# Waste Management Benchmarking Analysis and Policy Priorities

May 2008

Forfás

# Table of Contents

## Executive Summary

The availability of waste management services and facilities and the associated costs continue to be a key competitiveness issue for enterprise in Ireland. This report presents the findings of an updated waste management benchmarking assessment and sets out the policy actions that need to be prioritised to ensure that Ireland meets the waste management needs of enterprise now and in the future.

### Key Findings

It is ten years since the publication of the Government policy statement on waste management, *Changing our Ways,* which has resulted in a significant improvement in Ireland's waste management performance. Most notable is the substantial progress towards improving our recycling performance. Municipal recycling rates have increased from nine percent of total municipal waste treated in 1998 to 36 percent in 2006 (most recent data available). Ireland's recycling performance has also been impressive with regard to packaging waste and electrical and electronic goods. The EU set a target for packaging waste recycling of 50 percent by 2005, which Ireland exceeded in 2004 with a packaging recovery rate of 56.4 percent. Under the WEEE directive, Member States were obliged to achieve a collection rate of 4kg of household WEEE per capita by the end of 2006: Ireland achieved 7.4 kg per inhabitant[1].

However, Ireland continues to perform poorly relative to competitor countries in meeting the waste management needs of enterprise:

- landfill costs in Ireland have moderated in the last two years but remain among the top three most expensive of the benchmarked countries;
- biological waste treatment fees in Ireland are the most expensive of the benchmarked countries;
- Ireland has limited waste management infrastructure options with resultant heavy reliance on landfill;
- there remains a high level of uncertainty as to the policy framework for waste management in Ireland; and
- by 2016, Ireland will need an annual capacity of approximately 800,000 tonnes of thermal treatment, 500,000 tonnes of mechanical biological treatment and 700,000 tonnes of landfill to treat municipal (household and commercial) waste. A further 500,000 tonnes capacity of landfill, thermal treatment and biological will be required for non-hazardous industrial waste as well as 100,000 tonnes of solvent treatment capacity for hazardous waste including thermal treatment and solvent recycling facilities.

Ireland's comparatively poor performance on key benchmarking indicators such as costs and waste treatment capacity can be traced back to the failure to deliver key waste management

[1] WEEE = Waste Electrical and Electronic Equipment.

infrastructure in recent years. In spite of the urgent need for action to accelerate the delivery of waste infrastructure from reuse and recycling to incineration, progress in addressing the barriers to infrastructure rollout in the past twelve months has been slow.

### Conclusions and Recommendations

Forfás is seriously concerned about the implications for enterprise development of the lack of progress in addressing waste policy issues in recent years and the high level of uncertainty that persists about the future direction of waste policy, which in turn is likely to lead to further delays in progressing these actions.

After 15 years of exceptional economic performance, Ireland is heading into a period of slower growth due mainly to the downturn in construction activity. Recent developments such as the slowdown in the US economy and the increasing strength of the euro against the dollar and sterling are adding to the challenges facing the economy, and in particular Irish exporters. It is therefore vital that policy decisions in areas such as waste management support national competitiveness as well as environmental sustainability policy objectives.

The main policy actions required to deliver a choice of competitively priced, environmentally friendly and secure waste management options to enterprise and to move Ireland up the waste hierarchy are set out below.

1. Ireland needs to accelerate the delivery of waste infrastructure projects along the waste hierarchy. Specific infrastructures that need to be developed include:

    - thermal treatment capacity to recover energy from municipal and industrial waste;
    - thermal treatment or landfill capacity for hazardous waste;
    - biological treatment (composting, anaerobic digestion) throughout Ireland; and
    - reprocessing capacity for recovered materials (e.g. paper, glass and plastic recycled materials).

2. The regionally based waste planning framework is hindering the delivery of cost effective, commercially viable, sophisticated waste treatment options along the waste hierarchy as it tends to result in smaller scale facilities than would be the case if infrastructure planning was done at a national level. The regional waste management plans need to be coordinated 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 households.

3. There is currently a high level of uncertainty about the future direction of Irish waste management policy due to the delay in reaching a decision on the regulation of the sector (the public consultation on the matter was concluded in late 2006), as well as the proposed changes in waste policy in the areas of preferred treatment options and the use of levies indicated by

the Department of the Environment, Heritage and Local Government. It is critical that Government provides policy and regulatory certainty in the waste sector to incentivise private investment in waste infrastructure. In particular, the following actions need to be prioritised:

- a decision on the future regulatory structure for the waste sector needs to be made quickly, as the current regulatory uncertainty is inhibiting investment in alternatives to landfill. In determining how the sector should be regulated, the relative roles and responsibilities of the State in the regulation and management of the waste sector at national, regional, and local level need to be clarified to ensure that Ireland remains attractive to private investment in waste infrastructure; and

- the review of waste policy recently initiated by the Department of the Environment, Heritage and Local Government needs to be completed as speedily as possible and its outputs progressed quickly. The scope of the waste review needs to include an assessment of what Ireland needs to do to ensure that the waste management needs of enterprise are addressed in the context of wider waste policy objectives.

4. The introduction of the Strategic Infrastructure Act, 2006 is welcome and its effectiveness in terms of reducing the lead time to get waste projects approved needs to be assessed in due course. The provision of resources to fast track judicial reviews of strategic infrastructure projects needs to be prioritised.

5. Waste policy needs to send the appropriate price signals to the private sector to support national competitiveness objectives in the short and medium term, while also ensuring that Ireland meets its environmental obligations. In particular, Ireland needs to:

   - ensure that further increases in the landfill levy are not introduced until such time as adequate new alternative waste treatment facilities are operational; and

   - assess what measures are required to ensure that alternative waste treatment options in Ireland are competitively priced and not determined by landfill costs which are among the top three most expensive of the benchmarked countries.

6. Continued and enhanced efforts are required by Government Departments and agencies to ensure that businesses are fully aware of how best to exploit waste management reduction processes and technologies. Given that many organisations are already working with companies on a range of energy efficiency, pollution prevention or resource conservation initiatives, the opportunity to develop a more integrated approach across a range of related issues should be exploited to create greater awareness among companies, particularly SMEs, of the benefits of waste reduction and prevention.

Prioritising these actions is critical for the delivery of competitively priced and environmentally sound alternative infrastructure along the hierarchy. In order to ensure that the required

infrastructure projects are delivered as quickly as possible, the actions to coordinate the regional plans, create policy and regulatory certainty, reduce planning lead times and set the price signals for waste infrastructure investors need to be progressed in parallel. Progress on waste minimisation and prevention initiatives is the most effective tool available to address both competitiveness and environmental sustainability objectives. The provision of the necessary resources to help businesses to realise waste prevention objectives needs to be prioritised.

## 1. Introduction and Background

The quality, availability and cost of waste management solutions continue to be a key competitiveness issue for enterprise in Ireland. Enterprises continue to have concerns in relation to cost of waste management services and the lack of adequate waste infrastructure and services in Ireland to meet the demands from industrial, commercial and household waste generation.

There is currently a high level of uncertainty about the future direction of Irish waste policy. In particular, a decision on the regulation of the sector is pending[2]. This uncertainty, which has serious implications for the provision of new services and infrastructure by the private sector, is likely to continue for some time as the recently initiated review of waste policy by the Department of the Environment, Heritage and Local Government is not due to be completed until mid 2009.

This report presents the findings of the latest waste management benchmarking update and reviews Ireland's progress since the first waste management benchmarking report in 2006. Building on previous waste reports, it sets out the policy priorities from an enterprise development perspective that need to be addressed to ensure that Ireland meets the waste management needs of industry now and in the future.

In 2005, Forfás commissioned RPS Consulting Engineers to undertake a series of three benchmarking studies of the Irish waste management sector. This report incorporates the findings of the latest benchmarking analysis. Forfás established a Steering Group to oversee the project, comprising representatives from the Department of Enterprise, Trade and Employment, the Department of Environment, Heritage and Local Government, Enterprise Ireland, the Environmental Protection Agency (EPA) and IDA Ireland.

Given that internationally, waste data can often be of variable quality and that there is a lack of up to date, comparable international data, one of the major challenges of the benchmarking exercise was to develop robust indicators. As a consequence, this study focuses on the priority waste streams of most relevance from an enterprise development perspective, namely municipal, industrial and hazardous waste[3].

## 2. Overview of Waste Management in Ireland

Ireland produced over 30 million tonnes of waste (excluding agricultural waste) in 2006; an increase of 23 percent since 2004[4]. Construction and demolition waste increased by 50.6 percent between

[2] The Department of the Environment, Heritage and Local Government published the consultation paper, *Regulation of the Waste Management Sector,* in August 2006.

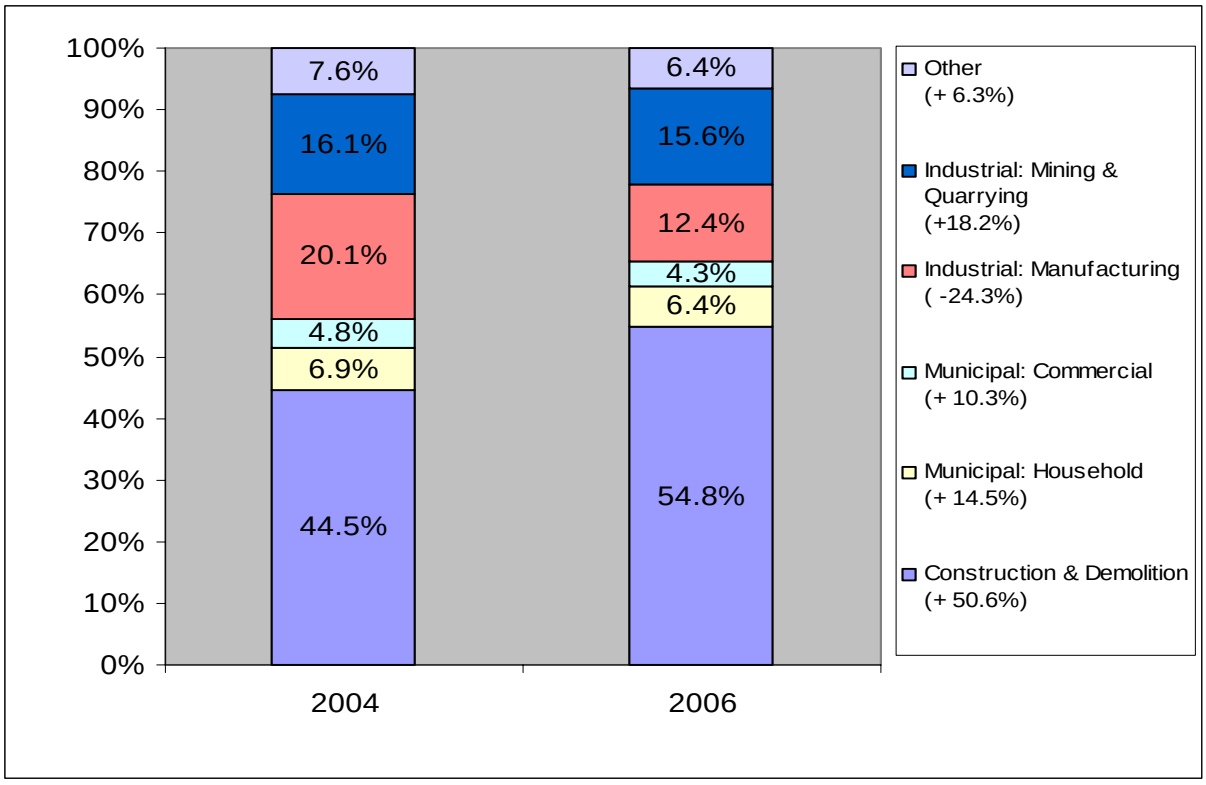
[3] Reported data for municipal and hazardous waste is generally reliable and was found to be consistent for most of the selected countries. Reporting on industrial waste was limited because of data availability and comparability issues.

[4] National Waste Report 2006, EPA, January 2008.

2004 and 2006, and accounted for almost 55 percent of total waste in 2006, up from 45 percent in 2004. Mining and quarrying waste is the second largest waste stream at 15.6 percent (Figure 1).

Of the waste streams of most relevance from an enterprise development perspective, manufacturing waste accounted for 12.4 percent of the total in 2006 (compared to 20.1 percent in 2004), and municipal waste's share was 10.7 percent (12.0 percent in 2004)[5]. Other waste streams include end of life vehicles and scrap metal (2.4 percent) and contaminated soil (1.3 percent).

Figure 1: Composition of Waste Generation in Ireland, 2004-2006 (sectoral growth rates in brackets)




Source: EPA

*Notes:*

1. *The figures in brackets in the legend box indicate the percentage change in the amount of waste generated in each waste stream between 2004 and 2006.*
2. *The EPA cautions that the Construction and Demolition waste data is poor.*
3. *Manufacturing waste excludes hazardous waste.*
4. *Figures for 2004 are revised by the EPA in the 2006 report.*
5. *The "Other" waste category includes hazardous waste, end of life vehicles and scrap metal and contaminated soil. It also includes street cleansing waste which is normally classified as a municipal waste stream.*

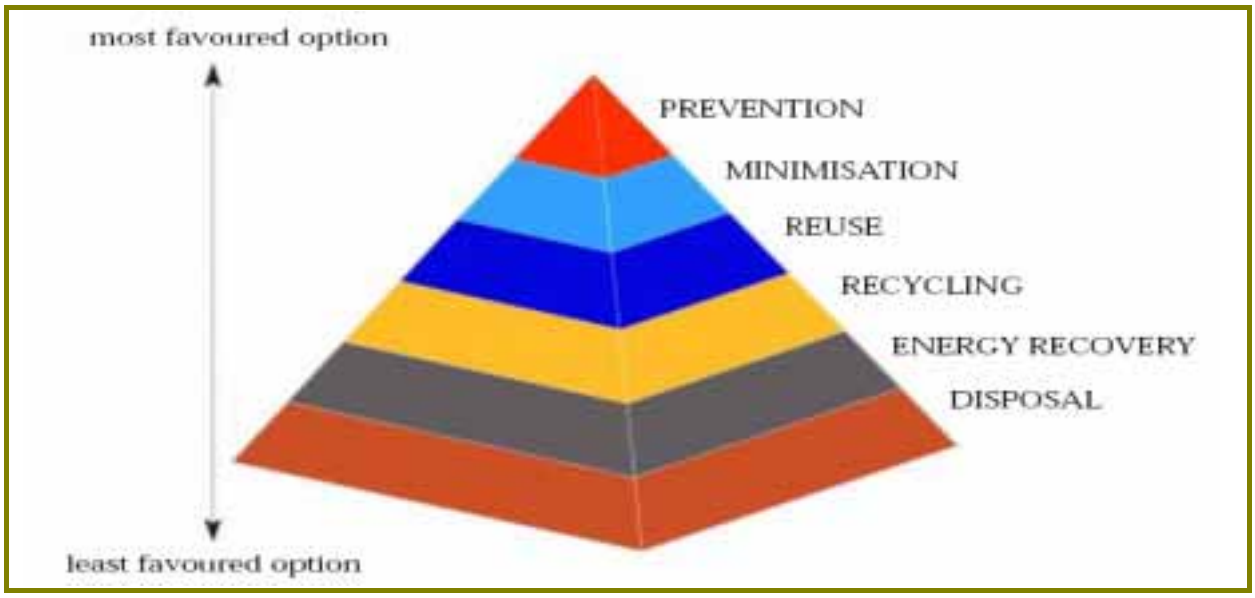
Ireland's approach to dealing with waste is based on the internationally adopted waste management hierarchy, which states that the most preferred option for waste management is prevention and

[5] Municipal waste includes commercial and household waste. Hazardous waste accounted for one percent of total waste in 2006 (compared to 0.4 percent in 2004).

minimisation of waste, followed by re-use and recycling, energy recovery and, least favoured of all, disposal (Figure 2).

'Prevention and minimisation' aims to reduce waste at source, thus eliminating the need to handle, transport, treat and dispose of waste. 'Re-use and recycling' methods, also known as recovery, include the re-use of plastic bags, the re-processing of materials like glass into new products and biological treatment[6, 7]. 'Energy recovery' or waste-to-energy (WTE) refers to any waste treatment process that creates energy in the form of electricity or heat from a waste source that would have otherwise been disposed of in landfill. The most commonly used method of WTE is thermal treatment. The least favoured treatment option is the disposal of untreated waste in landfill facilities.

Figure 2: Waste Management Hierarchy




Source: Changing Our Ways, Department of the Environment, Heritage and Local Government, 1998

## 3. Ireland's Comparative Performance

A competitive enterprise sector needs a choice of competitively priced, environmentally friendly and secure waste management options along the waste hierarchy, from prevention and minimisation through to reuse, recycling, recovery and disposal. Ireland is currently falling short in a number of areas with relatively higher costs and a heavy reliance on landfill.

[6] Re-use is also considered to be waste prevention, especially where the item is used for the same original purpose. Recycling involves a complete re-transformation of a recovered material usually in an industrial scale process.

[7] Biological treatment in this report refers primarily to composting, which can be defined as the process of producing compost through decomposition of biodegradable organics matter. Other forms of biological treatment include anaerobic digestion, where unlike composting, sewage and animal waste can be broken down to produce soil improver, and in some cases a biogas that can be used to produce electricity.

The following benchmarking indicators provide an overview of the performance of Ireland's waste management sector. Waste generation data (Figures 3-5) which serves as an indicator of the ability of businesses and households to prevent and minimise waste; the waste treatment options available to enterprise (Figures 6 and 7); and the level of landfill, thermal and biological gate fees (Figures 8-10) and municipal waste collection ownership (Figure 11) together give an indication of the competitive structure of the Irish waste market compared with other countries.

### 3.1. Benchmarking Methodology

This is the third in a series of waste management benchmarking reports produced by Forfás. The baseline report was published in 2006 and the first update in 2007. It was not possible within the scope of the study to look at all seven priority waste streams. The study therefore focused on the priority waste streams of most relevance from an enterprise perspective - municipal, industrial and hazardous waste.

RPS, in consultation with Forfás and the Steering Group, drew up a list of countries to benchmark Ireland against: Austria, Czech Republic, Denmark, Netherlands, New Zealand, Scotland, Singapore and Sweden. Two regions were also included, namely Flanders and Massachusetts. These countries and regions were selected in order to assess a variety of market sizes with different waste management policies and practices as well as markets with similar waste generation patterns.

Reported data for municipal and hazardous waste is generally reliable and was found to be consistent for most of the selected countries. Reporting on industrial waste was limited because of data availability and comparability issues. As waste data tends to be updated on a cyclical basis, it is not possible to update all of the indicators for each benchmark country every year. In all cases, any specific caveats or qualifications relating to the data used are highlighted in the analysis of the key performance indictors in this section.

### 3.2. Waste Generation

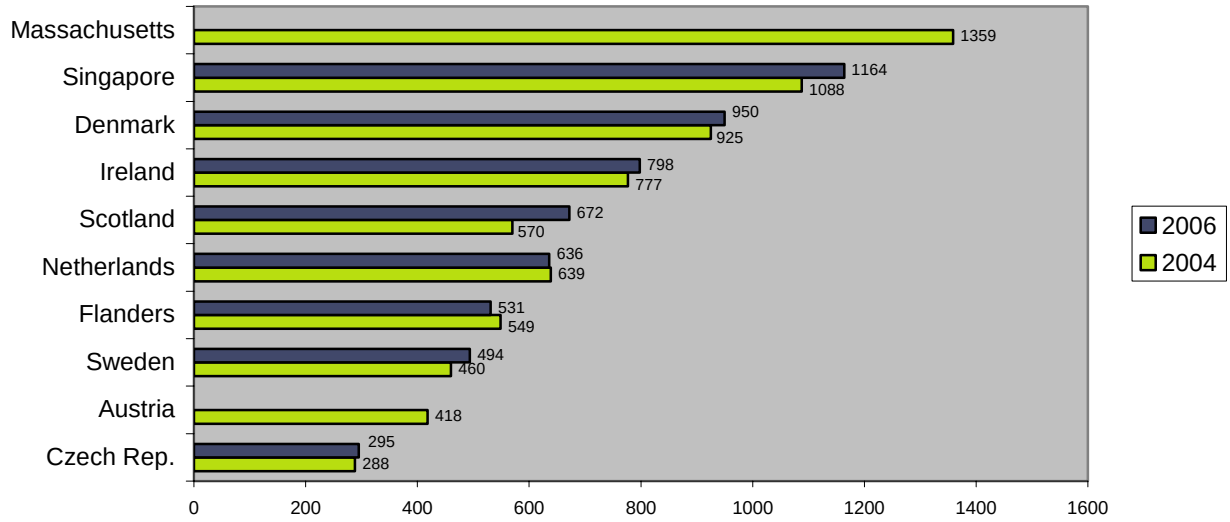
Municipal waste, which comprises commercial and household waste, increased by 12.8 percent to 3.4 million tonnes between 2004 and 2006[8]. Commercial waste grew by 10.3 percent over that period while household waste increased by 14.5 percent.

In terms of municipal waste generation per capita, Ireland remains the fourth highest of the benchmark countries. Per capita municipal waste generation in Ireland has risen from 777kg in 2004

[8] While annual growth in municipal waste generation slowed to 2.8 percent and 1.3 percent respectively in 2004 and 2005, it increased by 11.3 percent in 2006.

to 798kg in 2006, an increase of 2.7 percent over the period (Figure 3). Ireland is not the only country to see municipal waste generation per capita increase between 2004 and 2006.

Figure 3: Municipal Waste Generation per Capita (kg per capita), 2004 versus 2006



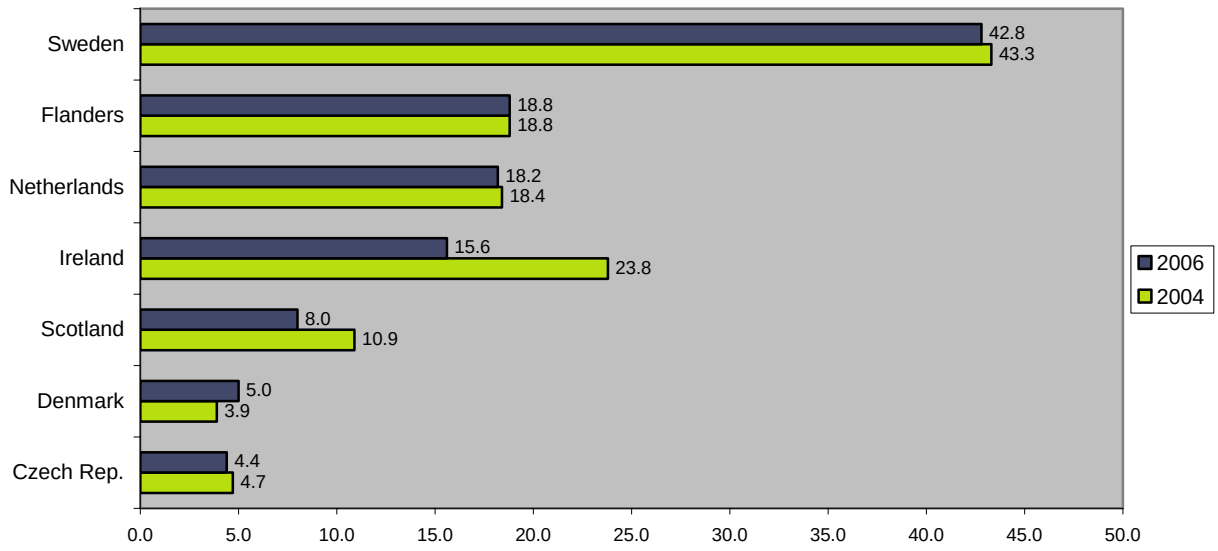

Source: RPS

*Notes:*

1. *2004 data for Ireland is based on the 2002 Census population.*
2. *Data for Denmark and Scotland is for 2003 and 2006. No new data was reported for Massachusetts and Austria.*
3. *Data sourcing and data quality for the Czech Republic has improved and the data has been revised accordingly. Reported data is for 2005 and 2006.*

The volume of manufacturing waste generated (including hazardous waste) in Ireland declined by 23.3 percent to 4.1 million tonnes between 2004 and 2006 driven by industrial restructuring and greater efficiency. It is notable that manufacturing waste per manufacturing employee in Ireland fell from 23.8 tonnes per employee in 2004 to 15.6 tonnes in 2006 (Figure 4). The top three waste generating manufacturing sectors are food (42.8 percent), metals (29.7 percent) and chemicals (8.4 percent).

Figure 4: Manufacturing Waste per Employee (tonnes), 2004 versus 2006



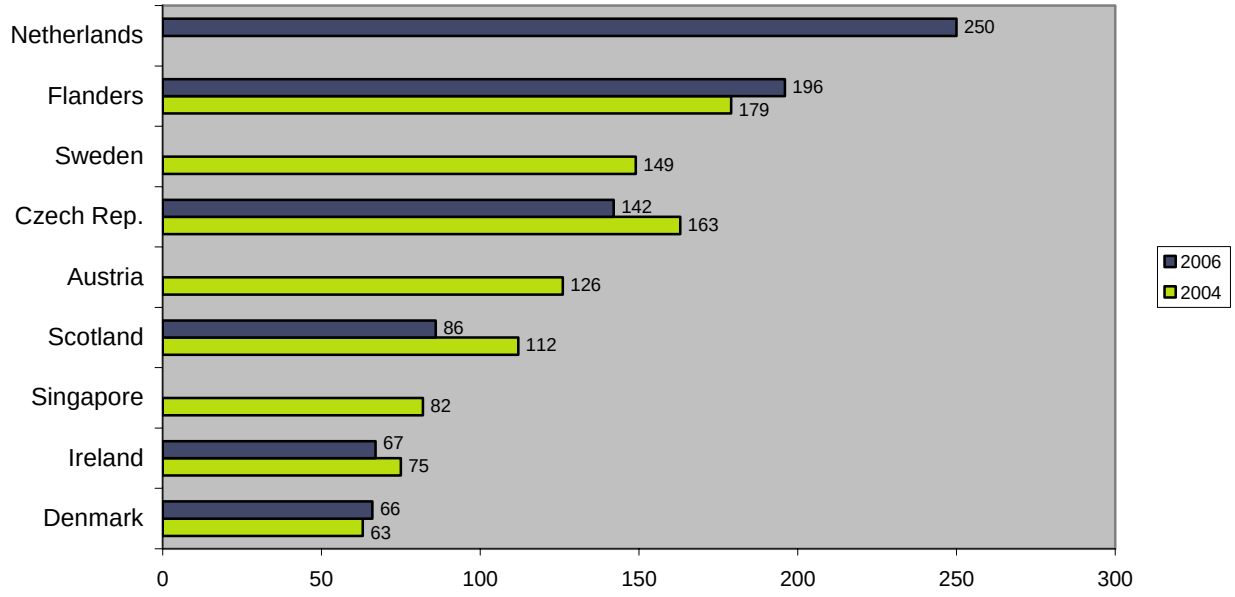

Source: RPS

*Notes:*

1. *Manufacturing waste includes hazardous and non-hazardous waste.*
2. *It should be noted that industrial structure (e.g. dependence on heavy versus light industry) plays an important role in determining manufacturing waste per employee.*
3. *Data for Denmark and Flanders is for 2003 and 2006 while data for Scotland is for 2002 and 2005. No new data was reported for Austria.*
4. *Data for the Czech Republic has been revised due to improvements in data collection and quality. Reported data is for 2005 and 2006.*
5. *Data for Sweden was revised to include waste generated by the wood manufacturing industry, hence the revision in the 2004 figure from the first Forfás report in 2006.*

Finally, in terms of waste generation, of the nine regions/countries benchmarked, Ireland has the second lowest hazardous waste generation per capita, generating 67 kg per capita in 2006, a decrease of 8 kg per capita on the 2004 figure (Figure 5). Ireland's low levels of hazardous waste generation can be attributed to the profile of the industrial base in Ireland and the absence of heavy industrial activity.

Figure 5: Hazardous Waste Generation per Capita, 2004 versus 2006




Source: RPS

*Notes:*

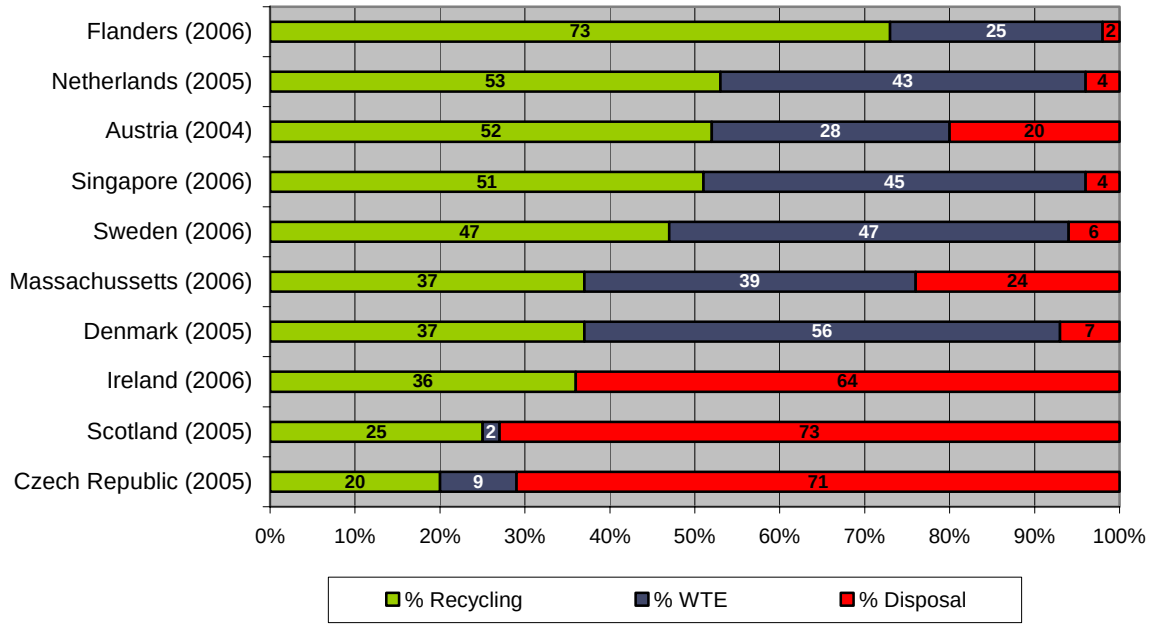
1. *Data for Denmark is for 2005 and 2006 and Scotland is for 2003 and 2005. The Singapore data is for 2005.*
2. *No 2006 data was available for Austria, Singapore and Sweden.*
3. *Data for the Czech Republic has been revised due to improvements in data collection and quality. Reported data is for 2005 and 2006.*
4. *The figure for the Netherlands has increased dramatically since the previous report following the adoption of the EU standard hazardous waste classification system in the interim. The large difference is mainly due to bituminous type waste being classified as hazardous under the new system.*

### 3.3. Waste Treatment Options

A competitive economy needs a choice of secure waste management options along the waste hierarchy, from prevention and minimisation of waste through to reuse, recycling, recovery and disposal. As outlined in section 3.1, Ireland is making progress in terms of reducing manufacturing and hazardous waste on a per capita basis, while municipal waste is growing, driven primarily by population growth. Ireland is also progressing well in terms of the proportion of municipal waste being recycled. The target to recycle 35 percent of municipal waste by 2013 was achieved in 2005, eight years ahead of schedule.

However, despite this progress, Ireland is still highly dependent on landfill (Figures 6 and 7). In 2006, 64 percent of municipal waste and 62 percent of industrial waste was landfilled. This represents a marginal improvement on the 2004 position when 67 percent of municipal waste and 65 percent of industrial waste went to landfill. While there was an 18 percent increase in the volume of municipal waste recycled between 2004 and 2006, the amount of municipal waste landfilled also increased by eight percent over the same period.

Figure 6: Municipal Waste Treatment Options



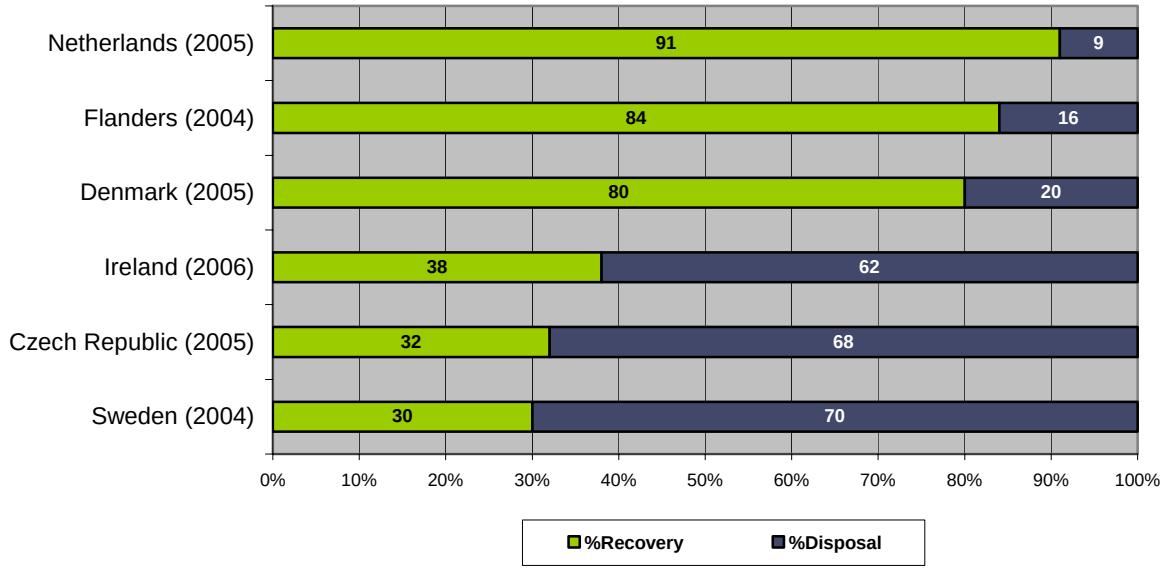

Source: RPS

*Notes:*

1. *No new data reported for Austria.*
2. *Data for the Czech Republic has been revised due to improvements in data collection and quality.*

Given that approximately three quarters of municipal waste landfilled in 2006 was biodegradable waste, the increase in municipal waste landfilled has implications on Ireland's ability to meet the EU Landfill Directive targets. Under the directive, Ireland will be restricted to landfilling 75 percent of the biodegradable municipal waste produced (by weight) in 1995 by 2010, 50 percent by 2013 and 35 percent by 2016. This means that Ireland will be restricted to landfilling less than 970,000 tonnes of biodegradable municipal waste in 2010 and just over 450,000 tonnes by 2016. Ireland faces a significant challenge in meeting the 2010 targets as 1.4 million tonnes of biodegradable municipal waste was landfilled in 2006.

Figure 7: Industrial Waste Treatment Options




Source: RPS

*Note:*

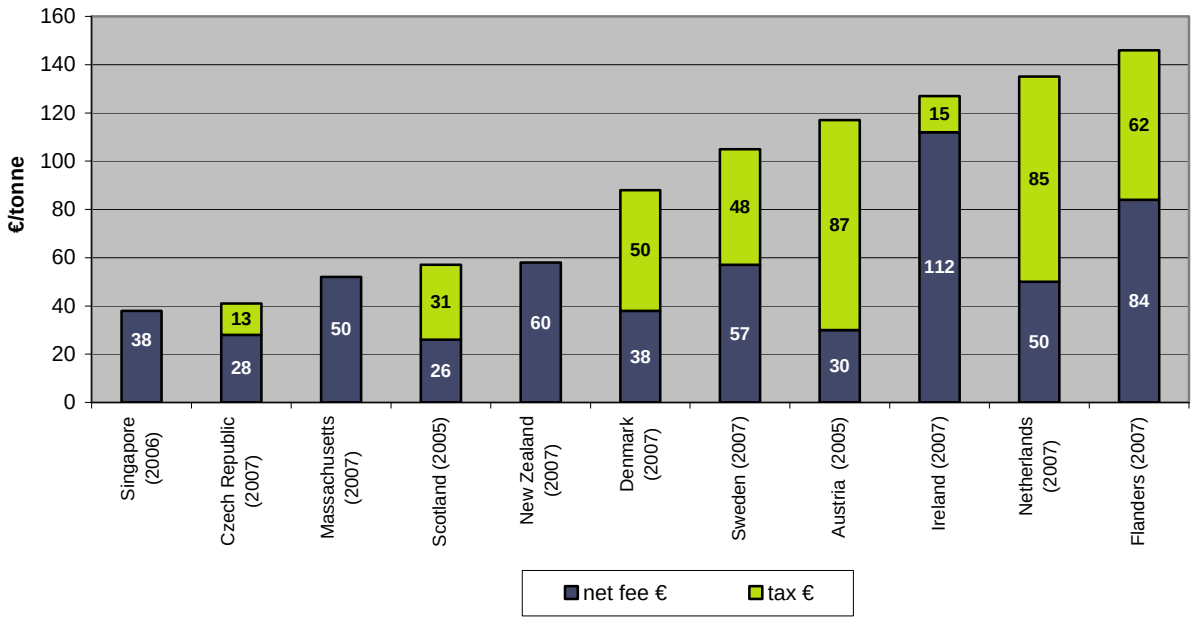
1. *Recovery includes waste to energy treatment facilities.*
2. *No new data was reported for Denmark and Sweden.*

### 3.4. Waste Management Costs

Although Irish landfill costs have moderated in the last two years, they remain relatively high. In 2007, average landfill gate fees for Ireland were the third highest after the Netherlands and Flanders, in spite of a reduction in the average gate fee from €135 per tonne (including the levy) in 2006 to €127 in 2007. Landfill gate fees can vary considerably across the country due to a number of factors such as the amount of excess landfill capacity available, the amount of waste generated and the availability of alternative waste treatment options in the region. Landfill gate fees in some parts of the country have fallen below €100 per tonne (including the levy).

Many countries are using significant landfill taxes to keep landfill costs artificially high to incentivise the use of preferred treatment solutions such as recycling and waste to energy. For example, in Flanders, which has the lowest municipal waste rate sent to landfill (just two percent), landfill costs €146 per tonne, including a €62 landfill levy. Thermal treatment gate fees are €110 per tonne including a levy of €7 per tonne for waste treated in plants with energy recovery. In Denmark, landfill gate fees are €88 per tonne including a landfill levy of €50. Thermal treatment gate fees are €72 per tonne including a levy of €44 per tonne.

Figure 8: Landfill Gate Fees (including levy), 2007, (€ per tonne)

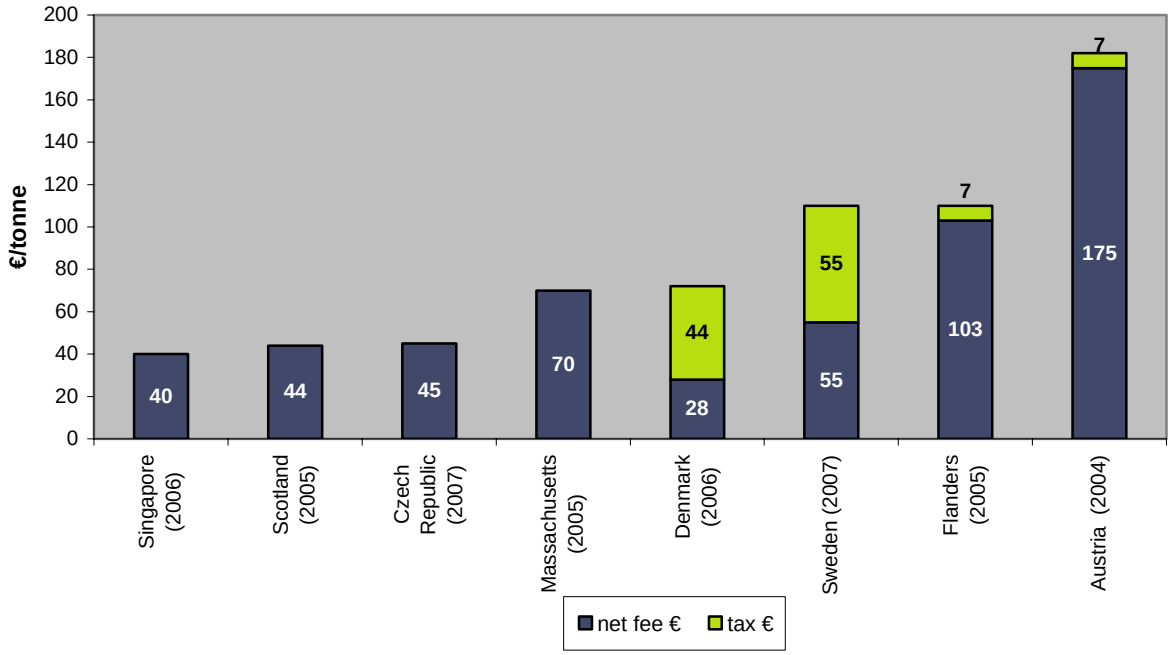



Source: RPS

Although Ireland has one of the highest landfill charges, it has one of the lowest tax surcharge rates for landfill. The Department of Environment, Heritage and Local Government recently announced plans to increase the landfill levy by €5 per tonne from June 2008. Further increases are also planned to encourage recycling and other waste treatment options. The extent to which economic instruments are used to incentivise the use of preferred waste treatment options will need to take into account the availability of other waste management facilities as well as the implications for providing competitively priced waste management solutions to Irish companies.

Some countries have imposed levies on thermal treatment to incentivise waste treatment options further up the hierarchy such as recycling, reuse and reduction (Figure 9). When thermal treatment plants are in operation in Ireland, it is proposed to introduce thermal treatment levies at the same level as landfill levies so as not to give competitive advantage to incineration.

Figure 9: Non-Hazardous Thermal Treatment Gate Fees (including levy), 2007, (€ per tonne)



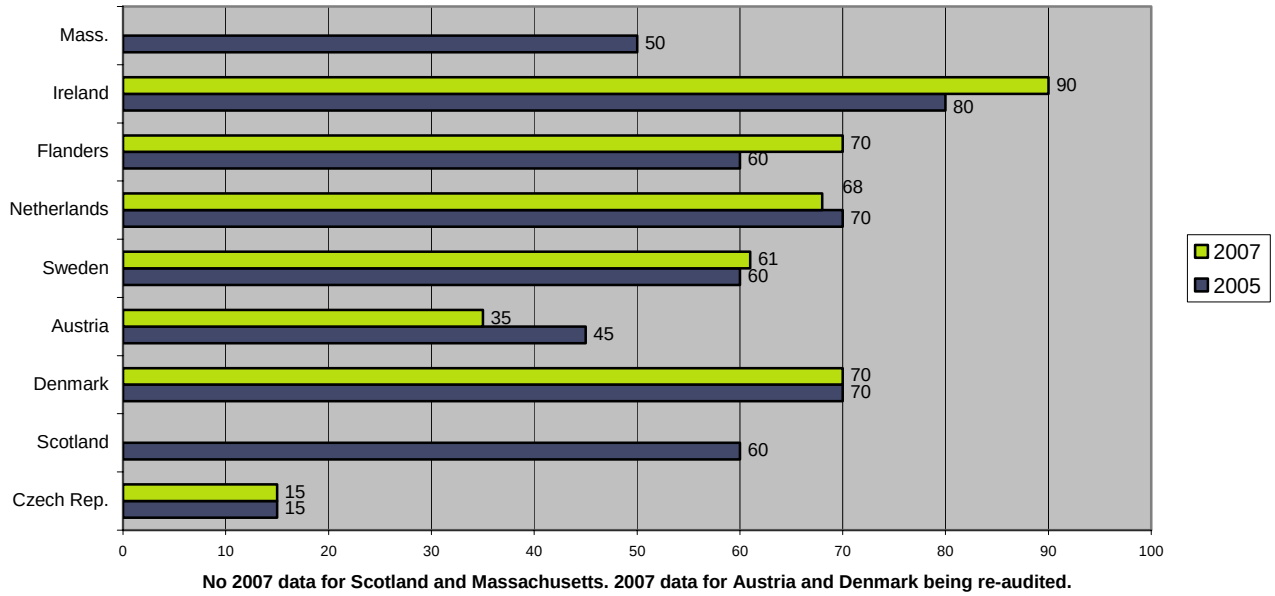

Source: RPS

*Notes:*

1. *Under the revised EU Waste Framework Directive, not all thermal treatment facilities are classified as energy recovery. In Flanders, the levy varies according to its treatment classification, with a higher levy of €15 per tonne imposed on facilities classified without energy recovery.*
2. *No new data reported for Austria or Scotland.*
3. *No commercial thermal treatment facilities are currently available in Ireland and New Zealand.*

Biological treatment facilities can contribute significantly to diverting material from landfill and achieving recycling targets. However, biological gate fees in Ireland in 2007, at €90 per tonne, remained the highest of the benchmark countries (Figure 10). The higher cost of biological treatment in Ireland can in part be attributed to the relatively small scale of facilities in operation. None of the benchmarked regions/countries apply levies on biological treatment facilities.

Figure 10: Biological Gate Fees, 2005 versus 2007, (€ per tonne)



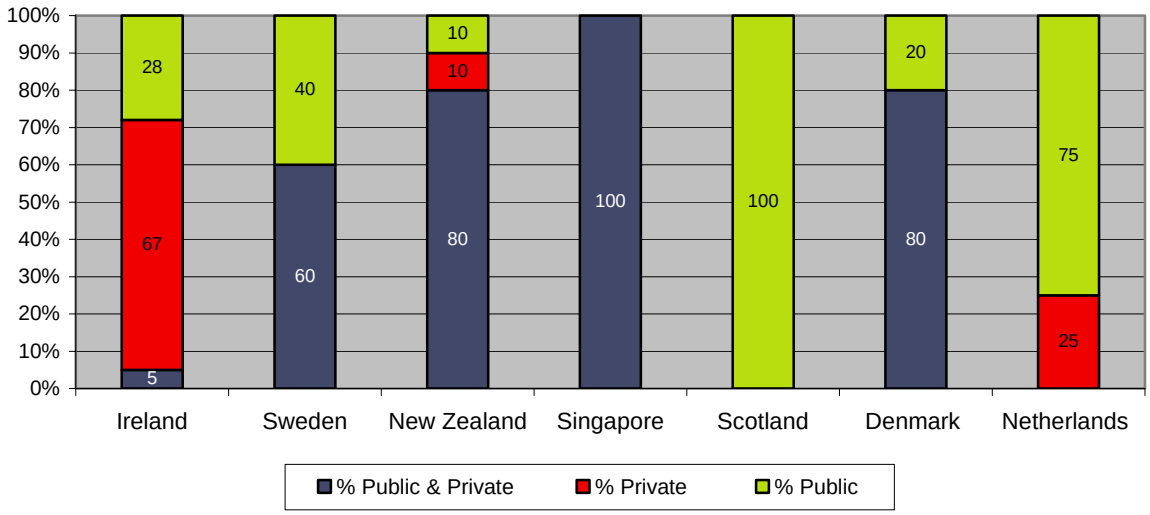

Source: RPS

*Notes: Latest data reported for Scotland and Massachusetts is for 2006.*

### 3.5. Ownership – Municipal Collection

Unlike in most other benchmarked countries, Ireland has a high level of private sector involvement in municipal waste collection, with the private sector collecting 67 percent of all municipal waste (Figure 11). Public provision of services is concentrated in the major urban centres.

Figure 11: Municipal Waste Collection by Ownership




Source: RPS

## 4. Conclusions and Recommendations

Ireland has made substantial progress towards improving its recycling performance in recent years and has also seen a significant reduction in the amount of manufacturing waste produced per employee. However, the benchmarking analysis confirms that Ireland continues to perform poorly relative to a selection of competitor countries in meeting the waste management needs of enterprise. Although landfill costs in Ireland have moderated in the last two years, they remain among the top three most expensive of the benchmarked countries. Biological fees in Ireland are the most expensive of the benchmarked countries. Ireland also has limited waste management infrastructure options which leads to a heavy reliance on landfill.

The two previous waste benchmarking reports highlighted the need to accelerate the delivery of waste infrastructure along the hierarchy as critical to improving Ireland's waste management performance. Key to delivering that infrastructure is the removal of a number of existing barriers such as the regulatory and policy uncertainty, the lack of coordinated regional waste plans and the lengthy planning delays. In spite of the urgent need for action, there has been limited visible progress in advancing the policy priorities for enterprise development highlighted in last year's waste management benchmarking report (see Appendix 1).

Forfás and the development agencies are seriously concerned about the implications for enterprise development of the lack of progress in addressing these waste policy issues. In late 2006, the Department of the Environment, Heritage and Local Government invited submissions from interested parties to its consultation on the future regulation of the waste sector. A decision is still pending. Added to the regulatory uncertainty is uncertainty over the future direction of waste policy. The Department of Environment, Heritage and Local Government is currently in the process of commissioning an international review of waste policy[9]. This review must be completed as speedily as possible and its outputs need to be progressed quickly.

The remainder of this section sets out the policy priorities for enterprise development that need to be addressed to improve Ireland's comparative performance in meeting the waste management needs of business.

### 4.1. Addressing the Infrastructure Deficits

National waste policy over the last ten years has consistently stated the need to develop an integrated mix of waste treatment solutions and that no one technology should be selected as a cornerstone of Ireland's waste policy. The main goal of Ireland's waste policy is to promote the provision of an integrated range of waste treatment facilities that allow Ireland to move up the waste hierarchy towards recycling, reuse, reduction and prevention.

While significant progress has been made in recent years to increase the percentage of waste being recycled, Ireland's dependence on landfill remains high relative in comparison to other countries. Ireland's comparatively poor performance on key benchmarking indicators such as costs and capacity can be traced back to the failure to deliver key waste management infrastructure in recent years.

Ireland has approximately 29 landfills, 45 biological treatment plants and no waste to energy (thermal treatment) facilities in operation. In greater detail:

- There are 29 landfills currently operating in Ireland, down from 35 in 2005. Further closure of existing landfill facilities is expected in the short term with approximately 14 facilities due to close within the next five years based on current landfilling rates. This will have serious capacity consequences and further highlights the need for medium to large-scale alternative treatment capacities to be developed nationally. Failure to do so will lead to security of supply concerns and higher prices for enterprise and also undermine national and European waste targets and potentially poses a risk to public health.

[9] According to the terms of reference, DEHLG expects to commission consultants to undertake the waste policy review by July 2008 and that the work will be completed by July 2009.

- The number of biological facilities operating in 2007 has dropped slightly to 45 from the reported 46 in 2006. Several new facilities have opened, while a similar number of relatively small biological treatment facilities have closed.
- Three waste to energy facilities have been granted planning permission. It is likely to be 2012 before any of these facilities become operational.

A range of infrastructures are required along the waste hierarchy to meet Ireland's waste management requirements. Specific infrastructures that need to be developed include:

- thermal treatment capacity to recover energy from municipal and industrial waste;
- thermal treatment or landfill capacity for hazardous waste;
- biological treatment (composting, anaerobic digestion) throughout Ireland; and
- reprocessing capacity for recovered materials (e.g. paper, glass and plastic recycled materials)[10].

In order to ensure competitively priced waste treatment options for business and for domestic customers, it is important to have a number of competing facilities with excess capacity at each level of the hierarchy. Research undertaken by RPS on behalf of Forfás to assess the likely future waste treatment capacity requirements along the hierarchy is discussed in the next section (4.2).

## 4.2. National Coordination of the Regional Waste Plans

Most local authorities have adopted a regional approach in the development of their waste management plans. With the exception of Wicklow, Kildare and Donegal County Councils, who have decided to proceed with county plans, all local authorities are now involved in regional waste management plans. While a 2005 Ministerial direction confirms that the inter-regional movement of waste should not be precluded so as to inhibit the rational development of a strategic national waste management infrastructure, the upcoming waste policy review provides an opportunity to assess if regional waste plans are the appropriate framework to meet future competitiveness and environmental sustainability objectives.

Under the existing framework, decisions on the rollout of infrastructure are primarily made at regional or county level rather than being based on national criteria. Forfás has highlighted the lack of coordination of regional waste plans as an impediment to the delivery of cost effective, commercially viable, sophisticated waste treatment options along the waste hierarchy as it tends to result in smaller scale facilities than would be the case if infrastructure planning was done at a national level. The fact that Ireland is not fully exploiting the economies of scale that can exist in the delivery of waste infrastructure will have implications for the comparative cost of alternative waste treatment options available to business.

[10] The Market Development Programme, which was established by the Department of the Environment, Heritage and Local Governmnet, to promote the development of markets for recycled materials, focuses on three waste streams; paper, plastics and organics.

This is a view shared by the OECD in its recent review of the public sector in Ireland which concluded that the lack of coordination of waste management plans within and among the ten waste regions has resulted in uneconomic infrastructure and regional monopolies and is hindering the effective and efficient implementation of the waste management hierarchy. In particular, it asserts that the regional waste planning framework has had the opposite of the intended effect and has led to overcapacity of landfill which is detrimental to the commercial viability of other, preferred infrastructure options such as thermal treatment.

As highlighted by the OECD, better coordination of regional waste plans is required in order to take into account infrastructure needs at the national level. So as to facilitate competition within and between waste treatment options such as recycling, recovery and disposal, consideration needs to be given to the waste infrastructure capacity required nationally along the waste hierarchy. The findings of a review of future capacity requirements are set out below[11]:

- With regard to waste treatment options for municipal waste, it is suggested that by 2016, a thermal treatment capacity of approximately 800,000 tonnes per annum and a Mechanical Biological Treatment (MBT) capacity of between 400,000 and 500,000 tonnes would be required[12]. The MBT capacity will be needed primarily in regions where the development of waste to energy facilities is not economically viable based on the available waste tonnages. Approximately 700,000 tonnes per annum of landfill capacity will also be required in 2016.

- In terms of industrial waste, 80 percent of it is either recovered or disposed of on-site currently. Large amounts of industrial wastes from the food and pharmaceutical sectors are currently exported for further treatment. The development of a mix of treatment capacity (landfill, thermal and biological) of approximately 500,000 tonnes per annum, in addition to the municipal waste capacity outlined above, for the wastes from the food (slaughtering/rendering) and the pharmaceutical sectors will be required to reduce Ireland's need to export industrial waste.

- Approximately half of Ireland's hazardous waste is currently exported. The proposed National Hazardous Waste Management Plan recommends that Ireland should strive for greater self sufficiency in hazardous waste management where this is technically and economically feasible. In particular, it recommends the development of 100,000 tonnes per annum of solvent treatment capacity including thermal treatment and solvent recycling

[11] The capacity projections are based on a national recycling rate of 50 percent by 2016 and on the assumption that the biodegradable municipal waste diversion targets will be met. See Appendix 2 for further details.

[12] The thermal treatment capacity figure is based on existing planned thermal treatment facilities including those in Meath, Cork and Dublin, which have received planning permission and a fourth facility planned for West Dublin has been accepted for application under the Strategic Infrastructure Act. The material treated in the thermal treatment facilities is assumed to be non pre-treated mixed waste and residual waste from MBT facilities.

facilities. It also recommends the development of a national hazardous waste landfill capacity of 25,000 tonnes per annum.

Based on these findings, Ireland will require significant additional waste management treatment capacity across a range of waste treatment solutions.

Coordination of regional waste plans would also allow national targets to be put in place for the diversion of waste to different treatment options along the waste hierarchy, which would improve Ireland's environmental sustainability performance and ensure compliance with EU targets.

### 4.3. Creating Policy and Regulatory Certainty

A stable framework for policies and regulation is key for the efficient functioning of any market and to the delivery of a choice of competitively priced, environmentally friendly and secure waste management options along the waste hierarchy. As previously mentioned, there is currently a high level of uncertainty about the future direction of Irish waste policy due to the delay in reaching a decision on the regulation of the sector and the changes in waste policy proposed by Government.

It is critical that Government provides policy and regulatory certainty in the waste sector to incentivise private investment in waste infrastructure as envisaged in the NDP. Greater clarity will also enable local authorities to plan for the future. In particular, the Department of the Environment, Heritage and Local Government needs to complete its waste review as speedily as possible and ensure its outputs are progressed quickly. It is important that the waste review, which is focusing on the municipal and construction and demolition waste streams, gives due consideration to enterprise development and competitiveness objectives. It also needs to consider the merits of "competition for" the market versus "competition in" the market. While 'competition in' the market has delivered benefits to customers in terms of price and choice of waste collection services, it has raised concerns about "cherry picking" of the most lucrative markets. International experience suggests that 'competition for' the market delivers greater cost efficiencies in the waste sector. However, as cautioned by the OECD, the effectiveness of competitive tendering (competition for the market) depends on several factors including the level of competition in the bidding process and the competitive neutrality between the bidders (i.e. risk of gaming).

Forfás welcomes the stated intention of the Department of the Environment, Heritage and Local Government to progress the important issue of the future regulation of the sector separately from its waste review[13]. It is critical that this happens quickly as the regulatory uncertainty is one of the biggest barriers to addressing the core issues of high costs and reliance on landfill.

[13] Although DEHLG held a public consultation on the regulation of the waste sector in late 2006, no decision has yet been made on how the market is to be regulated.

The increasing involvement of the private sector in waste collection and infrastructure provision in recent years has given rise to much debate about the competitive structure of the market. One of the main factors contributing to concerns over the existing market structure arises from the potentially conflicting role of the local authorities as service or infrastructure provider and as regulator of the sector. Providing a level playing field for private and public service and infrastructure providers is essential to facilitate competition between and within waste treatment options and to give Irish businesses a choice of competitively priced waste management solutions. The recent OECD review of the public sector also recommended the creation of a level playing field for waste service providers. Specifically, it recommended the transfer of the licensing functions of the local authorities to the regional or national level in the longer term. In the short term, it proposed that local authorities should review how they could make better use of their licensing authority.

A further complicating factor is the recent decision by the Dublin local authorities to make changes to the Dublin region waste plan for the period 2005 to 2010[14]. Currently a number of private operators, as well as the local authorities, collect household waste across the Dublin waste region. Under the variation to the waste plan, collection services for household waste will in future be provided by a single operator as the local authorities are of the view that multiple service providers operating on the same collection routes is unsustainable. They also believe that this change is necessary to ensure that ambitious targets for reduction, re-use and recycling in the Dublin region are met and to make sure that everyone has access to a waste collection service[15]. The single operator will either be a Dublin local authority or a successful tenderer under a public tendering process which may be on a geographical basis. Best practice internationally would suggest that it would not be appropriate for the local authorities to run the competition and to also participate in it. In April, a waste collection company was granted leave by the High Court to challenge the local authorities' decision to change rules for private waste collectors.

A regulatory framework that supports competition is a critical factor in restoring Ireland's cost competitiveness. For competition to work effectively, the market needs to be transparent and predictable and barriers to entry need to be removed. If Ireland is to deliver competitively priced waste management services to business and consumers while meeting its environmental obligations, the relative roles and responsibilities of the State in the regulation and management of the waste sector at national, regional, and local level need to be clarified. In particular, the local authorities' role in carrying out the following regulatory functions must be addressed:

- Drawing up and reviewing of regional waste plans;
- Granting of collection and facilities permits;
- Setting landfill gate fees; and
- Directing waste to particular treatment facilities.

[14] For full details, see http://www.dublinwaste.ie/Waste_Plan_Variation_Details.html.

[15] The local authorities fund a waiver scheme for about 70,000 low income families in the region to make sure everyone has a waste collection service.

Careful consideration needs to be given to the potential for existing agencies to undertake the regulatory functions outlined above. While regulation is necessary and often valuable, it must be balanced against the costs to end users. All regulation is costly and this can have a significant impact on enterprise and in particular on small businesses.

### 4.4. Improving Waste Management Cost Competitiveness

After 15 years of exceptional economic performance, Ireland is heading into a period of slower growth. The ESRI expects GNP to grow by 1.6 percent in 2008, its slowest rate since 1988. This slower pace of growth is due mainly to the downturn in construction activity. Recent developments such as the slowdown in the US economy and the increasing strength of the euro against the dollar and sterling are adding to the challenges facing the economy, and in particular Irish exporters. It is therefore vital that policy decisions in areas such as waste management support national competitiveness as well as environmental sustainability policy objectives, so as not to disadvantage Irish businesses relative to their international competitors.

A competitive economy needs a choice of competitively priced, environmentally friendly and secure waste management options along the waste hierarchy, from prevention and minimisation through to reuse, recycling, recovery and disposal. Although landfill costs in Ireland have moderated in the last two years, they remain among the top three most expensive of the benchmarked countries, in spite of the relatively low landfill levy. The lack of alternative waste treatment options means that many companies are directly affected by the high landfill costs.

The Government recently announced plans to increase the landfill levy to incentivise recycling and dis-incentivise disposal so that Ireland can meet the EU Landfill Directive targets. The use of levies can be an effective tool in making alternative, more environmentally friendly solutions more attractive commercially and has been used successfully in other countries. However, alternative waste treatment options for business are limited given the absence of waste to energy facilities and the limited biological treatment facilities currently available. This means that levy increases will just be an additional cost for business at a time when we need to improve our cost competitiveness. Due consideration must be given to the timing of the introduction of future increases in the landfill levy to ensure that they are not introduced until such time as adequate new alternative waste treatment facilities are operational.

Furthermore, steps must be taken to ensure that the high landfill costs in Ireland do not lead to relatively higher costs for alternative waste treatment options along the waste hierarchy. Firstly, further research is required to understand why Ireland's landfill gate fees are so high even with a low landfill tax. This could be addressed within the scope of the Department of the Environment, Heritage and Local Government's waste review. The Department of the Environment, Heritage and Local Government also needs to assess what measures are required to ensure that alternative waste treatment options in Ireland are competitively priced. Factors to be considered include the scale of facilities allowed, the size of the local market being served and the regulatory barriers to entry.

### 4.5. Reducing Planning Delays

Lengthy delays in the planning process have had a negative impact on the timely delivery of key waste management infrastructure, in particular delays due to legal challenges.

The Strategic Infrastructure Act, 2006, which came into effect on 31st January 2007, has put in place a streamlined planning process for certain strategic infrastructural projects, including waste, while ensuring that all statutory requirements are observed. The Act provides for the establishment of a Strategic Infrastructure Division within An Bord Pleanála, which will be the sole planning consent authority for almost all major infrastructure development. The legislation is expected to speed up the delivery timeframe for projects which are subject to it. A number of planning applications for waste facilities are currently being pursued under the Strategic Infrastructure Act. However, it is too early to determine if the Act has led to an improvement in planning timelines. The impact of the new legislation on the lead time to get a project approved needs to be assessed by the waste review.

Measures to fast track judicial reviews of strategic infrastructure projects also need to be accelerated. For example, in the case of the proposed thermal treatment facility in Meath, an application was made to the High Court seeking a judicial review of An Bord Pleanála's assessment of the planning application in 2003. A hearing was held and the Court published its judgment in favour of Indaver in November 2004. This was subsequently appealed to the Supreme Court, which made a final judgment in favour of the State and An Bord Pleanála in May 2007, allowing Indaver to get full planning permission for the project.

### 4.6. Waste Minimisation and Prevention

Waste minimisation and prevention programmes are the most effective tool available to simultaneously address cost competitiveness and environmental sustainability objectives. Both Government and enterprise need to work together to ensure that Ireland is not falling behind its competitor countries in reducing the amount of waste generated. A recent business confidence survey by Ulster Bank suggests that enterprise is already taking steps in the right direction. It found that 62 percent of SMEs had introduced measures to reduce their waste costs, up from 45 percent of SMEs when the first such survey was carried out in April 2007. This would also support the effectiveness of pricing signals as a tool to reduce the amount of waste generated.

In addition to the EPA, organisations such as IDA Ireland, Enterprise Ireland, IBEC, Chambers Ireland, ISME and others, that interface with businesses have a role in raising their awareness of the benefits of waste minimisation and prevention. Many of these organisations are already working with companies on a range of energy efficiency, pollution prevention or resource conservation initiatives. This presents ready-made channels through which measures to reduce and prevent waste generation can be communicated to companies. Limited resources, both in terms of time and people, is one of the biggest barriers to SMEs' capacity to engage with new initiatives. It is therefore imperative that this opportunity to develop a more integrated approach across a range of related issues is exploited to create greater awareness among companies, particularly SMEs, of the benefits of waste reduction and prevention.

# APPENDIX 1: Summary of Main Policy Actions Identified in the 2007 Waste Management Benchmarking Report

1. The development of specific waste management infrastructures, particularly thermal treatment, biological treatment and reprocessing facilities must be accelerated *(Action: DEHLG, public and private infrastructure providers)*[16];

2. The required resources to progress the development of markets for recycled materials, as identified in the Market Development Group work programme, need to be put in place without further delay so that work on delivering the various elements of the work programme can commence *(Action: DEHLG, Market Development Group)*;

3. The relative roles and responsibilities of the State in the regulation and management of the waste sector at national, regional, and local level need to be reviewed to address the issues affecting infrastructure provision and to ensure that the Irish market remains attractive to private infrastructure providers. Furthermore, the terms of reference for any new waste management authority or entity to deliver the multi-disciplinary public policy objectives which arise in the waste sector need to be carefully assessed against the potential for existing agencies to fulfil these roles *(Action: DEHLG)*;

4. Regional waste management plans need to be effectively coordinated to ensure that Ireland is benefiting from the economies of scale that can exist in the delivery of national waste infrastructure *(Action: DEHLG)*;

5. The impact of the Strategic Infrastructure Act 2006 and the proposed legal reforms on the speed of delivery of important new infrastructure need to be maximised to ensure the expected benefits are being realised *(Action: DEHLG)*; and

6. Continued and enhanced efforts are required to ensure that businesses are fully aware of the benefits of waste prevention and how best to exploit waste management reduction processes and technologies **(Action: Development agencies, IBEC, EPA)**.

Source: Waste Management in Ireland, Forfás, 2007[17].

[16] DEHLG = Department of the Environment, Heritage and Local Government.
[17] http://www.forfas.ie/publications/show/pub265.html

# APPENDIX 2: Possible Municipal Waste Treatment Modelled Scenarios for 2016

| | Current Situation | Economic Scenario | Population Scenario | Prevention Scenario |
|---|---|---|---|---|
| **Total Municipal Waste** | **3,384,606**[18] | **4,358,662** | **3,848,000** | **3,386,240** |
| *Recovery (Materials Recycling and Biological Treatment)* | *1,119,692* | *2,179,331* | *1,924,000* | *1,693,120* |
| *MBT* | - | *500,000* | *450,000* | *400,000* |
| Water (26%) | - | 130,000 | 117,000 | 104,000 |
| Biowaste (26%) | - | 130,000 | 117,000 | 104,000 |
| Materials recycling (3%) | - | 15,000 | 13,500 | 12,000 |
| Solid recovered fuels[19] (45%) | - | 225,000 | 202,500 | 180,000 |
| *Thermal Treatment* | - | *850,000* | *802,500* | *780,000* |
| Primary Treatment [waste to energy (WTE)] | - | 625,000 | 600,000 | 600,000 |
| Secondary Treatment [WTE/kilns] | - | 225,000 | 202,500 | 180,000 |
| *Landfill* | *1,980,618* | *829,331* | *671,500* | *513,120* |
| Residual municipal solid waste | - | 414,666 | 335,750 | 256,560 |
| MBT Biowaste | - | 26,000 | 23,400 | 20,800 |
| *Total Biodegradable Municipal Waste Landfilled* | *1,422432* | *440,666* | *359,150* | *277,360* |
| *Maximum Allowable Biodegradable Municipal Waste* | - | *451,469* | *451,469* | *451,469* |

**Assumptions:**

- The capacity projections above are for municipal waste (household and commercial) in 2016.
- The national recovery rate (materials recycling and biological treatment) will be 50 percent by 2016.
- The economic scenario above links municipal waste with the predicted GNP growth rates as per the ESRI's Medium Term Review 2005 – 2010's medium growth scenario. This is a high growth scenario for the amount of municipal waste that will be generated in 2016.
- The population scenario is based on CSO projections for 2011 and 2016, with a linear extrapolation of data for interim years. The municipal waste arisings per capita data for 2006 has been assumed for 2007 onwards. This is a medium growth scenario for the amount of municipal waste that will be generated in 2016.
- The prevention scenario assumes the amount of municipal waste generated will be similar to predicted municipal waste levels in the population scenario. By 2010, high levels of prevention are assumed for the following years which will decouple waste growth further so

[18] Includes an estimate by the EPA of 205,474 tonnes of uncollected household waste.

[19] Solid Recovered Fuels (SRF) are solid fuels prepared from non-hazardous waste to be utilised for energy recovery in incineration facilities. They are already used to substitute fossil fuels in cement kilns, power stations and industrial boilers.

that by 2016 the level of municipal waste generated is very similar to the 2006 figure. This is a low growth scenario for the amount of municipal waste that will be generated in 2016.

- The maximum allowable biodegradable municipal waste to be landfilled by 2016 is a mandatory target set by the EU Landfill Directive. If Ireland is to achieve the landfill diversion targets by 2016, the capacities identified in the population scenario need to be developed as a minimum.
- The MBT processing percentages are taken from a sophisticated Austrian MBT facility which has been commonly referenced.
- The residual material treated in thermal treatment facilities refers to black bin type waste (mixed residual municipal waste) sent directly to a waste to energy facility for treatment.
- The biodegradable municipal waste content of biowaste generated from MBT is 20 percent.
- The landfill quantities refer to materials which are sent directly to landfill without any form of pre-treatment.
- The biodegradable municipal waste content of mixed non-pre-treated municipal solid waste is 50 percent based on EPA Waste Characterisation Surveys.

# APPENDIX 3: Examples of Environmental Supports offered by Enterprise Ireland

Enterprise Ireland works closely with individual companies and sectoral groups, offering a range of financial and non-financial supports to Irish-owned companies. These are designed to help them compete in the most challenging competitive environments, to help them achieve greater efficiencies and to improve overall business performance across a range of areas.

Enterprise Ireland aims to assist companies to increase profitability, competitiveness and export growth through, among other things, improved environmental performance and the development of products or services related to the environment or environmental protection.

The Enterprise Ireland Environment Unit administers two direct financial support schemes that help Irish SMEs to increase awareness of, and promote eco-efficiency in, their operations. These are the Environmental Management System (EMS) Support Scheme and the Environmentally Superior Products (ESP) Support Scheme.

**The Environmental Management System (EMS) Support Scheme**

This scheme provides 50 percent funding (up to a total of €12,700 from EI) to help companies to install an Environmental Management System (EMS) that complies with the ISO 14001 Standard. An EMS allows a company to proactively manage its environmental issues, including areas such as waste management, energy management, reduction in the use of hazardous chemicals. An EMS can help a company to reduce costs on waste treatment and energy usage. It is also particularly valuable as a marketing tool; it allows the company to clearly demonstrate its "green" credentials to the marketplace.

**The Environmentally Superior Products (ESP) Support Scheme**

This scheme provides 50 percent funding (up to a total of €31,750 from Enterprise Ireland) to help companies to develop an Environmentally Superior Product (ESP). An ESP is an industrial product which has significant environmental benefits over a conventional product; e.g. an electrical product designed to use the minimum amount of power, have no hazardous chemicals involved in either its manufacture or working life, be easy to disassemble at the end of life to facilitate recycling, etc.

**Other Supports**

As well as the two "hard" financial support schemes above, Enterprise Ireland provides a range of "soft" supports to those companies it is mandated to assist including the Envirocentre website, www.envirocentre.ie, which provides up to date information on a range of environmental issues relevant to industry; regional industrial environmental fora which are regional seminars that cover relevant environmental issues for the SME sector and technical advice to client companies from a range of in-house experts in various environmental fields.

# Forfás Board Members

| |
|---|
| **Eoin O'Driscoll (Chairman)**<br>Managing Director, Aderra |
| **Pat Barry**<br>Communications Adviser |
| **Martin Cronin**<br>Chief Executive, Forfás |
| **Prof. Frank Gannon**<br>Director General, Science Foundation Ireland |
| **Sean Gorman**<br>Secretary General, Department of Enterprise, Trade and Employment |
| **Anne Heraty**<br>Chief Executive, Computer Placement Resources (cpl) plc |
| **Dr Rosheen McGuckian**<br>Chief Executive Officer, GE Money |
| **Rody Molloy**<br>Director General, FÁS |
| **William O'Brien**<br>Managing Director, William O'Brien Plant Hire Ltd. |
| **Barry O'Leary**<br>Chief Executive, IDA Ireland |
| **Frank Ryan**<br>Chief Executive Officer, Enterprise Ireland |
| **Dr Don Thornhill**<br>Chairman, National Competitiveness Council |
| **Jane Williams**<br>Managing Director, The Sia Group |
| **Michael O'Leary**<br>Secretary to the Board, Forfás |

# Forfás Publications 2007/2008

| | |
|---|---|
| **The Report of the High Level Group on Manufacturing** | April 2008 |
| **Annual Employment Survey 2007** | April 2008 |
| **The Higher Education R&D Survey 2006 (HERD) - Detailed Findings** | March 2008 |
| **Review of the European Single Market** | February 2008 |
| **Future Skills Needs of the Irish Medical Devices Sector**<br>Expert Group on Future Skills Needs | February 2008 |
| **Annual Business Survey of Economic Impact (ABSEI)** | January 2008 |
| **Survey of Selected Multi-National Employers' Perceptions of Certain Graduates from Irish Higher Education**<br>Expert Group on Future Skills Needs | December 2007 |
| **Review of International Assessments of Ireland's Competitiveness**<br>National Competitiveness Council | December 2007 |
| **Electricity Benchmarking Analysis and Policy Priorities** | December 2007 |
| **The Science Budget - First Findings 2006/2007** | December 2007 |
| **Ireland's Broadband Performance and Policy Requirements** | December 2007 |
| **Future Skills Needs of the International Financial Services Industry**<br>Expert Group on Future Skills Needs | December 2007 |
| **Template Collaboration Agreements**<br>Based on the National Code of Practice for Managing and Commercialising Intellectual Property from Public-Private Collaborative Research | December 2007 |
| **Ireland's Co-operative Sector** | December 2007 |
| **Annual Competitiveness Report Volume 1: Benchmarking Ireland's Performance**<br>National Competitiveness Council | November 2007 |
| **Annual Competitiveness Report Volume 2: Ireland's Competitive Challenge**<br>National Competitiveness Council | November 2007 |

### Forfás Websites

The publications of Forfás and the independent advisory councils to which it provides administrative and research support are available on the Forfás website www.forfas.ie.

Email notifications direct to your inbox are available on the latest announcements, press releases and publications. To sign up for our email alerts contact us at info@forfas.ie or through the website.

## Notes

*The National Policy and Advisory Board*
*for Enterprise, Trade, Science,*
*Technology and Innovation*

Wilton Park House, Wilton Place,
Dublin 2, Ireland

*Tel* +353 1 607 3000
*Fax* +353 1 607 3030

**www.forfas.ie**

Forfás