Waste Management in Ireland: Benchmarking Analysis and Policy Priorities

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Forfás

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Executive Summary

The provision of integrated and cost effective waste management treatment options is both an important competitiveness challenge and a key environmental consideration for Ireland. In the context of the unprecedented challenges facing the Irish economy and the need to ensure that businesses operating in Ireland are competitive enough to support sustainable, export-led growth, it is vital that policy decisions in areas such as waste management support national competitiveness as well as environmental sustainability policy objectives. Previous Forfás Waste Benchmarking Studies in 2006, 2007 and 2008 have compared Ireland's waste management performance against a number of comparable competitor countries and regions. Drawing on the most up-to-date data provided by RPS Consulting Engineers, this 2009 report looks at a range of waste management indicators and presents the findings in an updated waste management benchmarking assessment.[1] It also sets out the policy actions needed to improve Ireland's competitiveness in meeting the waste management requirements of the enterprise base.

Key Findings

This waste benchmarking report confirms that while progress is being made in some areas of waste management, Ireland continues to perform poorly relative to a selection of competitor countries and regions in meeting the waste management needs of enterprise. Ireland is currently falling short in a number of areas with relatively higher costs, a slowed rate of progress on recycling and a heavy reliance on landfill. The particular challenges raised by this report focus on the cost and availability of waste management services in Ireland. Specifically, the benchmarking analysis has found the following:

Waste Generation

- Municipal waste generation (household and commercial waste) in Ireland has continued to rise year on year and stood at 3.4 million tonnes for 2007. The amount of municipal waste generated in Ireland is high when compared internationally[2] and in line with previous studies, Ireland remains in the weakest four of ten benchmarked countries/ regions for this indicator.
- The most recent data available for Ireland[3] shows that manufacturing waste per employee fell from 23.8 tonnes per employee in 2004 to 15.6 tonnes in 2006. This puts Ireland in the middle of the seven benchmarked countries/ regions for this indicator.

1 It was not possible to update all of the indicators for all of the benchmarked countries/ regions as waste data tends to be updated on a cyclical basis.

2 Municipal waste generation in Ireland includes both household waste and commercial waste. While this definition is used by most of the benchmarked countries/ regions in this report, there is still need for caution when comparing municipal waste generation in Ireland with other countries due to differences in definition. In particular, the extent to which commercial waste is included can vary.

3 The Environmental Protection Agency is responsible for producing national statistics on waste generation and management in the Republic of Ireland. A detailed national waste report is published every two years in accordance with the reporting schedule for the EU Waste Statistics Regulation. The last full report was the National Waste Report 2006, published in 2007. Every other year, a shorter

- Although hazardous waste generation levels increased slightly between 2006 and 2007, Ireland had the second lowest hazardous waste of the nine regions/ countries benchmarked for this indicator.

Waste Treatment Options

- Ireland continues to have a relatively high reliance on landfill for waste treatment and Irish companies continue to have a limited choice of waste treatment solutions compared to their competitors.
- In 2007, 64 percent of municipal waste was landfilled, putting Ireland in the bottom three of the ten countries/ regions benchmarked for the amount of municipal waste recovered (through recycling and energy recovery).
- The level of recycling of municipal waste was 36 percent in 2007, the same level as that reported in 2006.
- Figures for industrial waste treatment showed similar trends with 62 percent of industrial waste being disposed of in landfill in 2006 (most recent data).
- Although plans are afoot to develop the infrastructure here, Ireland continues to be the only one of the ten benchmarked countries/ regions not to have commercial energy recovery treatment options.

Cost of Waste Management

- At €112, the advertised landfill gate fee for Ireland (excluding landfill tax) was the highest of the nine countries/ regions benchmarked for this indicator. In practice, it is recognised that reductions of up to 40% of this advertised price can be negotiated in the market. Even when this reduced market price is considered, landfill costs remain among the most expensive of the benchmarked countries/ regions.
- Biological waste treatment fees in Ireland are the most expensive of the benchmarked countries/ regions.
- Thermal treatment tax does not feature in the cost of thermal treatment in half of the benchmarked countries/ regions. Where it does, it is in countries where thermal treatment is long-established as a waste management option and it is imposed at a low level or in such a way that incentivises heat and energy recovery.

Conclusions and Recommendations

Ireland's comparatively poor performance in the cost and availability of waste management highlights that a range of key challenges remain to be addressed before waste is managed in an environmentally effective and cost efficient way. In spite of the urgent need to accelerate the delivery of waste infrastructure to address current high levels of landfill, slowing progress in recycling and missed opportunities for energy recovery, progress in addressing the barriers

report is published, most recently the National Waste Report 2007 which was published in 2009 and which contained an update on certain waste statistics.

to infrastructure rollout in the recent past has been slow. Furthermore, the more immediate planned policy steps appear to be focussed on fiscal measures (such as an increased landfill levy and a new incineration levy) which stand to impact negatively on the competitiveness of Irish businesses. A key challenge for waste policy should be to assess what measures are required to ensure that alternative waste treatment options in Ireland are competitive in terms of cost and quality of service. Consideration should thus be given to how favoured waste treatment solutions can be made more competitive (for example, through the use of planning laws, provision of regulatory certainty, etc.), rather than reducing the cost competitiveness of already high cost landfill.

The high level of uncertainty that persists about the future direction of waste policy is likely to lead to further delays in progressing infrastructure rollout and is impacting on the cost of waste management provision. Given the huge challenges facing the Irish economy and the Irish enterprise base, Forfás believes that early and decisive action is needed to:

Create policy and regulatory certainty

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. The International Waste Review for the Department of Environment, Heritage and Local Government has been finalised in July 2009. Given the huge challenges facing the Irish economy, action to provide policy certainty must be undertaken as a matter of urgency. 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.

Improve waste management competitiveness

In the context of the need to restore the cost competitiveness of Irish enterprise, it is critical that waste management policy decisions support national competitiveness as well as environmental sustainability policy objectives, and do not disadvantage Irish businesses relative to their international competitors. This waste benchmarking report shows that Ireland continues to have relatively higher waste management costs. These prices, which erode the competitiveness of Irish enterprises, are seen to reflect the market structure, capacity constraints and lack of competition in the market.

Waste policy needs to send the appropriate certain and clear 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:

- In light of the current high landfill gate fees in Ireland compared with international competitors, further increases in the landfill levy should not be introduced until such time as adequate new alternative waste treatment facilities are operational. Any immediate increase in the levy would further disimprove the competitive position of Irish enterprise.
- Ireland should not introduce an incineration levy or a cap on incineration until such time as adequate new alternative waste treatment facilities are well established and the use of landfill is reduced significantly. When introduced, the incineration levy should be at a

lower level than the landfill levy to reflect the position of incineration higher up the waste management hierarchy.

Coordinate national waste plans

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.

Reduce Planning Delays

Delays in the planning process have had a negative impact on the timely delivery of key waste management infrastructure. While the introduction of the Strategic Infrastructure Act, 2006 has been a welcome step in addressing this issue, the need to fast track decisions on strategic infrastructure projects, including those in the waste management sector will continue to be of key importance. The provision of resources to fast track judicial reviews of strategic infrastructure projects needs to be prioritised. Given the volume of judicial review cases arising out of planning decisions, the creation of a specialised Planning and Infrastructure division in the High Court – in the same format as the existing specialised Commercial Court - could be considered.

Improve waste prevention

The challenge for businesses is not only to find lower cost alternatives to landfill but also to further reduce costs by reducing waste arising through effective waste prevention and minimisation measures. Continued and enhanced efforts will be required by Government Departments, agencies and business representative associations to ensure that businesses are fully aware of how best to exploit waste management reduction processes and technologies. The work of programmes such as the National Waste Prevention Programme's Green Business Initiative has brought a number of important schemes to an advanced stage but ensuring that companies, particularly small and medium enterprises, actively work to prevent waste is the important next step. Given that many organisations are already working with companies on a range of energy efficiency, pollution prevention or resource conservation initiatives, continued efforts should be made to develop a more integrated approach across a range of related issues. In addition, such resource efficiency programmes should continue to be targeted at the internationally trading manufacturing and services sectors to improve their ability to compete in global markets.

1. Introduction and Background

In the current climate, Ireland faces a range of competitiveness challenges to support sustainable, export-led growth. Competitive and advanced waste management services are an important part of ensuring that we have a conducive environment for enterprise to be successful on world markets. The quality, availability and cost of waste management impacts on the competitive performance of all firms operating in Ireland.

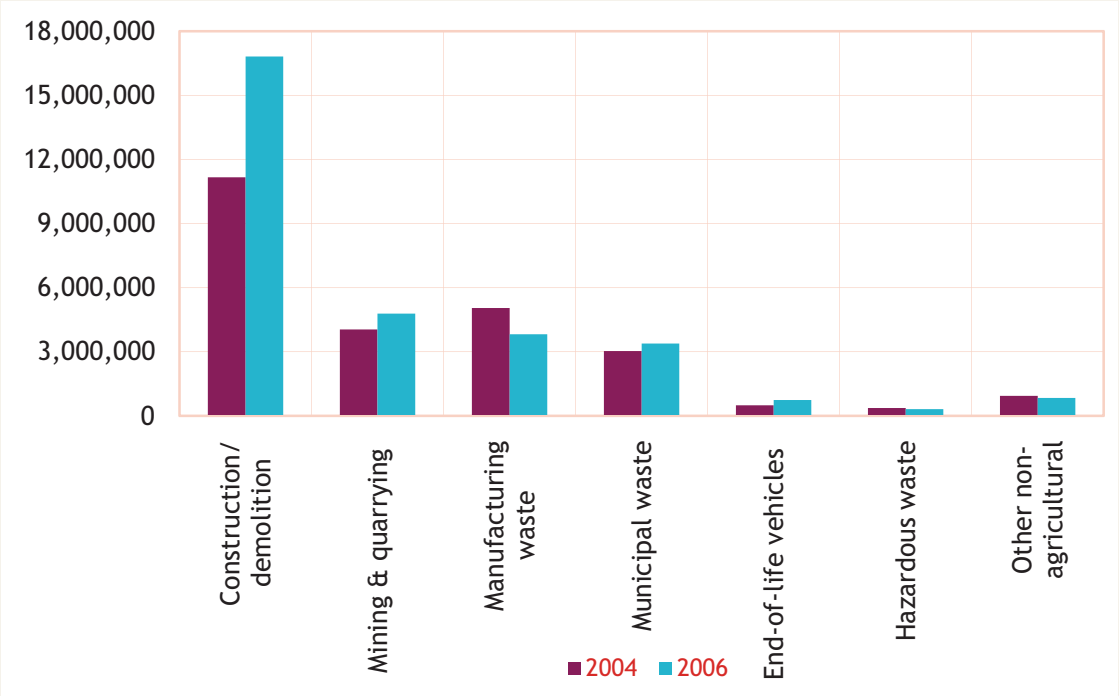
In recent years, Forfás' Waste Benchmarking Studies 2006, 2007 and 2008 have compared Ireland's waste management performance with a range of competitor countries across a number of key issues such as waste generation, treatment options, cost and capacity. These benchmarking studies have confirmed Ireland's comparatively poor performance in waste management and have pointed to a lack of adequate waste infrastructure and services in Ireland to meet the demands from industrial, commercial and household waste generation. The reports outlined a number of policy issues that needed to be addressed in order to improve Ireland's comparative performance in waste management. There has been limited progress in addressing these issues.

This year's report updates Ireland's comparative performance across key indicators and focuses on the policy issues that need to be addressed to enable Ireland meet the waste management needs of the enterprise sector and to ensure that Irish enterprises can compete internationally.

2. Overview of Waste Management in Ireland

2.1 Waste Produced

Figure 1: Non-agricultural waste by category 2004 and 2006 (tonnes)



Source: EPA

From most recent figures available, the Republic of Ireland produced over 30 million tonnes of non-agricultural waste in 2006, an increase of 23 percent from the 2004 level of 25 million tonnes.[4] The construction and demolition sector was the predominant waste generator for these years, followed by the mining and quarrying sector.

From an enterprise development perspective, the priority waste streams of most relevance are municipal, manufacturing and hazardous waste and as such, this report focuses on these categories.[5] In doing so, it is seen that:

- Municipal waste (household waste and commercial) accounted for 11 percent of total non-agricultural waste in 2006. Municipal waste generated has grown from 3 million tonnes in 2004 to almost 3.4 million tonnes in 2007.[6]

4 National Waste Reports, 2004 and 2006, Environmental Protection Agency.

5 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.

6 Data for municipal waste for 2007 was available in the National Waste Report 2007. 2006 was the latest year for data on manufacturing waste and hazardous waste.

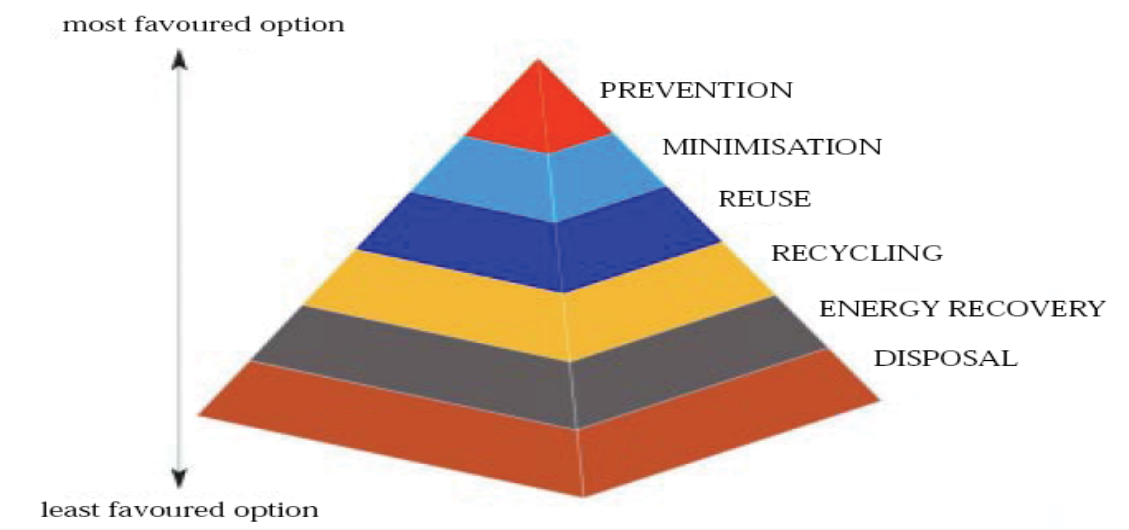
- Manufacturing waste contributed just over 12 percent of total non-agricultural waste generated in 2006. As a single waste stream, manufacturing waste decreased by 20 percent between 2006 and 2004.
- Hazardous waste accounted for just over one percent of total non-agricultural waste in 2006. As a single waste stream, hazardous waste in 2006 was 17 percent lower than 2004 levels.

While initial indications are that the downturn in the economy has led to a decline in overall waste, waste generation levels are likely to remain a significant environmental and enterprise challenge.

2.2 Waste Management Hierarchy

Sustainable economic development will require cost competitive, modern waste management facilities across the internationally accepted waste management hierarchy. This hierarchy guides Irish waste management policy[7] and has a legislative basis in the European Union's revised Waste Framework Directive, which is to be transposed into law in Ireland before the end of 2010. The hierarchy states that the most preferred option for waste management is prevention and minimisation of waste, followed by re-use and recycling, energy recovery (i.e. incineration) and, least favoured of all, disposal (Figure 2).

Figure 2: Waste Management Hierarchy



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

7 The waste management hierarchy has been adopted in Ireland as the basis of our waste policy via the Waste Management Acts, 1996 – 2001 and the 1998 Government policy statement, Changing Our Ways and the 2004 paper, Taking Stock and Moving Forward.

Prevention and minimisation aims to reduce waste at source, thus eliminating the need to handle, transport, treat and dispose of waste. Re-use is a prevention activity. The reuse of resources falls under prevention as this waste is not collected through typical mechanisms/systems. Recycling covers material recycling - the sorting and (re)processing of material such as paper, plastics, card, metals and glass into new materials. Recycling also covers the biological treatment of food and green waste, which is processed into new products such as compost. The term energy recovery is best described as an umbrella term covering a range of technical processes for treating residual wastes. These technologies often fall into two categories: thermal treatment or Mechanical Biological Treatment (MBT). Waste-to-Energy (WTE) is used to describe previously termed mass-burn or incineration plants due to their higher energy generation performance and efficiencies. The least favoured treatment option is the disposal of untreated waste in landfill facilities.

3. Important Recent Developments

3.1 International Waste Review for the Department of Environment, Heritage and Local Government

In line with the commitment in the 2007 Programme for Government, the Department of Environment, Heritage and Local Government contracted Eunomia Research and Consulting in July 2008 to undertake a comprehensive review of Irish waste policy. The stated objectives of the review were to:

- Identify possible changes to policy at national level in order to assist Ireland to move towards a sustainable resource and waste policy including minimising the creation of waste and self-sufficiency in the reuse and recycling of materials; and
- Examine the legal, institutional, and organisational arrangements currently in place and analyse potential changes which could assist in achieving Ireland's policy goals, and meeting national and international obligations.

Although not yet publicly available, the final report of the review was submitted to the Department of Environment, Heritage and Local Government for consideration at the end of July 2009. Among the issues understood to be considered as part of the review were: the configuration of the waste collection market; the role of local authorities in waste management and regulation; the regional basis for waste management planning; pay-by-use producer responsibility schemes and recycling mandates. The review is expected to have significant implications for waste policy in Ireland and any decisions made on foot of the review will also have significant impacts on the competitiveness of Irish enterprise in the waste management arena.

3.2 Revised Waste Framework Directive

In October 2008, the Council of the European Union adopted the revised Waste Framework Directive which set a revised framework for waste management in the European Union. This Directive, which is required to be transposed into national law within two years, will provide the legal basis for much of Irish national waste management policy. It will have direct implications for the waste management industry in Ireland and also wider indirect implications for enterprises in Ireland.

The Revised Waste Framework Directive:

- Sets new recycling targets to be achieved by Member States by 2020, including recycling rates of 50 percent for household and similar wastes and 70 percent for construction and demolition waste.
- Strengthens provisions on waste prevention through an obligation for Member States to develop national waste prevention programmes and a commitment from the European Commission to report on prevention and set waste prevention objectives.
- Clarifies a number of important definitions, such as recycling, recovery and waste itself. In particular, it draws a line between waste and by-products and defines when waste has been recovered enough – through recycling or other treatment - to cease being waste.
- Gives a legislative base for the waste management hierarchy.

3.3 Market Development Group and Recyclate Market Developments

A Market Development Group (MDG) was established by the Department of the Environment, Heritage and Local Government in 2004 to develop markets for recyclables in Ireland. In 2007, the MDG published the Market Development Programme (MDP) for Waste Resources 2007 - 2011 which aims to promote more recycling of materials recovered in this country. Among the key issues addressed in the programme are promoting stable demand for recovered materials, supporting the achievement of economies of scale in the production of products made from recycled materials and the need for more recycling infrastructure in Ireland to reduce reliance on overseas markets. A Market Development Implementation Team was appointed in late 2008 to implement the 5-year programme and an action plan for 2009 which was launched in May of this year is currently underway. This is seen as an important development. Ireland has traditionally had very limited levels of waste reprocessing infrastructure but recent developments in the form of the collapse in the prices on world markets for recovered materials at the end of 2008, have further focused efforts in developing the market here.

3.4 National Waste Prevention Programme

In line with Ireland's commitment under the Waste Framework Directive, a national Waste Prevention Programme has been in place since 2004. The updated version of this, Ireland's National Waste Prevention Programme 2009-2012, was launched in 2009. This Programme aims to deliver substantive results on waste prevention and minimisation and integrate a range of initiatives addressing awareness-raising, technical and financial assistance, training and incentive mechanisms. The Green Business initiative is one recent development stemming from the National Waste Prevention Programme which supports companies to identify efficiencies and, ultimately, cost savings through online site assessments and benchmarking tools. Given the current trends in waste production and the need for businesses to reduce costs, it is seen as imperative for Ireland's future competitiveness and environmental sustainability that the necessary resources and commitment are given to programmes such as this.

3.5 Measures to reduce the amount of biodegradable waste going to landfill

As part of the effort to reduce the amount of biodegradable municipal waste sent to landfill, the Department of Environment, Heritage and Local Government has prepared draft regulations which propose to provide for mandatory source segregation of commercial food waste. The draft regulations would apply to all food waste produced on specified premises. This includes shops, supermarkets, restaurants and cafés but also applies to industrial or office buildings where food is supplied to employees. The producer of food waste will be required to source segregate and recovery. The final version of the draft regulation is due by the end of 2009.

In June 2009, the Environmental Protection Agency (EPA) announced that it will be reviewing EPA licences for landfills, to reduce the amount of biodegradable waste going to landfill. A guidance document on the pre-treatment of organic wastes to landfills was also published by the EPA in June setting restrictions for all landfill operators in terms of the disposal of biodegradable waste. Together with the development of the draft regulation, these measures

are seen as important steps in helping Ireland meet its obligations for diversion of biodegradable municipal waste from landfill under the Landfill Directive.[8]

3.6 Proposed cap on incineration

The Minister for the Environment, Heritage and Local Government has recently proposed to issue a policy direction under Section 60 of the Waste Management Act 1996 to cap incineration capacity as a proportion of municipal waste arisings. In line with Strategic Environmental Assessment requirements, an environmental report on the proposal was published by Eunomia consultants in June 2009 and a consultation process was undertaken in July 2009. Such a cap would be expected to have significant implications for the development of the incineration market in Ireland.

3.7 Infrastructure Developments

The last decade has seen important changes in Irish waste management infrastructure as we continue the movement away from low-grade solutions to new technologies and methodologies for better managing our waste. This section looks at the most recent developments on waste treatment options here and also briefly looks at efforts to develop infrastructure which will move Ireland up the waste management hierarchy.

3.7.1 Landfills

From most recent EPA data, there were 29 landfills receiving municipal waste in Ireland in 2007 – the same number as 2006. While the total number of landfills has declined in the last number of years in line with Government policy, excess landfill capacity continues to be reported in the market and levels of waste landfilled continue to rise.

There is currently very limited hazardous waste landfill capacity in Ireland. As a consequence, large quantities of hazardous waste are exported for landfill to other countries (in 2007, 48 percent of Ireland's hazardous waste was exported). In this respect, one of the main objectives of the National Hazardous Waste Management Plan 2008 – 2012 is to increase self-sufficiency in the management of hazardous waste and to reduce hazardous waste export where economically feasible.

3.7.2 Incineration

There are currently no commercial incineration treatment options available in Ireland. After a lengthy planning procedure, two commercial incinerators have been granted licences by the EPA. Work has commenced on one of these in Carranstown, Co. Meath, which is due to be completed by the end of 2011 while the second in Ringaskiddy, Co. Cork is currently subject to an oral hearing by An Bord Pleanála. In November 2008, the EPA granted a licence for a third municipal waste incinerator at Ringsend, Co. Dublin and this plant is currently in the final stages of pre-construction activity. Plans for an additional incinerator in Rathcoole, Co.

8 See Appendix 2 for Ireland's current position and targets for biodegradable waste diversion from landfill.

Dublin, were rejected by An Bord Pleanála in February 2009 on the grounds that it posed an "unacceptable risk" of polluting the environment.

3.7.3 Biological Treatment

Biological treatment technology is currently at early stages of development in Ireland. At present, although some sites in Ireland employ mechanical treatment of waste (from last available data, a total of 12 facilities were reported as treating residual waste mechanically in 2006), it is seen to vary significantly from picking out recyclables to a fully mechanised system which processes waste. Similarly, there are currently very few facilities treating organic waste biologically on-site in Ireland with most recent figures from the EPA highlighting that only two facilities were treating residual household and commercial waste both mechanically and biologically on-site in 2006.

3.7.4 Recycling Infrastructure

Infrastructure for the collection of recyclable waste has improved considerably over the past number of years and has contributed to Ireland's improved recycling performance in the recent past. From the most recent data available, the number of bring banks in 2007 stood at 1,960, an increase of over 500 from 2001 while 90 civic amenity sites were in use in 2007 compared with 50 in 2001. Nonetheless, the amount of municipal waste continues to grow and the recovery rate for municipal waste remained at 36 percent for 2006 and 2007 so significant challenges remain in developing Ireland's recycling infrastructure. Exporting of collected recyclables is expected to continue while markets do not exist locally.

4. Ireland's Comparative Performance

4.1 Benchmarking Methodology

Since 2006, Forfás has been undertaking an annual benchmarking analysis of the Irish waste management sector, comparing Ireland's performance against a number of countries/ regions in areas such as waste generation, waste treatment, waste costs and waste capacity. These countries/regions were selected in order to represent a variety of market sizes with different waste management policies and practices as well as markets with similar waste generation patterns.

Drawing on data provided by RPS Consulting Engineers, this 2009 report updates the previous year's analysis. Forfás has also consulted a range of stakeholders in developing this project, including the Department of Enterprise, Trade and Employment, the Department of Environment, Heritage and Local Government, Enterprise Ireland, IDA Ireland, the Environmental Protection Agency and the Competition Authority.

Domestically, there is a time lag of two years for a number of waste management indicators which creates difficulties, particularly in the context of the speed of recent change in the economic landscape. Internationally, waste data can often be of variable quality and tends to be updated on a three or five year cycle.[9] This also has lead to a dearth of up-to-date, comparable international data. As a result, one of the major challenges of the benchmarking exercise was to develop robust indicators.

As noted above, this report focuses on the priority waste streams of most relevance from an enterprise development perspective, namely municipal, industrial and hazardous waste.[10] 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.

9 Ireland's waste statistics compare well with all ten benchmark countries/ regions selected, both in terms of availability and the accuracy of the information available.

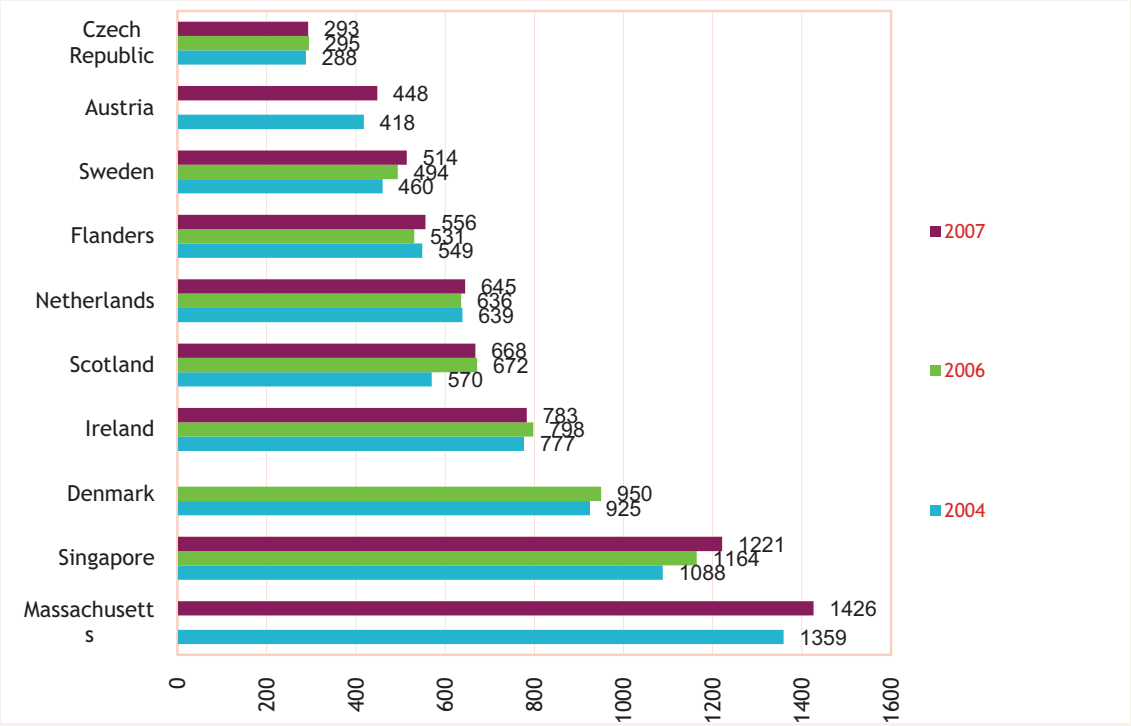
10 The other priority waste streams are packaging waste, construction & demolition waste, waste from end-of-life vehicles and waste oil.

4.2 Waste Generation

4.2.1 Municipal Waste Generation

This indicator attempts to compare municipal waste generation in Ireland with that of the other benchmarked countries/ regions.[11]

Figure 3: Municipal Waste Generation per Capita (kg per capita), 2004, 2006 and 2007



Note: Municipal waste generated for Austria includes households and similar installations only.

Source: RPS Consulting Engineers

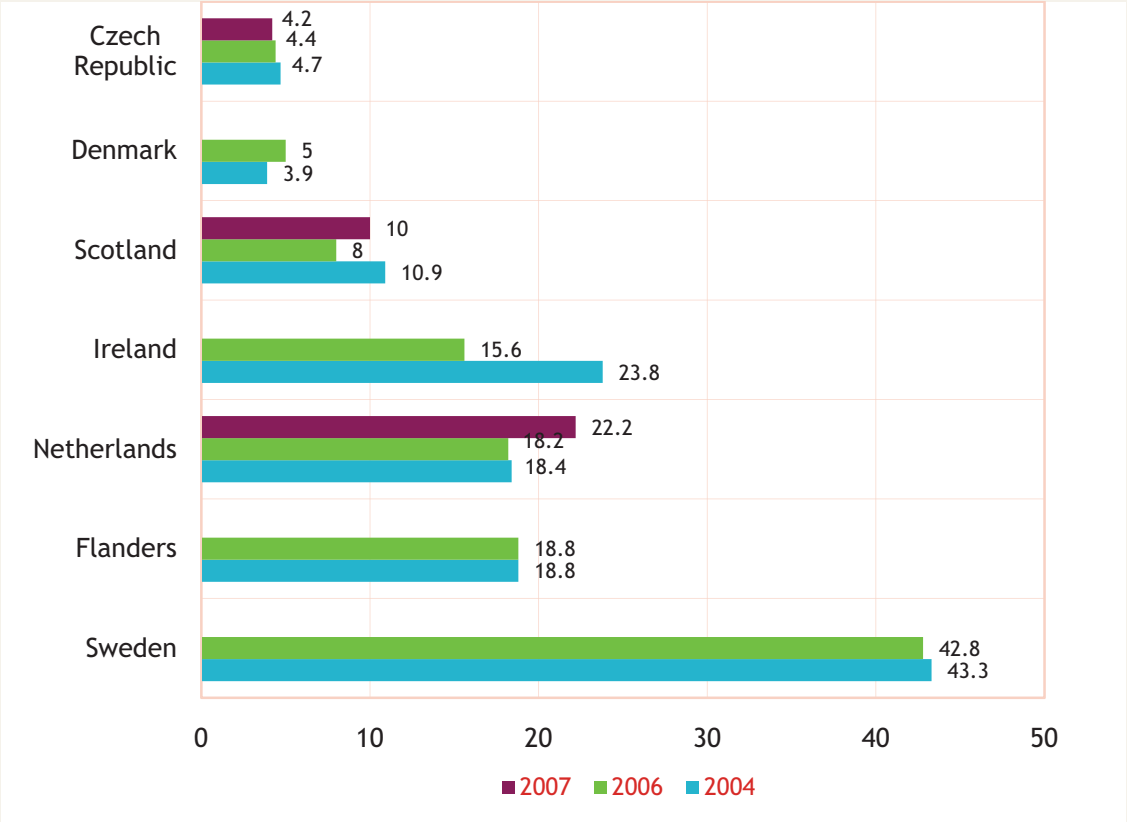
- Municipal waste generation has continued to rise year-on-year and stood at 3.4 million tonnes for 2007. This amounted to a very small increase of 0.3 per cent from 2006 but has continued the upward trend of the last number of years and is 25 per cent higher than 2001 levels. These increases have reflected Ireland's strong economic performance and population growth during this period.
- The amount of municipal waste generated in Ireland is high when compared internationally. While municipal waste generation per capita declined slightly between 2007 and 2006 (from 798 kg to 783 kg), Ireland continues to have the fourth highest level of municipal waste generation of the benchmarked countries/ regions. This ranking is consistent with the previous waste benchmarking studies done by Forfás.

11 Municipal waste generation in Ireland includes both household waste and commercial waste. While this definition is used by most of the benchmarked countries/ regions, there is still need for caution when comparing municipal waste generation in Ireland with other countries due to differences in definition. In particular, the extent to which commercial waste is included can vary.

4.2.2 Manufacturing Waste per Employee

As the definition of industrial waste varies internationally, data on manufacturing waste was used. This indicator shows the generation of waste by manufacturing activities, which are categorised by NACE code.[12]

Figure 4: Manufacturing Waste Generation per Employee (tonnes per employee), 2004, 2006 and 2007



Source: RPS Consulting Engineers

- The most recent data available for Ireland shows that manufacturing waste per employee in Ireland fell from 23.8 tonnes per employee in 2004 to 15.6 tonnes in 2006 (Figure 4). This put Ireland in the middle of the seven benchmarked countries/ regions where data was available. The drop during this period is due to better waste practices by companies who have sought to reduce costs and also due to the relative decline of this sector in the State.

12 NACE codes are the Statistical Classification of Economic Activities in the European Community. Manufacturing waste includes both hazardous and non-hazardous waste. Examples of manufacturing waste include waste metals, chemicals, woos products, textiles and food.

4.2.3 Hazardous Waste Generation

Hazardous waste is generated by all sectors of society, including households, industry, agriculture, construction and healthcare. Most hazardous waste in Ireland is generated by industry, particularly the pharmaceutical and chemical sectors that produce organic solvents.

Figure 5: Hazardous Waste Generation (kg per capita) 2004, 2006 and 2007

Source: RPS Consulting Engineers

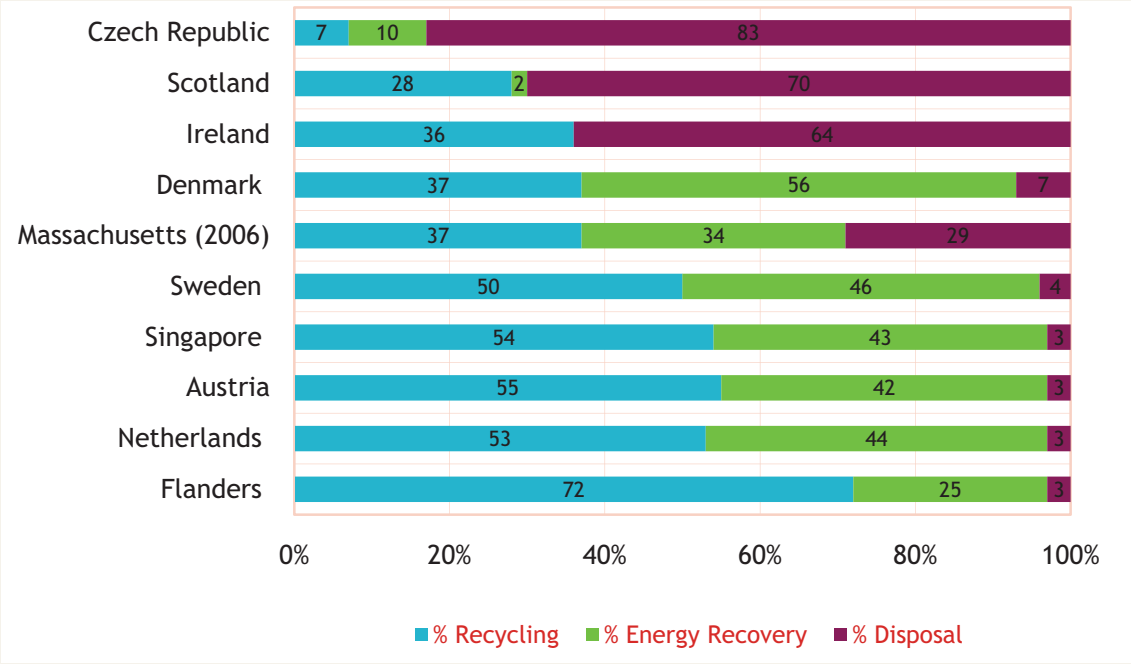
- Of the regions/ countries benchmarked, Ireland had the second lowest hazardous waste generation per capita in 2007. The amount of hazardous waste generated per capita increased by 4 per cent between 2006 and 2007 but at 70kg per capita remains below the 75kg per capita level of 2004.

4.3 Waste Treatment Options

4.3.1 Municipal Waste Treatment

This indicator ranks the benchmarked countries/ regions based on the percentage of municipal waste that is disposed of in landfill.

Figure 6: Municipal Waste Treatment Options, 2007



Source: RPS Consulting Engineers

- Ireland remains highly dependent on landfill to treat municipal waste, landfilling 64 percent of its municipal waste in 2007.
- The 2007 figures of 64 percent landfill and 36 percent recycling are the same as 2006 levels and contrast with steady reductions of landfill/ increases in recycling previously experienced year-on-year up to 2006.
- Ireland's performance on this measure remains poor compared to the benchmarked countries/ regions where five of the ten countries have treated, on average, less than five percent of their municipal waste in landfill.
- Ireland is the only country benchmarked not to have energy recovery[13] treatment options. As noted above, licences have been granted for three incinerators in Ireland by the EPA

13 Energy recovery is defined as a form of resource recovery in which the organic fraction of waste is converted to some form of usable energy. Recovery may be achieved through the combustion of processed or raw refuse to produce steam through the pyrolysis of refuse to produce oil or gas; and through the anaerobic digestion of organic wastes to produce methane gas.

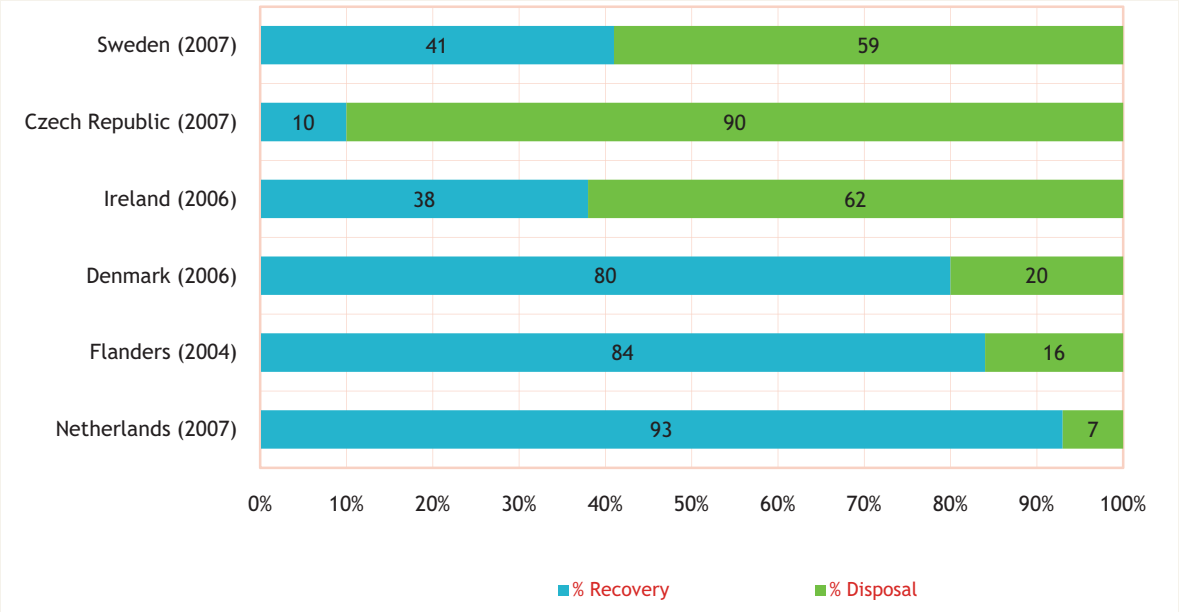
but work has only commenced on one of these which is not due to be completed until the end of 2011.

- The Landfill Directive requires significant reductions in the rate of biodegradable waste going to landfill. The targets and existing levels of landfilled biodegradable municipal waste are listed in Appendix 2.

4.3.2 Industrial Waste Treatment

This indicator ranks the benchmarked countries/ regions based on the percentage of industrial waste that is disposed of in landfill, as this is the least preferable waste treatment solution.

Figure 7: Industrial Waste Treatment Options



Source: RPS Consulting Engineers

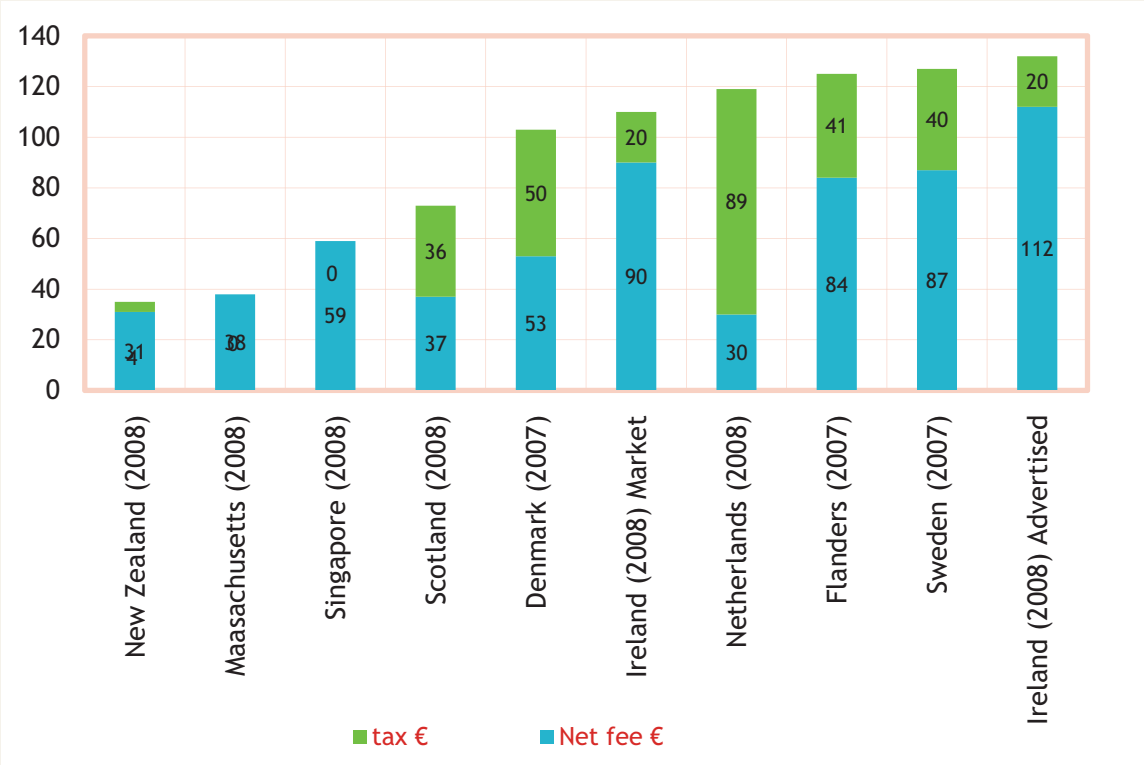
- 2007 figures for industrial treatment options for Ireland were not available but figures for 2006 again emphasise Ireland's dependence on landfill as a waste treatment option. 62 percent of industrial waste was disposed of in landfills in 2006 while 38 percent was recovered. This is an improvement on 2004 when 65 percent of industrial waste was disposed and 35 percent was recycled.
- Ireland's high level of disposal and low level of recovery (recycling and energy recovery) compares poorly relative to the benchmarked countries/ regions in particular the Netherlands, Flanders and Denmark which have long established policies and fiscal instruments which have incentivised preferred treatment options such as recycling and energy recovery.

4.4 Costs

4.4.1 Landfill Gate Fees (including levy)

This indicator compares the cost of landfill disposal across the benchmarked countries/ regions.

Figure 8: Landfill Gate Fees (including levy), 2008 (€ per tonne)



Source: RPS Consulting Engineers

- The cost of landfill in Ireland is high compared with the other benchmarked countries/ regions. The advertised level for landfill costs in Ireland for 2008 was €112 per tonne for landfill gate fee (excluding tax) plus €20 landfill tax per tonne, which is the highest of the nine benchmarked countries/ regions. However, it is believed that in the market, reductions can be negotiated for the landfill gate fee which can result in a landfill gate fee of up to 40% less than the advertised rate. A survey undertaken by RPS Consulting Engineers confirmed this, and the market landfill gate fee from this survey was found to range between €70 to €90 excluding tax. Nonetheless, this market price would still place Ireland fourth of the nine benchmarked countries/ regions in terms of the high cost of landfill disposal.
- Although the landfill levy increased from €15 to €20 per tonne on July 1st 2008, as can be seen in Table 2 below the overall cost of landfill has moderated in Ireland in recent years as capacity pressures have eased.

Table 2: Landfill Gate Fee and Tax in Ireland 2005 - 2007

	Landfill Gate Fee (excl. tax)/ € per tonne	Landfill tax/ € per tonne
Ireland 2005	€120	€15
Ireland 2006	€120	€15
Ireland 2007	€112	€15
Ireland 2008	Advertised: €112 Market: €70 to €90	€20

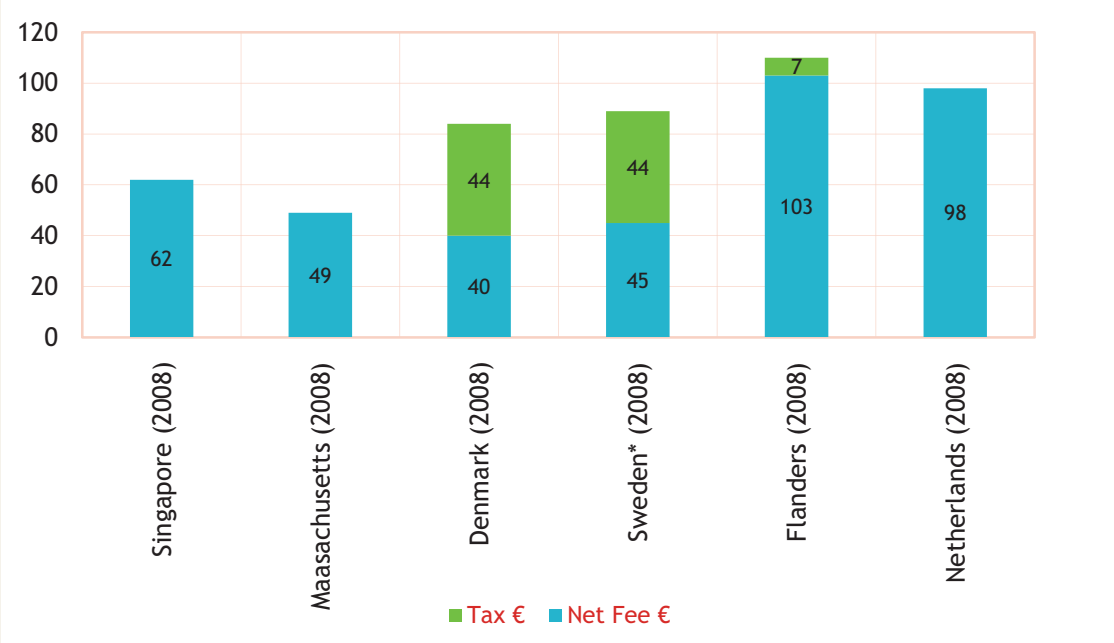
Source: RPS Consulting Engineers

- Many of the benchmarked countries/ regions are using significant landfill taxes to keep landfill costs artificially high to incentivise the use of preferred treatment options up the waste management hierarchy such as recycling and waste to energy. Although Ireland currently has a low tax surcharge for landfill, it has the highest landfill gate fees of the benchmarked countries/ regions. The extent to which economic instruments continue to be 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.

4.4.2 Non-Hazardous Thermal Treatment Gate Fees (including levy)

This indicator presents the current average cost of treatment for non-hazardous and industrial type waste. Thermal treatment taxes are included where applicable.

Figure 9: Non-hazardous Thermal Treatment Gate Fees (including levy) 2008 (€ per tonne)



Source: RPS Consulting Engineers

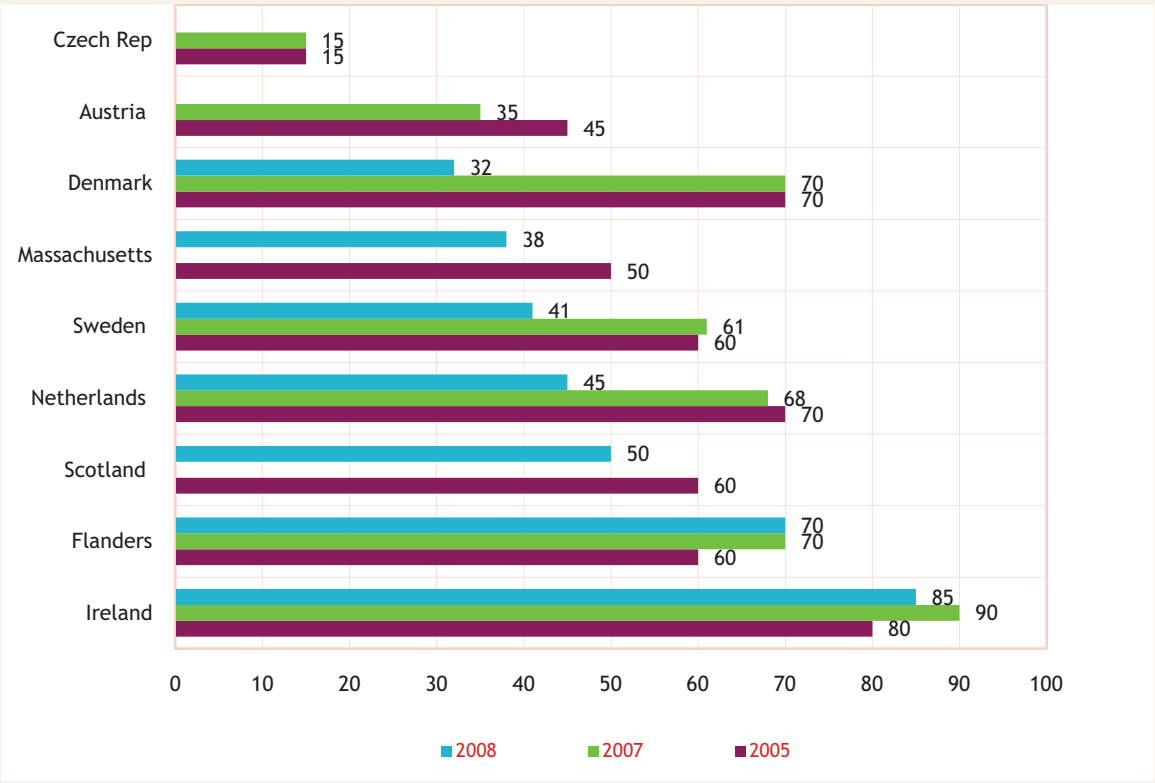
Note: Sweden's thermal treatment tax varies depending on the level of heat and energy recovery available. Without electricity production, the tax is up to €44 per tonne but with electricity production, it is significantly lower (€7.50 with 20 percent electricity production, €7 with 15 percent electricity production).

- 2008 data on thermal treatment costs was only available for six benchmarked countries/ regions. Ireland is not included as there are no public thermal treatment plants. Massachusetts had the lowest thermal treatment gate fee at €49 per tonne while Flanders had the highest at €103 per tonne.
- Reflecting the waste management hierarchy, thermal treatment costs for each of the benchmarked countries/ regions are lower than is the case for landfill gate fees.
- Thermal treatment tax does not feature in the cost of thermal treatment in half of the benchmarked countries/ regions. Where it does, it is in countries where thermal treatment is long-established as a waste management option and it is imposed at a low level (Flanders) or in such a way that incentivises heat and energy recovery (Sweden).

4.4.3 Biological Gate Fees

This indicator shows the current costs for the treatment of municipal and industrial bio-waste in each of the benchmarked countries/regions.

Figure 10: Biological Gate Fees 2005, 2007 and 2008 (€ per tonne)



Source: RPS Consulting Engineers

Note: A biological gate charge of €35 is likely for "green" waste in Flanders.

- Although, biological gate fees fell by six percent between 2007 and 2008, Ireland continues to have the highest biological treatment gate feels of all the benchmarked countries/ regions.
- To encourage the greater use of biological treatment solutions, biological gate fees are not taxed in the benchmarked countries/ regions.

5. Conclusions and Recommendations

From an enterprise perspective, Ireland continues to perform poorly relative to a selection of competitor countries in meeting the waste management needs of enterprise. In line with previous Forfás Waste Benchmarking Studies, this update has highlighted Ireland's current difficulties in waste management, in particular the issues around relatively higher costs and continued overreliance on landfill. Addressing these challenges has taken on even greater importance in the current environment where the need to ensure that businesses operating in Ireland are competitive enough to support sustainable, export-led growth is vitally important.

5.1 Addressing Infrastructure Deficits

While significant developments have been made in some areas of waste management, Ireland's limited waste management infrastructure options is resulting in a comparatively poor performance on issues such as costs and waste treatment capacity. This poor performance can be traced back to the failure to deliver key waste management infrastructure in recent years. 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.
- Reprocessing capacity for recovered materials (e.g. paper, glass, plastic, metal recycled materials).

5.2 Removing Barriers to Infrastructure Delivery

Concerns remain about the implications for enterprise development from the lack of progress in addressing waste policy issues in recent years. The high level of uncertainty that persists about the future direction of waste policy is likely to lead to further delays in progressing these actions. 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 years has been slow. Furthermore, the more immediate planned policy steps appear to be focussed on fiscal measures (such as an increased landfill levy and a new incineration levy) which stand to impact negatively on the competitiveness of Irish businesses rather than on alternative measures (such as addressing regulatory certainty or the use of planning laws) which can make waste treatment solutions up the waste management hierarchy more attractive without impacting on competitiveness.

The high level of uncertainty that persists about the future direction of waste policy is likely to lead to further delays in progressing infrastructure rollout and is impacting on the cost of waste management provision. The international waste review by Eunomia Consultants for the Department of Environment, Heritage and Local Government which commenced in July 2008 and was submitted for consideration in July 2009 is vital to creating this policy certainty and addressing the barriers to infrastructure delivery but resulting policy decisions will need to take into account national competitiveness concerns. Given the huge challenges facing the

Irish economy and Irish enterprise, Forfás believes that this review should feed into early and decisive action which will:

5.2.1 Create policy and regulatory certainty

A decision on the future regulatory structure for the waste sector needs to be undertaken as a matter of urgency, 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.

Clarifying the potentially conflicting role of local authorities as regulators, service providers and owners of infrastructure is central to encouraging investment. The impending court decision in the case between waste providers in Dublin and Dublin City Council on the right of the local authorities to change rules for private waste collectors is expected to provide some degree of clarity in this respect. The OECD, in their review of the Irish public sector also looked at the role of the local authorities as waste service providers.[14] 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.

Providing a certain, 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.

5.2.2 Improve waste management cost competitiveness

In the context of the need to restore the cost competitiveness of Irish enterprise, it is critical that policy decisions in waste management support national competitiveness as well as environmental sustainability policy objectives, and do not disadvantage Irish businesses relative to their international competitors. This issue is particularly pertinent in the context of the need to enhance the competitiveness of Irish enterprises in the current economic downturn. This waste benchmarking report has shown that Ireland continues to have relatively higher waste management costs. These prices, which erode the competitiveness of enterprise in Ireland, are seen to reflect the market structure, capacity constraints and lack of competition in the market.

Uncertainties on the direction of waste policy in Ireland create unnecessary risk and therefore cost to firms where investment cycles are often lengthy. 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 terms of waste management competitiveness, much discussion has focused on the use of economic instruments such as the landfill levy and the possible introduction of an incineration levy to avoid underutilisation of alternative waste management treatment options and to counteract increasing quantities of waste being landfilled.

14 Towards an Integrated Public Service, OECD Public Management Review, OECD, April 2008.

The landfill levy is recognised as an important instrument to incentivise the use of preferred treatment options up the waste management hierarchy but because of the current high cost of landfill in Ireland compared to international competitors, further increases in the landfill levy should not be introduced until such time as adequate new alternative waste treatment facilities are operational. A key challenge should be to assess what measures are required to ensure that alternative waste treatment options in Ireland are competitive in terms of cost and quality of service. That is, consideration should be given to how favoured waste treatment solutions can be made more competitive (for example, through the use of planning laws, development of relevant skills, research and development, etc.), rather than reducing the cost competitiveness of already high cost landfill. If the levy is to be increased in advance of the operation of alternatives, it is important from a cost competitiveness perspective that such increases are moderate and introduced on a phased basis to enable all industry to adjust. The need for certainty and clarity in the price signals sent by Government is also seen to be hugely important.

The possible introduction of an incineration levy and a cap on incineration has also been mooted by the Department of Environment, Heritage and Local Government. This benchmark report has shown that Ireland is alone in the ten benchmarked countries/ regions in not having energy recovery treatment options. It also highlights that seven of these countries/ regions use energy recovery to treat more than 25 percent of their municipal waste. The introduction of an incineration levy or a cap on incineration before a market is established could have implications for the development of energy recovery in Ireland. An additional important consideration is that an incineration levy does not feature in a number of benchmarked countries/ regions and has only been imposed in countries which have had incineration as a waste management option for a number of years. As such, it is recommended that any incineration levy or cap on incineration should not be introduced until such time as adequate new alternative waste treatment facilities are well established and the use of landfill is reduced significantly. When introduced, the incineration levy should be at a lower level than the landfill levy to reflect the position of incineration higher up the waste management hierarchy.

5.2.3 Coordinate national waste plans

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. This has implications for Ireland's international competitiveness in the provision of competitively priced and high quality waste management solutions for businesses operating here and those considering establishing a presence in Ireland.

As we move to viewing waste as a resource in line with the Revised Waste Framework Directive, the need to allow inter-regional cooperation on the movement and management of waste is even more important to developing a network of integrated waste management facilities. Coordinating the regional waste management plans at national level would stand 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.

5.2.4 Reduce Planning Delays

Delays in the planning process have had a negative impact on the timely delivery of key waste management infrastructure. The introduction of the Strategic Infrastructure Act, 2006 has been a welcome step in addressing this issue. The Act, which aims to provide a fast track planning procedure for certain major public and private infrastructure projects, has been used in a limited number of cases in the past 12 months but it is too early to determine if it 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. Continuing to fast track decisions on strategic infrastructure projects, including those in the waste management sector will continue to be of key importance.

The introduction of a specialist "Infrastructure Court", to deal with medium to large-scale planning and construction cases, modelled on the successful Commercial Court (a list of the High Court that handles commercial cases of high value), could assist in cutting time and costs of delivery of our much-needed infrastructure. Such a system is operated in the United Kingdom and in Australia. Among the advantages of such a specialist court to hear challenges to infrastructure projects above a certain threshold is the expertise that would be gained from seeing all angles of a project and all the differing viewpoints. An alternative to an Infrastructure Court would be to expand the categories of infrastructure disputes that can be referred to the Commercial Court.

The issues outlined above are seen to be vital in developing an integrated and cost effective range of waste management treatment options and are essential for a modern, vibrant and competitive economy.

Appendix 1: Sources of Data

Municipal Waste Generation	
Massachusetts	Department of Environmental Protection, MA
Singapore	Ministry of the Environment & Water Resources, Singapore
Denmark	COWI
Ireland	EPA
Scotland	SEPA
Netherlands	Senternovem
Flanders	OVAM
Sweden	COWI
Austria	Umweltbundesamt
Czech Republic	Czech Statistical Office

Manufacturing Waste per Employee	
Sweden	COWI
Flanders	OVAM
Netherlands	Senternovem
Ireland	EPA
Scotland	SEPA
Denmark	COWI
Czech Republic	Czech Statistical Office

Hazardous Waste Generation	
Netherlands	Senternovem
Flanders	OVAM
Sweden	COWI
Czech Republic	Czech Statistical Office
Austria	Umweltbundesamt
Scotland	SEPA
Singapore	National Environment Agency Website
Ireland	EPA
Denmark	COWI

Municipal Waste Treatment options	
Flanders	OVAM
Netherlands	Senternovem
Austria	Umweltbundesamt
Singapore	Ministry of the Environment & Water Resources, Singapore
Sweden	COWI
Massachusetts	Department of Environmental Protection, MA
Denmark	COWI
Ireland	EPA
Scotland	SEPA
Czech Rep	Czech Statistical Office

Industrial Waste Treatment options	
Netherlands	Senternovem
Flanders	OVAM
Denmark	COWI
Ireland	EPA
Czech Republic	Czech Statistical Office
Sweden	COWI

Landfill gate fees	
Singapore	Ministry of the Environment & Water Resources, Singapore
Massachusetts	COVANTA Energy
Scotland	NISP
New Zealand	RPS
Denmark	COWI
Sweden	COWI
Ireland Advertised	RPS* (survey)
Ireland Market	RPS*
Netherlands	Senternovem
Flanders	OVAM

*Irish landfill gate fees vary as the gate charge can be negotiated. It is believed that market charges range from between €70 to €90. This range represents the net fee on offer to collectors and the rate depends on the quantities of waste guaranteed.

Thermal Treatment Gate Fees	
Singapore	Singapore NEI
Massachusetts	COVANTA Energy
Denmark	COWI
Sweden	COWI
Flanders	OVAM
Netherlands	Senternovem

Biological Gate Fees	
Massachusetts	COVANTA Energy
Ireland	RPS
Flanders	OVAM
Netherlands	Senternovem
Sweden	COWI
Austria	Pending Response
Denmark	COWI
Scotland	NISP
Czech Rep	BIOM

Appendix 2: Current position and targets for biodegradable waste diversion from landfill (per Directive 1999/31/EC)

Current position		Quantity landfilled (tonnes)
2004		1,304,426
2005		1,307,570
2006		1,412,581
2007		1,475,077
Targets	**Landfill Directive Target**	**Maximum quantity allowed to be landfilled (tonnes)**
2010	75% of quantity generated in 1995	967,433
2013	50% of quantity generated in 1995	644,956
2016	35% of quantity generated in 1995	451,469

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Notes

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