Environment, Community and Local Government, the EPA and the Department of Communications, Energy and Natural Resources.
- The environmental impact statement process should be amended to accommodate more generic designs with appropriate conditions included to ensure that the final design and construction meets the environmental conditions attached to the

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<sup>22</sup> The full report from the Irish Academy of Engineering can be found at <http://www.forfas.ie/publications/2011/title,8075,en.php>

approval. Currently tenderers have little flexibility to innovate and alter designs to take advantage of technological and other developments that might arise between project design and delivery - even if it could lead to outcomes that are more desirable and cost reductions.

- Review the approach adopted for the display of newspaper and site notices when permission is being sought for major infrastructure projects. Recently a planning application for an essential cross border electricity interconnector was withdrawn, following an error in specifications included in the newspaper notice. This should not have been necessary. The intention of a site notice or newspaper advertisement should be to alert the public about the application, to outline the general nature of the project and to indicate how and where an interested party may obtain further information.
- To improve the effectiveness of the planning system, an appropriate balance between the right of individual citizens and the common good is essential. Clear national guidelines or a code of practice should be established to ensure full participation of all stakeholders and consistency in the implementation of the consultation process.
- All approvals should be subject to timescales for decisions and inputs by parties and these should be adhered to.
- Where the same controversial safety or environmental issue is raised on project after project (e.g. effects of high voltage power lines on human health), once An Bord Pleanála has made a decision, the definitive position should be stated by the Board and the matter should only be re-opened where it is clear that fresh evidence is being put forward.

### 4.2 Reducing the cost of buying land

The prices paid for the purchase of land and the acquisition of way leaves have been a major component of the cost of infrastructure in Ireland over the last fifteen years. According to the Academy, land acquisition costs for motorways in Ireland are significantly higher than the EU average. Of the €8 billion cost of land acquisition for the recently completed inter-urban motorway system, €1.46 billion, or 18.5 per cent was spent acquiring the 7,800 hectares required for the 1,000 km of motorway<sup>23</sup>. This is equivalent to €187,000 per hectare or €76,000 per acre.

#### *Academy Recommendations:*

- There is a clear need for a common approach to the acquisition of land or way leaves across the range of national infrastructure. In this regard, the report highlights recommendations made in the Kenny Report regarding the level of premiums which should be paid to landowners.
- Legislation setting up the National Infrastructure Authority, which is proposed by the Academy, should include a new code of practice for agreements with landowners for

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<sup>23</sup> Fred Barry, CEO of the National Roads Authority, Engineers Ireland Roads and Transportation Society, May 2010.

all infrastructure projects. This should include the cost of land and way leave acquisition, access arrangements, accommodation works and reinstatement of lands, on the basis of fairness and value for money. Consideration should be given to a mechanism for dispute resolution including a process for final referral to the Commercial Court.

### 4.3 Improving public procurement

The absence of properly functioning multi-annual budget provisions in many public bodies causes delays and inefficiencies in the public procurement process. This particularly applies to major programmes /projects with an inception to delivery life span of 10 to 15 years.

#### *Academy Recommendations:*

- Government departmental and agency administrative and project management procedures governing public procurement practice and approval processes need to be streamlined.
- Ireland needs to establish national training courses and accreditations for people engaged in large scale public procurement services to ensure a high level of expertise and standards within accredited procurement centres of excellence. Accreditation must require that the appropriate professional training, technical, economic and legal contract competencies exist within accredited organisations.
- Public procurement for strategic infrastructure should be conducted by the proposed National Infrastructure Authority. For other projects, recognising subsidiarity, the necessary authority should be devolved to the lowest appropriate party, to conduct and conclude the public procurement process (subject to the required procurement expertise being available).

## 4. Longer term infrastructure priorities

While the focus of the Government's capital review is on immediate infrastructure investment priorities, given the time lag in delivering infrastructure priorities, we also need to consider longer term investment to support future enterprise growth and job creation.

### 5.1 Ensuring future connectivity to meet enterprise needs

While the scope to progress large scale investment projects is limited in the short to medium term, it is important that we commence the feasibility assessment/planning process for longer term projects during the lifespan of this capital review (2012-2016). The delivery of many large scale infrastructure projects has a long lead time. Among the priority longer term projects to ensure that we continue to have good internal and external access in the future are:

- Completion of the upgrade of the Atlantic road corridor from Galway to Waterford to provide good access between the main regional cities; and

- Eastern Bypass and the Leinster Orbital Route corridor in Dublin to ensure ease of movement of people and goods in the Dublin region and to ensure that enterprises everywhere continue to have good access to Dublin's air and sea ports.

### 5.2 Encourage adaptation to global warming

Rising temperatures, increased risks of floods, wetter winters, drier summers and more intense storms are some of the climate changes anticipated to impact on Ireland in coming years. Critical pieces of infrastructure such as those that generate and distribute energy and treated water will be impacted by climate change. Climate change could also increase vulnerability of supply chains and could have impacts on production processes and service delivery (such as refrigeration, data centre cooling and precision engineering processes).

Early adaptation measures can reduce these costs. Early consideration of the need to adapt to climate change within the policy system - particularly through planning measures and spatial policies - can ensure that risks are minimised at least cost or that measures are cost-effective over the lifetime of the decision/policy<sup>24</sup>. Forfás has completed an assessment of the challenge of adapting to climate change. High level recommendations include:

- Owners/ public authorities that manage critical infrastructures (e.g. water, flood protection, energy, transport and communications, waste, etc.) will need to plan to ensure that these pieces of infrastructure are climate resilient. As a first step, Owners of critical pieces of infrastructure for business (energy, water, transport, communications, and waste) should be required to undertake an asset risk assessment of potential risks.

### 5.3 Develop a more sustainable transport system

Global energy demand is set to continue to grow strongly over the next two decades<sup>25</sup>. Peak oil will pose a particular challenge for Ireland given our high dependence on oil. Ireland's current spatial patterns militate against the development of an efficient and effective public transport system and increase our dependence on road transport and the private car. Ireland has one of the most dispersed populations in Europe with 40 per cent of the population living in rural areas. This is further compounded by the low density of urban centres relative to other European countries.

Ireland also needs to give consideration to the development of a national strategy that encompasses energy, transport, enterprise, spatial, environmental and research policy to prepare for the challenges of peak oil<sup>26</sup>. In particular:

- Ireland needs to deliver a more sustainable model of spatial development that will reduce our dependence on oil. Ireland should accelerate the implementation of the

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24 Detailed recommendations for water supply and quality, flood protection, energy infrastructure, transport and communications and waste management can be found in the Forfás report 'Adaptation to Climate Change: Issues for Business'. it can be found at: <http://www.forfas.ie/media/Adaptation%20to%20Climate%20Change%20ONLINE%20FINAL.pdf>

25 A Baseline Assessment of Ireland's Oil Dependence, Forfás 2006.

26 Forfás, Sharing our Future: Ireland 2025, July 2009.

National Spatial Strategy. The development of regional gateways and hubs will play a key part in enabling urban communities to respond to the challenges of peak oil.

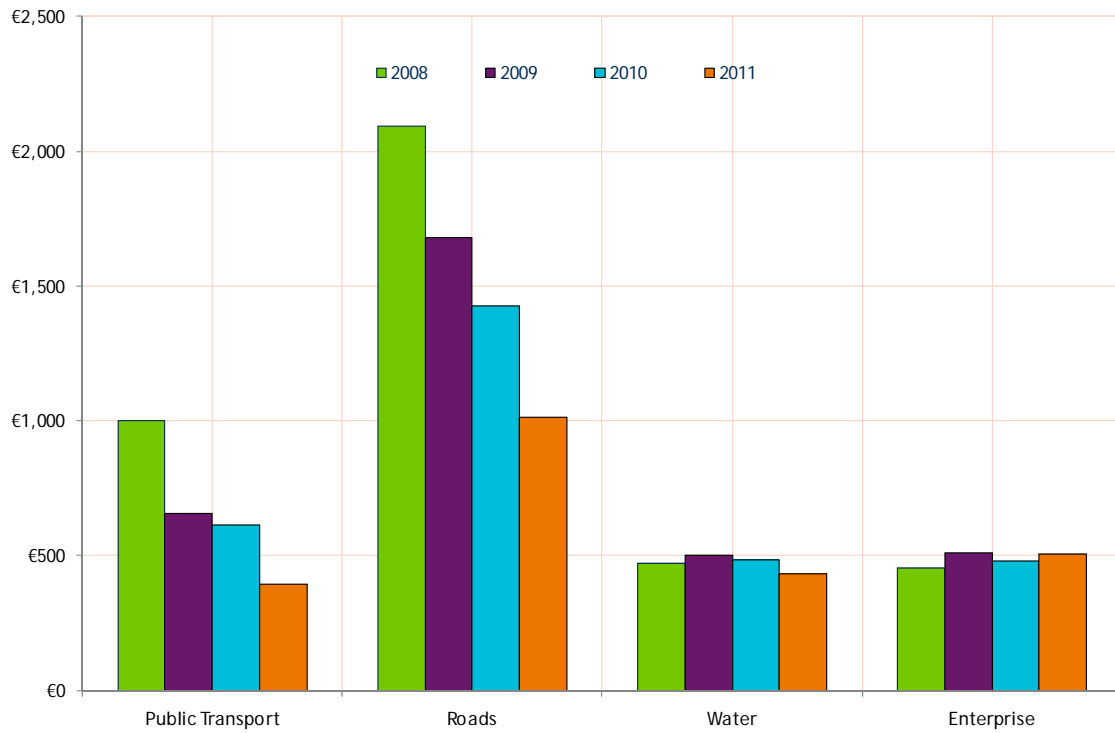
- The implementation of the Department of Transport's smarter travel policy is critical to achieving this<sup>27</sup>. Initiatives to reduce the usage of oil in transportation, for example, by bringing about the replacement over time of the existing stock of vehicles with more fuel-efficient vehicles, the use of bio fuels, and the provision of alternative modes of transport, particularly public transport, that run on electricity rather than petroleum related fuels (e.g. electrified trams, trains and buses) can reduce our dependence on oil.
- Ireland should assess options to address security of supply concerns that may arise in the context of peak oil. Options should include expanding domestic energy storage capabilities.

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<sup>27</sup> The smarter travel policy statement sets out the actions to deliver a to achieve a sustainable travel and transport system by 2020. Source: Department of Transport, SmarterTravel, A Sustainable Transport Future, 2009.

## Appendix 1: SUPPLEMENTARY INFORMATION

Figure A1: Economic infrastructure budgets 2008-2011



Source: Department of Finance

## APPENDIX 2: AGENCY INFRASTRUCTURE PRIORITIES

### Road Priorities:

Project	Scheme	Agency ranking	Enterprise Justification
1.	N6 Galway City outer by-pass (12 km)	Essential	<ul style="list-style-type: none"> <li>▪ Relieves bottlenecks in Galway, allowing full benefits of previous investment to be captured, also removes bottleneck on the Atlantic Corridor;</li> <li>▪ Enhances access and eases congestion around Galway - links industrial area east of city to residential areas in the west; and</li> <li>▪ Improves access from the wider hinterland to the motorway network and to air and sea ports in Dublin and elsewhere.</li> </ul>
2.	N22 Cork Northern Ring Road and N25 Cork South Ring	Essential	<ul style="list-style-type: none"> <li>▪ Cork has a significant and diverse enterprise base and well developed cohort of export oriented companies in the pharmaceuticals, food and ICT sectors in particular;</li> <li>▪ Completes ring of Cork city, allowing full benefits of previous investment to be captured, and removes bottleneck on the Atlantic Corridor;</li> <li>▪ Enhances traffic movement for people and goods around Cork city by removing remaining bottlenecks; and</li> <li>▪ Improves access from other parts of the south and south west to Cork city, to the motorway network and to air and sea ports in Cork and Dublin.</li> </ul>
3.	N28 Ringaskiddy/Cork (13 km)	Essential	<ul style="list-style-type: none"> <li>▪ Facilitates better access to/from the important pharmaceutical concentration at Ringaskiddy, improving mobility of people and goods; and</li> <li>▪ Improves access to port facilities in Ringaskiddy and allows for future port developments (e.g. deep water port).</li> </ul>
4.	N20 Mallow/Croom (40 km)	Essential	<ul style="list-style-type: none"> <li>▪ Relieves a key bottleneck on the Atlantic Corridor, which improves the Limerick-Cork section and improves mobility of people and goods between two key regional centres;</li> <li>▪ Improves access to air and sea ports in Cork and Shannon /Limerick; and</li> <li>▪ Links the hinterland effectively to the large urban centres of Cork and Limerick and to the motorway network and access to Dublin air and sea ports.</li> </ul>

Project	Scheme	Agency ranking	Enterprise Justification
5.	N22 Macroom/ Ballyvourney by-pass (22 km)	Essential	<ul style="list-style-type: none"> <li>▪ Removes bottleneck at Macroom/Ballyvourney and enhances connectivity between Tralee/Killarney and Cork city, and access to Cork air and sea ports;</li> <li>▪ Improves access on a key tourism route for the SW region.</li> </ul>
6.	N80 Portlaoise/ Tullamore (34km)	High	<ul style="list-style-type: none"> <li>▪ Links the M4 and M6 to the M7 and M8 improving national inter-regional connectivity</li> <li>▪ Enhances access for the midlands region to air and sea ports in Dublin, Cork and Limerick (Shannon/Shannon-Foynes)</li> </ul>
7.	N14 Letterkenny-Lifford (19km)	High	<ul style="list-style-type: none"> <li>▪ Ties in with A5 improvements to facilitate high quality link from Letterkenny to N2/M1 to Dublin(airport)</li> <li>▪ Enhances cross-border access for the north west and border areas to air and sea ports in Dublin</li> </ul>
8.	N13 Letterkenny-Derry/Belfast (36 km)	High	<ul style="list-style-type: none"> <li>▪ Ties in with A6 improvements to facilitate high quality access between Letterkenny/Derry/Belfast</li> <li>▪ Enhances cross-border access</li> <li>▪ Enhances access for the north west and border areas to air and sea ports in Dublin and Northern Ireland</li> </ul>
9.	N2 Continued improvements Clontibret to NI (28 km)	High	<ul style="list-style-type: none"> <li>▪ Ties in with A5 improvements to facilitate high quality north-south connection linking the north west region and Derry with Dublin</li> <li>▪ Enhances access for the north west and border areas to air and sea ports in Dublin and Northern Ireland</li> </ul>
10.	N4 Mullingar-Longford (50 km)	High	Enhances access for the west and north west to Dublin and its air and sea ports
11.	N4 Carrick-on-Shannon/Dromod; Collooney/Castlebaldwin (32km)	High	Enhances access for the west and north west to Dublin and its air and sea ports Improves mobility in the bypassed town of Carrick on Shannon

Project	Scheme	Agency ranking	Enterprise Justification
12.	N5 Scramoge/Ballaghderreen (35km)	Medium	Enhances access for the west and north west to Dublin and its air and sea ports
13.	N52 Tullamore by-pass to Kilbeggan (5km)	Medium	<ul style="list-style-type: none"> <li>Links Tullamore (part of midlands NSS gateway) to the M6</li> </ul> Enhances access for Tullamore and its hinterland to key cities of Dublin and Galway, and to Dublin air and sea ports
14.	N24 (various improvement schemes)	Medium	Improves access between Limerick and Waterford Enhances access to Shannon airport from south east and access to ports at Waterford and Rosslare from the mid west and west Improves mobility in the bypassed towns of Carrick on Suir, Clonmel and Mooncoin
15.	N16 (various improvement schemes incl. by-pass of Manorhamilton)	Medium	Enhances cross-border connectivity linking Sligo with A4/M1 to Belfast and N2 to Dundalk Improves mobility in the bypassed town of Manorhamilton

**Water and Waste Water Priorities:**

Forfás reviewed water and waste water supply and demand in all NSS centres in 2008 and identified the following short term deficits:

Sector	Scheme	Contribution to Growth & Competitiveness	Direct Labour Intensity	Potential for Parallel Works	Enterprise Justification	Regional Impact
Water	Works to address forecast shortages (2013) in: <ul style="list-style-type: none"> <li>▪ Dublin, shortage of 35,784m<sup>3</sup> forecast for 2013</li> <li>▪ Athlone, shortage of 6,503m<sup>3</sup> forecast for 2013</li> <li>▪ Galway, shortage of 5,806m<sup>3</sup> forecast for 2013</li> <li>▪ Letterkenny, shortage of 4,258m<sup>3</sup> forecast for 2013</li> </ul>	<i>2009: High</i>	Above Average	Yes (Waste Water; Telecoms)	Key NSS centres where shortages are forecasted	Gateway development
Waste Water	Works to address forecast shortages (2013) in: <ul style="list-style-type: none"> <li>▪ Dublin, shortage of 389,196m<sup>3</sup> forecast for 2013</li> <li>▪ Galway, shortage of 44,819m<sup>3</sup> forecast for 2013</li> <li>▪ Letterkenny, shortage of 18,708m<sup>3</sup> forecast for 2013</li> <li>▪ Athlone, shortage of 16,430m<sup>3</sup> forecast for 2013</li> <li>▪ Wexford, shortage of 1,017m<sup>3</sup> forecast for 2013</li> <li>▪ Mallow, shortage of 782m<sup>3</sup> forecast for 2013</li> </ul>	<i>2009: High</i>	High	Yes (Water; Telecoms)	Key NSS centres where shortages are forecasted	Gateway development
Water	Upgrading and refitting of pipelines in towns with high leakage rates	<i>2009: High</i>	High	Yes (Telecoms)	it will increase the volume of water available to meet demand without necessitating significant capital investment in new water treatment capacity	

Other Priorities:

Sector	Scheme	Contribution to Growth & Competitiveness	<i>Direct Labour Intensity</i>	Potential for Parallel Works	Enterprise Justification	Regional Impact
Regeneration	Limerick Regeneration	<i>2009 agency priority</i> Linked Objectives	<i>n.a.</i>	Yes (urban infrastructure corridors)	Limerick city quality of life enhancement, reversal of negative reputation	Mid-West <i>Gateway development (Limerick)</i>



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