

**An Assessment of the Economic and Job Opportunities
Arising in Scotland in Relation to the Growth in Solid
Wastes Management**

March 2008



Executive Summary

The waste management industry in Scotland has seen significant growth in both economic and job terms over the previous ten years due initially to the development of recycling and diversion targets for MSW. There is significant potential for further growth especially in waste reprocessing for onward delivery to markets and in local treatment facilities especially if additional tonnage from the commercial and industrial waste streams are required to be diverted.

The key indicators of the recent impact on the waste management sector are summarised in the following bullet points.

Jobs

Although the previous policy and strategy was focussed specifically on waste diversion and not jobs, there was nevertheless about 4,500 new jobs created

- Public sector employment in waste management has been increasing, particularly in manual posts. 1,446 direct new jobs have been created in the last five years
- Private sector employment has been increasing but mainly in collection and disposal. There was an increase of 2,100 jobs from 1998 - 2004
- Employment in the consultancy, community and education sectors have created approximately 1,000 new jobs.

Contribution to the Scottish Economy

- From 1998 - 2004 business numbers in the sector increased by 50% from 114 to 226 whilst turnover increased by 70% to £453.9 million in 2004.
- The waste industry spent £230 million in 2004 on goods materials and services.
- Capital expenditure has risen by over 300% since 1998.
- The key indicator of industry performance and health is gross value added (GDP at basic prices) This is the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used up in production, not including taxation or subsidies. GDP at basic prices reached £190 million in 2004, up from £64.5 million in 1998. GDP at basic prices is lowest in non scrap recycling and highest in disposal

Opportunities for Investment and Growth

- The availability of recycling services (material outlets and reprocessors) accessible to Local Authorities is varied throughout the country with Aberdeenshire and Glasgow being well served while the Forth Valley and the Lothians have local access to far fewer recycling services – potentially offering business growth opportunities in these areas.
- There is potential for further capital investment in dry recycling facilities as

targets increase as well as their operations contributing to the wider economic benefit potentially resulting in the creation of further new jobs.

- A number of biological treatment systems will be required, although the results of food waste trials will impact on the type of opportunities presented to the market. All projects will be capital intensive, providing a potential barrier to new market entrants. The expected capital costs of in-vessel composting projects alone are likely to exceed £33 million
- New reprocessing opportunities appear limited due to developments in the UK and the strength of the export market. Scotland is already well serviced for glass reprocessing, but an opportunity exists to add value to recovered plastics

Barriers to Investment and Growth

- Enhanced recycling infrastructure will mean more capital investment, but not necessarily increased direct employment as the focus for investment will be towards increased use of equipment and greater automation for materials processing.
- Economies of scale and competition are vital
- The process of consolidation that has been experienced to date will likely continue, especially if there is a lack of substantial opportunities for the larger operators to capitalise funds in long term projects
- Enterprise and employee numbers may now be reaching saturation point, as the industry is now in a period of acquisition and consolidation
- Access to tonnage and economies of scale is presently the key driver for investment, hence the activity in acquisition and consolidation
- Key sources of income for recycling operators have not risen sufficiently to allow for high levels of productivity. The nature and value of contracts has not allowed for security of investment in productivity enhancing plant

Proposed Strategies for Consideration

- Recycling targets do produce more material for collection and processing, although, as the targets are not material specific, Authorities can decide how best to achieve them.
- Achieving economies of scale in treatment and processing facilities is vital - material landfill bans on priority materials would assist in achieving this by increasing the quantity of tonnage requiring services and infrastructure
- Mandatory source segregation is already prevalent in other countries and waste streams. This would assist in development of new services and reduce some treatment costs. Data collected could be used for more realistic long term business planning and assist in reducing investment risk
- To achieve real productivity and economies of scale, private sector investments and public sector provision must be complicit with each other
- While the municipal waste elements of the National Waste Plan have been

underpinned by significant financial support through the previous Strategic Waste Fund, this is not applicable for business waste as the 'polluter pays' principle is well established and requires that waste producers pay for the collection and disposal of the waste they produce. The extension of this principle to that of Producer Responsibility requiring producers to finance recovery and recycling could be extended to a broader range of materials.

Discussion

The Scottish Waste Management and Recycling market consists of a few large companies and a number of large independents. These businesses have shown increased growth and profits over the last few years. However, the industry has seen a process of consolidation with investments by the major companies being made primarily through acquisitions and mergers. Direct investment in infrastructure and capital equipment have been more limited primarily as a result of short term and low value Local Authority contracts that do not allow for capitalisation of funds – with most contracts operating on low margins – thus not attracting significant interest.

Significant potential for further industry expansion exists due to the requirement for MRFs and biological treatment facilities for MSW. In addition the development of initiatives to stimulate greater diversion of commercial and industrial wastes will provide access to greater tonnage and hence potential to stimulate local industries which can utilise the processed recycle. A variety of government interventions will be necessary and could include material source segregation, material landfill bans and greater stimulation of producer responsibility.

Caveat

The economic data presented here is drawn directly from the Annual Business Inquiry (ABI) produced by the Office for National Statistics 1998 -2004 and hence will significantly under estimate the recent economic activity but does however indicate the growth trends. The evaluation of jobs and opportunities is drawn from surveys and analysis of current market conditions.

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1 Introduction

1.1 Background

This report seeks to evaluate and assess the economic and job opportunities arising in Scotland associated with the growth in solid wastes management activity.

The analysis aims to identify where this contribution is highest for employment, potential investment and gross value added, to establish what the opportunities are for growth and finally to examine the potential strategies that could be adopted to assist in the delivery of such growth.

1.2 Aims and Objectives

The key aims of the project are to ascertain:

- The contribution solid waste management makes to Scotland's GDP.
- The total jobs created by solid waste management in Scotland.
- The future economic and employment impact of solid waste management in Scotland.
- What more Government, or its agencies, could and should do to stimulate such growth and whether any action currently being undertaken is either unhelpful or ineffective and, as such, should cease.

2 Private Solid Waste Management Sector Contribution to the Scottish Economy 1998 – 2004

2.1 Data Sources

Data for the economic analysis has been taken from the Annual Business Inquiry (ABI) produced by the Office for National Statistics. The ABI provides data on employment and financial information for industry activity. Data for the analysis in this report has been drawn from the years between 1998 & 2004.

Businesses are described using the Standard Industrial Classification (SIC) code groupings and address a wide range of business activities. The three main relevant codes in the ABI for the waste management sector are defined in:-

- | | |
|---|------------|
| 1. Disposal (including collection) | Code 90.02 |
| 2. Recycling of Metal Waste and Scrap | Code 37.1 |
| 3. Recycling of Non Metal Waste and Scrap | Code 37.2 |

The contribution to the economy was evaluated for each of the three SIC Code Groups to establish the relative contribution of each and evaluated through examination of number of business units, turnover, employment, expenditure on materials and services, capital expenditure and gross value added.

These SIC classifications are however broad in scope and do not allow for the full range of business functions that are undertaken to be identified. For instance a number of medium and large Waste Management companies might several years ago have been classified in the disposal Code 90.02 but will now have significant interests in 37.2. However their new recycling activities will still be considered under the Disposal code. Similarly companies whose original business functions related to recycling may now well have become far more involved in collection – an activity which is only measured under disposal.

In addition the ABI data is currently only available up to 2004 and will therefore not include the more recent developments in 2005, 2006 and 2007 which given the significant investments in the public sector collection and the consequential market stimulation from the Strategic Waste Fund have not been captured.

It should also be noted that the years 1999 and 2000 have no available data for disposal SIC.

Despite these limitations, the ABI does provide a credible overall picture of the trends and changes within the business and industrial sector and provides an impression of a sector experiencing some growth.

2.2 Enterprise Numbers & Turnover

From 1998 - 2004 business numbers increased by 50% for the sector, whilst turnover

increased by 70% to £453.9 million in 2004

Since 1998 the solid waste management sector saw an increase both in the number of business units and their turnover, with the increase most pronounced from 2001. The majority of this activity has been in disposal activity. Increases in the overall numbers of businesses illustrate sectoral growth and can be indicative of existing business expansion. For the entire sector enterprise numbers have increased by around 50%.

Non scrap recycling enterprise numbers have risen by over 40%, scrap recycling enterprise numbers have increased by 17% and collection and disposal enterprise numbers have risen by over 70%.

Turnover for the sector has increased over the review period by around 70% from £133.1 million to £453.9 million. Year on year growth in turnover is apparent in disposal and non scrap recycling, but average turnover per business unit in non scrap recycling is falling.

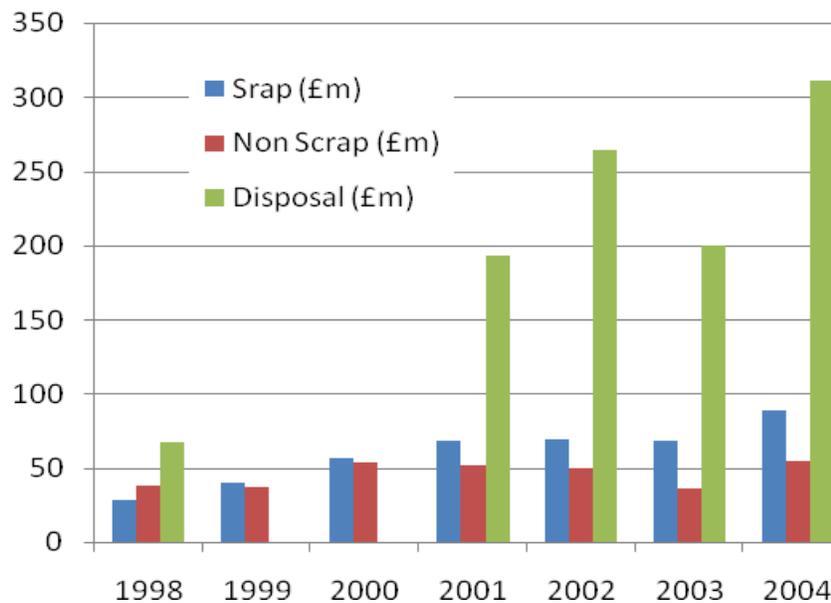


Figure 1: Turnover £m by SIC Code Group

2.3 Expenditure

The waste industry spent £230 million in 2004 on goods materials and services. Capital expenditure has risen by over 300% since 1998.

Expenditure is analysed in two different ways as analysis is of both a provision of services and means of production.

Expenditure on goods materials and services is an important indicator of contribution to

the wider economy. Capital investment is an important indicator, as purchase of fixed assets is indicative of business/sector growth and development of future production and services.

Expenditure is highest on goods materials and services, reaching over £230 million for the sector in 2004, up from £64.5 million in 1998. Relative to average turnover, this expenditure is highest in non scrap recycling, and lowest in disposal.

There has been a relatively high level of gross expenditure on goods materials and services (GMS) in scrap recycling and disposal where average expenditure is more than double that of non scrap recycling. The downward trend in the non scrap recycling over the review period would suggest that scrap and disposal experience higher spends on GMS.

Capital expenditure has grown also from £16.9 million in 1998 to over £56 million by 2002 – data is missing in disposal SIC groups for subsequent years. Disposal SIC contributes more in terms of net capital expenditure, and as a percentage of turnovers, non scrap recycling contributes the least.

Capital expenditure as a percentage of total turnover is highest in the disposal activities, while the data suggests a steady decline in capital expenditure as a percentage in turnover in scrap and disposal.

The trends for recycling companies indicate low levels interspersed with large outlay in certain years, this would suggest that capital expenditure is linked to specific points in time when investment is strategically important, such as acquisitions or critical mass of recycling tonnages.

There are relatively high levels of gross expenditure on goods, materials and services across the sector with the highest expenditure in disposal and scrap. Relative to turnover however, expenditure on goods, materials and services is highest in recycling activities. The lack of any discernable trend in capital expenditure in recycling suggests that such investment may be linked to factors such as acquisition or critical mass of recycling tonnages.

2.4 GDP at Basic Prices

GDP at basic prices reached £190 million in 2004, up from £64.5 million in 1998. GDP at basic prices is lowest in non scrap recycling and highest in disposal

The key indicator of industry performance and health is gross value added (GDP at basic prices) which is the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used up in production, not including taxation or subsidies. This is an important indicator as it shows a productive contribution to the economy from each sector. GVA, along with turnover statistics can also be used to estimate the increased efficiency, or increased productivity in a sector,

perhaps as a result of new technology investment.

Combined gross value added for the sector reached almost £190 million in 2004, up from almost £69 million in 1998.

Gross value added per employee in 2004 is lowest in non scrap recycling at £35,405, with scrap recycling accruing £51,115 and highest in disposal at £55,340.

Year	Scrap	Non Scrap	Disposal
1998	£33,492	£27,903	£60,522
1999	£30,652	£23,826	No Data
2000	£35,475	£31,789	No Data
2001	£33,670	£27,093	£40,481
2002	£36,389	£37,465	£55,689
2003	£42,288	£24,749	£42,248
2004	£51,115	£35,405	£55,340

Table1: GDP at Basic Prices (Gross Value Add per Employee) by SIC Code Group

Gross value added per employee in Scotland's manufacturing sector in 2004 was £52,962 and in the services sector was £28,821. Recycling is located in the manufacturing SIC, whilst disposal is located in the service SIC sector.

This shows that scrap recycling is comparative with other manufacturing sectors in it's SIC code group but non scrap recycling is significantly below national manufacturing GVA average. Trends in GVA year on year growth however, are positive for non scrap recycling, hence one could argue that productivity is increasing in this area.

If disposal is indeed located in the services sector then gross value added is almost twice the national average.

Despite some significant fluctuations the overall linear trends in increases in gross value added year on year show a progressive upward trend in disposal and also in non scrap recycling although there is an overall downward trend in year on year GVA increases in the scrap recycling sector.

If we use GVA as an indicator of productivity then disposal is most productive waste management SIC group, whilst non scrap recycling is least productive. This hides true facts of disposal group codes as activities may now include recycling, collection, landfill gas revenue and other higher value adding activity.

3 Total Jobs Created by Solid Waste Management in Scotland

3.1 Public Sector Employment

Public sector employment in waste management has been increasing, particularly in manual posts. 1,446 new jobs have been created in the last five years with the majority of these being new appointments rather than redeployment from other activities.

Audit Scotland Survey (2007) indicated that in 2005/2006 there were a total of 2,827 operational jobs in LA waste management.

Analysis of the Remade financial models coupled with a survey of 30 Local Authorities indicates that 1,446 new jobs have been created in LA waste management in the past 5 years, 3% were senior posts, 16 % technical posts and 81% manual posts; indicating low skilled labour as the primary requirement.

There has also been a certain amount of job shift or replacement from traditional waste management in normal collection and landfill management to jobs in Material Reclamation Facilities (MRF) or reprocessing.

Segregated waste collections require more labour due to increased number of collections, corresponding increase in the number of vehicles and finally the sorting process (kerbside or MRF). The majority of Local Authorities operate with three crew per collection vehicle.

3 Local Authorities in Scotland operate their own MRFs. Labour required for each of these facilities varies according to the size and set-up of the MRF and whether or not it is working to capacity.

Local Authority	Capacity (Tonnes)	Employees
East Ayrshire	25,000	22
Glasgow	25,000	17
Inverclyde	9,000	22

Table 2 Local Authority MRF Capacity and Employees

3.2 Private Sector Employment

Private sector employment has been increasing but mainly in collection and disposal. There was an increase of 2,100 jobs from 1998 - 2004

Employment is often seen as a central indicator of production and economic contribution and increases in employment are often an indicator of sectoral growth.

The Annual Business Inquiry suggests that in 2004 there were approximately 226 employers within the three SIC code groups.

There has been a significant increase in the overall number of jobs in the solid waste management sector from 1600 people employed in 1998 to 3700 in 2004.

Collection and disposal is the largest employer with approximately 2,600 employees in 2004, followed by non scrap recycling with 600 and 500 in scrap recycling.

Employment in recycling activities has remained consistent over the review period whilst employment in disposal activities has grown by 2,000.

Despite an increase in the numbers of business units the average number of employees in recycling businesses has stayed relatively stable.

On the whole wages and salaries have increased over the review period, but not as extensively in non scrap recycling, as a sector gross wages and salaries have grown from £25.4 million in 1998 to over £79 million in 2004.

Wages and salaries per employee are also highest in the disposal SIC group; although as a percentage of turnovers, wages and salaries are higher in non scrap recycling. Increases in wages and salaries across the sector have not been reflected in the non scrap recycling SIC group.

3.3 Community Sector

Employment in the community sector has trebled over the last few years with 740 additional jobs from 2003 - 2006

A recent Mapping Report by the Community Recycling Network Scotland (CRNS) indicated that in 2006 there were 199 community organisations in Scotland involved in collection/recycling/refurbishment activities. Some community based groups carry out specific recycling, re-use, composting or waste prevention services on behalf of, or in partnership with local authorities.

Full-time employment in the community sector has trebled over the review period (2003-2006) from approximately 360 to 1,100. The sector provides 970 Training Placements (SVQ and City and Guilds Standards) and over 3,200 Voluntary Positions.

The community sector is continuing to strive towards greater operational efficiency and in addition to staff has also investing in assets such as vehicles and equipment. The Community Sector plays a significant role in terms of employment and training within the waste industry. As recycling targets increase, there will be a corresponding increase in the number of competent individuals required in the waste industry. The sector provides trainees with skills required in this particular field - improving confidence, competency and morale. This can also lead to improved employability.

3.4 Consultancy and Chartered Institutions

An evaluation of the Ends Consultants survey and data from the Institution of Civil Engineers (ICE) and the Chartered institution of Waste Management (CIWM) has demonstrated that waste management remains a growing industry and is continuing to attract highly skilled professionals. Due to the differences between the infrastructure developments in Scotland and England and the overlap between the data sources, it is difficult to identify exact numbers employed in this area in Scotland however the figures suggest 200 new civil engineering job and 250 new CIWM members. It is clear however that the consultant sector is growing and has probably seen growth of between 70% and 100% over the previous seven year period. A best guestimate is that around 250 new consultancy jobs have been created.

3.5 Programmes funded by the Scottish Government

The previous Strategic Waste Fund provided funding to various organisations to support the delivery of the NWP to increase awareness, provide support and to evaluate treatment options. The following organisations provided this assistance:

- Community Recycling Network Scotland (CRNS)
- Envirowise
- Remade Scotland
- Scottish Waste Awareness Group (SWAG)
- Waste & Resources Action Programme (WRAP)
- SEPA

The jobs generated by these organisations is analysed in Appendix 1 and is estimated to be around 100 in total.

4 Analysis of Recycling Services available to Scottish Councils

This section assess the scope and extent of existing recycling services including reprocessors, material outlet and treatment facilities available to Scottish Councils and focuses on:-

- Segmentation of services
- Geographical segmentation of the sector
- Recent developments

Data was obtained from the Scottish Waste Aware Group regarding material recycling services listed in SWAG's Business Recycling Directory. The data was grouped to display the number of local services available in each Local Authority area for each material type.

Information was also provided regarding how many services are available nationally for each material type – these services are provided by companies that cover the whole of Scotland and are not included in the information regarding the local services. The total number of services available for each material type in a Local Authority area was therefore calculated by adding the number of services available from local companies to the number of services available from national companies.

The methodology of estimating companies, services and geographical coverage is detailed in Appendix 1.

4.1 Availability of Material Recycling Services

The following graph examines the average number of local and national material recycling services available per local authority in Scotland.

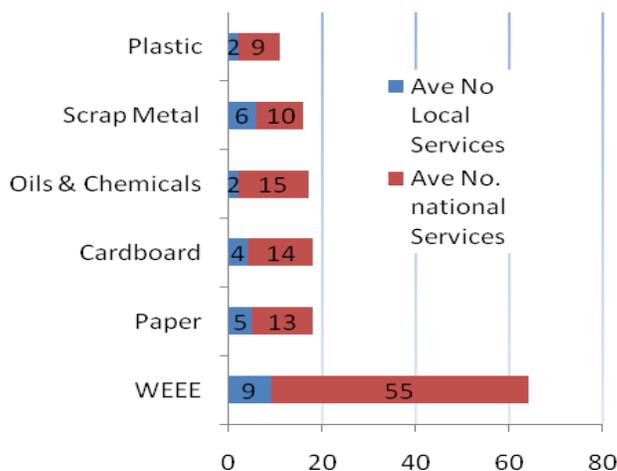


Figure 2. Average No of material recycling Services per LA

- For all materials there are more there are more national companies offering services than local ones.
- This is especially the case for recycling IT, Electrical Equipment & Fluorescent Tubes where the overwhelming majority of services are provided by national organisations (primarily WEEE related).
- Oils & Chemicals, there are a very limited number of local companies offering services
- Plastic food containers and packaging services are few and far between
- End of life vehicle services have on average a large number of local services but no national services.
- Printer cartridges and household batteries have many national services but no local services. This is similar for tyres, asbestos and mobile phones.
- Metals appear to be served by more local services than other material types.
- This applies also to construction wastes i.e. there are a higher percentage of local services than for, say, electrical equipment.

The high commodity and high value recycle streams appear to be the most developed in terms of number of services. However some recycling/diversion activities appear to be underdeveloped in terms of numbers of service providers, despite having significant legislation requiring their treatment such as batteries and oil where provision of such services may be deemed by providers to be a high risk business and may also be limited by current relatively small available tonnages.

Material	Affected by Legislation / Directive	Comment
Engine Oil	Hazardous Waste	At least one national service.
Car Batteries	Hazardous Waste	At least one national service.
Nickel Batteries	EU Battery Directive	At least one national service.
Animal By-Products	Animal By-Products Regulations	Various Services
Alkaline Batteries	EU Battery Directive	Presumably served by the nine national household battery services
Butchers Waste	Animal By-Products Regulations	Various services
Fish Waste	Animal By-Products Regulations	Various service
Catering Waste	Animal By-Products Regulations	Various services

Table 3 Materials affected by legislation / Directives

AS ABPR premises are not defined on the SWAG database, data on approved Animal By-Products premises from the Scottish Government website has been used to supplement this information. For butchers, fish, catering wastes and other materials affected by the Animal By-Products Regulations there are in 2007, 81 ABPR approved facilities throughout the country. These facilities capable of taking category 1, 2, or 3 material, range from collection, storage, intermediate technical plants, renders, biogas & composters and incineration - as detailed on the Scottish Government website <http://www.scotland.gov.uk/Topics/Agriculture/animal-welfare/policies/PolicyInfo/AnimalByProducts/Premises/Q/Zoom/145#a2>

4.2 Geographical Segmentation of Services

The availability of recycling services varies from area to areas with some local authority areas appearing to have access to more recycling services at both a regional and a national level. By calculating the mean number of services available per Local Authority in each Area Waste Group (and rounding to the nearest whole number) it has been possible to rank Area Waste Groups in terms of total material services.

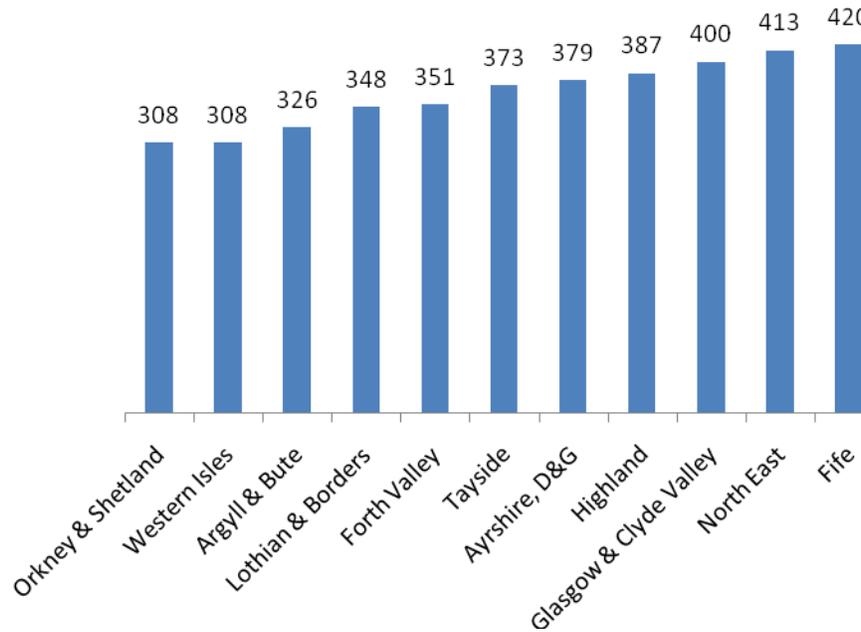


Fig 3: Average No. of Services per Area Waste Group

Recycling services are not equitably distributed from Area Waste Group to Area Waste Group –some services are more developed in some regions, perhaps due to historical Local Authority service provision, priority industries and utilisation of recycle by secondary industries in the locale.

Fife is the AWG best served with material services on average. Although Aberdeenshire and Aberdeen City are well served, poor availability of services in Moray has reduced service provision overall in the North East. Glasgow and Clyde Valley AWG averages are dragged down by low numbers of material services in LA areas such as East Dunbartonshire and South Lanarkshire.

The Local Authorities most deprived of material services rely most on national services and in general the areas most deprived of material services are at the extremities or contain island terrain, and for the areas not deemed remote the Tayside, Forth Valley and Lothian & Borders areas have relatively poor material services.

On a Local Authority basis Aberdeenshire and Glasgow have the highest number of recycling services. However, when this is mapped into Area Waste Groups, Fife has the highest number of recycling services. The data suggests that in terms of provision of recycling services the Forth Valley and Lothians may be underdeveloped. A more detailed breakdown of service provision per AWG is included in Appendix 2

4.3 Comparison of Major Cities and Service Provision

A Comparative assessment was undertaken of the range and number of services available in three major cities of Aberdeen City/Aberdeenshire, Glasgow and Edinburgh. Aberdeenshire is the Local Authority served by most material services followed closely by Glasgow. Aberdeen City is also served well.

- More paper services in Aberdeen than in Glasgow and double that of Edinburgh. (**NB** Possible query of Aberdeen data)
- Cardboard has most services in Aberdeen (attached to paper services), then Glasgow, then Edinburgh.
- Paper and cardboard the areas where Aberdeen beats Glasgow for number of services – a “significantly” higher number of confidential paper services in Aberdeen.
- Scrap metal services are abundant in Glasgow.
- Building /construction type waste has most services in Glasgow thanks to the number of scrap metal services. Otherwise, very similar to Aberdeenshire. Edinburgh has far fewer services for materials of this type.
- Dry recyclate has most services attached in Glasgow (due mainly to the number of can/metal services).
- No textile recycling services in Edinburgh whereas a couple in Aberdeen and four in Glasgow.
- IT and Plastic bottles the only predominant key materials where Edinburgh has more services than Aberdeen. (Glasgow has most IT services.)

<i>Local Authority</i>	<i>No. of local material services</i>	<i>No of material services (including national services)</i>	<i>Rank</i>
Aberdeenshire	173	464	1
Glasgow City	172	463	2
Aberdeen City	155	446	3
Fife	129	420	4
Renfrewshire	126	417	5
Inverclyde	110	401	6
Perth & Kinross	109	400	7
West	107	398	8
Dunbartonshire			
East Ayrshire	100	391	9
East Renfrewshire	98	389	10

Table 4 Comparison of Services available to LAs

- Aberdeen City and Shire have some of the only ABPR related services and has clearly more cooking oil services than Edinburgh or Glasgow.
- Oils and chemicals are most served in Aberdeen with Glasgow just behind. Edinburgh much further behind.
- Is Edinburgh more likely to rely on national services (capital city etc)?
- There is a large number of aluminium cans services in Aberdeenshire.
- There appear to be services that operate in Aberdeen that do not operate in Aberdeenshire and vice versa. E.g. Paper, cardboard and aluminium cans are Aberdeen and Aberdeenshire's most prevalent services. Noticeably more paper and card services in the City compared to Aberdeenshire and vice versa for the cans.

4.4 Conclusions on Current Recycling Service Provision in Scotland

Most material services are available in Aberdeenshire and the North East enjoys a greater number and more diverse range of material services than many central belt areas.

1. The Forth Valley and the Lothians don't have access to many material services compared to other areas.
2. The west, the south-west and the south of Scotland has no access to services for materials affected by ABPR legislation. This may be due to the more farming/livestock nature of the north and north east.
3. IT equipment has the most material services available per Local Authority but these services are provided largely by national companies.

In terms of local services paper and scrap metal services appear to be the most abundant and end of life vehicle services rank in the top five available services in many LAs.

There appear to be disparities in numbers of material services available to neighbouring Local Authorities e.g. Glasgow ranks 2nd in terms of number of local material services available with 172 services whereas East Dunbartonshire is ranked 22nd with only 63 services. Similarly Aberdeenshire and Aberdeen rank 1st and 3rd respectively with 173 and 155 services whereas Moray is ranked 25th with only 38 local services.

When including national services there are not huge differences between Local Authorities in terms of total number of materials that can be serviced.

- Edinburgh scores consistently lower than the other major cities in terms of number and diversity of material services.
- The Lothians have relatively few material services.
- For the main materials the North East, Glasgow, and Fife score best for numbers of services attached.
- The region with East Dunbartonshire, Falkirk, Stirling and Clackmannanshire has relatively few material services.

5 Market Opportunities

5.1 Dry Recycling Facilities

There is potential for further capital investment in dry recycling facilities as targets increase as well as their operations contributing to the wider economic benefit potentially resulting in the creation of further new jobs.

Facility Requirement

There were substantial changes in the number of planned MRF developments from original Area Waste Plans to the more recent Strategic Outline Cases . Changes were as a result of more and better data on collection systems, and have also arisen as a result of revisions to collection systems, necessitating differing types of facilities.

There are 6 MRF developments proposed, all for commingled dry recycle with a combined capacity in excess of 170 ktpa. Proposed developments were in Glasgow & Clyde Valley, Ayrshire, Fife, Tayside, Highlands and the North East.

Investment Requirement

The modelled capital costs for a new 25,000 tonne per annum (single shift) MRF is approximately £3 million while modelled operational costs can run to approximately £600k per annum. Potential barrier to entry for new companies could therefore be start up costs.

To this end there could be the maximum potential for up to £18m of capital expenditure, and with circa 60% of operational expenditure on goods materials and services, an economic benefit to suppliers of around £360,000 per annum. This of course, depends on the process by which these facilities are procured and delivered.

It should be noted however that in the last five years, private MRF developments have not prospered and have often been subject to acquisition. This has generally been reported as being due to a lack of long term contracted tonnage at good margins. The appetite for further new developments will therefore be subject to existing regional provision and nature of the contract terms offered.

Crucially, the areas where recycling services are perceived to be underdeveloped (Lothian and Borders and Forth Valley) do not have any dry recycling facility developments planned. This could affect ability to create economies of scale to facilitate business success

Employment Potential

The Remade MRF Model estimates the number of employees required for a 25,000 tonne a year commingled MRF to be 12 operatives and 2 senior staff.

There is therefore the potential for 84 new posts to be created in the development of these facilities depending on the procurement and delivery process.

5.2 Biological Treatment Facilities

A number of biological treatment systems will be required, although the results of food waste trials will impact on the type of opportunities presented to the market. All projects will be capital intensive, providing a potential barrier to new market entrants. The expected capital costs of in vessel composting projects alone are likely to exceed £33 million

Facility Requirement

To date organic treatment opportunities have been limited to the management of source segregated green and garden waste. As such, much of this business was absorbed by organisations that could maximise the viability of composting through some element of integration with their existing business. The next stage of organic waste treatment is likely to be larger and more capital intensive and will carry stricter regulatory controls.

Opportunities in organic treatment are likely to be linked to Local Authority service provision, as commercial collection of organic wastes is presently underdeveloped.

Developments required by Local Authorities will include MBT, In Vessel Composting and Anaerobic Digestion. Initial assessments predict a need for 14 In Vessel Composting

Facilities and 2 MBT facilities spread across 6 Area Waste Groups.

Investment and Risk

Interested parties will inevitably require access to large amounts of capital and establishing costing models for affordability of such systems will be critical to successful procurement. The expected capital costs of in vessel composting projects alone are likely to exceed £33 million. Costs and benefits are highly linked to technology and output specification and therefore opportunities carry more risk.

Risk and specifically, risks associated with the end use of the material will be an important factor in affordability appraisals.

To this end we would suggest opportunities will be explored by companies with some useful purpose for final material. End use aspects could mean that opportunities are more attractive to parties with a requirement for output products, or with a significant quantity of existing feedstock.

Nature of opportunities look set to change with introduction food waste collections, Anaerobic Digestion as a technology option may become more attractive, despite higher capital costs. The outcome of the food waste trials will have an effect on projected plans, and as such, we would expect more proposals for Anaerobic Digestion to be forthcoming.

5.3 Reprocessing Opportunities

Reprocessing opportunities appear limited due to developments in the UK and the strength of the export market. Scotland is already well serviced for glass reprocessing, but an opportunity exists to add value to recovered plastics

Paper Products

The Remade Scotland Market Development event (held 6th June 07) established there was stakeholder desire for low grade paper mill – however, Scottish Local Authorities need to secure best prices for paper in order to ensure continuing viability of collections.

Presently there is no paper reprocessing in Scotland, mill closures have continued since late 90's amid operational difficulties surrounding affordability include energy prices, ability to bid for recovered paper resources at present rates, and acquiring a critical mass of tonnage.

Over 100,000 tonnes of recovered paper is available for reprocessing from Scottish Local Authorities but the majority of paper is processed in England and Wales – with a significant quantity exported to Asia markets

Potential sites for additional UK mill capacity have been explored, including feasibility assessments for Ireland, as well as potential sites in England – but none in Scotland

New developments such as ECCO Newsprint in Teesside will be most likely serve the Scottish Market. This project was developed over two years with Tees Valley Regeneration and includes lease of development land. Any opportunity that would have existed in Scotland for new large scale recovered newsprint mill activities has most likely been usurped by ECCO Newsprint development on Teesside.

Nevertheless Scotland will now have direct access to three newsprint mills in Northern England – all of whom are looking to acquire a critical mass of recovered paper to ensure business success.

Glass Products

Recovered glass collection is still very much a Local Authority function. There are limited commercial collection services available for segregated commercial glass although some collection at present is via mixed collections, which diminishes the options available for sale and reprocessing.

Scotland is well serviced for glass processing. Container glass reprocessing in Scotland is dominated by Owens Illinois in Alloa, with commercial collection and merchandising activity undertaken predominantly by Viridor Glass in Dalkeith.

Allglass, part of William Tracey, are capable of processing both clear flat glass and also clear container glass for non container product lines

Some glass is used in construction processes, but some niche opportunities in areas such as filtration media have been problematic to commercialise fully due to high processing cost to reach standard required.

Clear and amber cullet are still in high demand and therefore opportunities are limited to develop new or niche reprocessing activities as barriers to entry would include the strong market prices paid for recovered cullet.

Green cullet presents some opportunities as Scotland is in surplus due to imbalances in container production and consumption.

Plastics Products

Collection of plastics is also primarily a Local Authority function although there is commercial plastics recovery as part of WEEE recycling, ELV recycling and some plastic film and construction plastics recovery.

Reprocessing of plastics is primarily undertaken in areas of production therefore England and overseas markets are dominant areas of reprocessing for Scottish waste

plastics, although some plastics reprocessing exists in niche materials related to WEEE and ELV wastes.

There is limited supply of plastics in Scotland, and almost no supply of segregated polymers – thus any reprocessing activity would need to include some polymer sorting capacity.

Local Authorities are required to attain the best prices for recyclates and presently the UK is bidding for recovered plastics at export rates – hindering the economic viability of existing reprocessing infrastructure.

There are substantial differentials in labour costs between UK manufacturing that could utilise recovered plastics and manufacturing overseas.

Large users of polymer such as HDPE are now considering internal reprocessing facilities and stricter management of supply chain wastes as a means of demonstrating environmental sustainability and making commercial gains.

Opportunities in Scotland may therefore be limited to operations that can add value to the recovered materials prior to sale to manufacturing centres.

This could include, segregation, sorting, cleaning and extrusion to pellet to particular grades.

Investment required for a 20,000 tonne per annum plant to sort polymers and create extruded pellet or flake could be in the region of £2million.

5.4 Producer Responsibility Opportunities

Opportunities arising from producer responsibility appear limited as Scotland is well serviced in key areas. Processing of plastics to feedstock grade appears to be the only key opportunity

End of Life Vehicles

Provision for End of Life Vehicles in Scotland is vast, with over 50 Authorised Treatment Facilities providing services.

Most companies are localised and are traditional car breakers, scrap merchants or dismantlers and salvage operators that have utilised the End of Life Vehicles legislation to add another service onto an existing business.

The present ELV market is evidence that existing businesses can benefit from introduction of legislation, if the requirements of legislation have a “fit” with existing business processes

Some niche opportunities in ELV may be in potential reprocessing of ABS scrap with

specialist companies such as Hardie Polymers in Glasgow already supply reprocessed ABS and Polycarbonate.

Waste Electronics

Provision of services within WEEE has a sectoral split between the electrical appliance reprocessing market and the IT and Telecoms reprocessing market. Both markets are well served with over 30 companies offering services in each market.

The vast majority of reprocessing in the IT and Telecoms market is derived from commercial and private sector business.

The large electrical appliance market is predominantly municipal waste, and as such is subject to contracting with the Local Authority.

Materials are usually subject to well established routes to market, specifically in the case of precious metals and harvested parts

Casings and plastics such as polycarbonate may offer some niche opportunities for adding value through preparation for manufacturing use.

Packaging

Most packaging is recovered in the municipal waste strategies adopted by Local Authorities. There are however, a number of packaging materials that are not collected as part of the municipal fraction and therefore may require some provision these include expanded polystyrene, plastic wrappings, and pallets.

EPS is well serviced in Scotland with 6 companies offering collection services for clean, uncompacted EPS and according to the Waste Aware Business Directory there are over twenty plastic wrapping and plastic film recycling services in Scotland.

Plastic wrapping and plastic film service provision has a sectoral split between services to agricultural plastics and services to industrial plastics.

The majority of service providers are collection agents only, Solway Recycling is the largest integrated collection to manufacture service providers in agriculture/horticulture market

Recovery of pallets is also well serviced in Scotland with 16 companies offering services. At least three of these companies offering services utilise pallets for the production of products such as decorative wood chip and animal bedding products.

6 Barriers to Economic Growth

Economic growth is defined here as an increase in any of the three indicators we have examined in section 2 – enterprise numbers and employment, investment/expenditure and gross value added/productivity.

6.1 Managing Expectations

Enhanced recycling infrastructure will mean more capital investment, but not necessarily increased direct employment

Industry is effectively divided into three sectors, primary (extraction, agriculture and fishing), secondary (manufacturing and production) and tertiary (services). Recycling, in terms of both preparation of materials for manufacturing and manufacturing itself is located in the secondary sector while collection and disposal have historically been in the third sector as these are essential services.

The business model required in the manufacturing and production sector is much different to that experienced in the services sector. The manufacturing and production sector relies on lean management and lean production techniques to maximise revenue and value add, notionally through reducing workforce numbers and employing mechanical automation into physical processes to improve margins.

Where costs rise in the secondary sector, particularly in terms of energy and other essential elements, the impact is felt on profit margins and value add, as most manufacturing and production competes in a national or global market, this is also true of recycle preparation and sale, particularly in paper, card and plastics. This is not the case however in essential services, particularly services that are as regionalised as waste, where increases in essential costs are passed onto the consumer. This is especially acute in areas of low or ineffective competition.

In addition, the unitary value of landfill assets continue to increase on an annual basis, as landfill gate fees are often increased in line with landfill tax and regulatory change, this can have effects on employment numbers, and also on the contribution to the Scottish economy that each stream of the solid waste management sector makes.

Recycling, collection and disposal are inherently different business models and as such, will have differing trends in employment, investment and productivity.

Recycling is similar to all manufacturing and production businesses and trends in employment will be linked to investment in automation and plant. Productivity and margins are related to global markets for commodities and local costs, and where value for money is presently based against landfill costs.

Collection and disposal services are more integrally linked to the costs of landfill and as these are local and regional services can pass additional costs onto the consumer, thus

maintaining profit margins and employment levels. Our ongoing strategic expectations on how each business contributes to the Scottish economy should therefore be modified for the business type.

6.2 Factors in Economic Growth

Economies of scale and competition are vital.

Developed economies such as Scotland rely more on services than manufacturing to contribute to GDP and economic growth and in order to maintain a high level of productivity and GDP contribution, manufacturing industries need to achieve economies of scale.

All industries, whether they be service industries or manufacturing industries require good levels of competition in order to ensure maximum economic benefit and innovation.

6.3 Trends in the Scottish Waste Management Sector

The process of consolidation that has been experienced to date will likely continue, especially if there is a lack of substantial opportunities for the larger operators to capitalise funds in long term projects.

The Scottish Waste Management and Recycling market has fewer players than England and Wales. The structure however, is essentially the same with a few big players, a few large independents and a more fragmented third tier. Of the seven leading waste management companies in the UK, Biffa, Shanks and Viridor have a pronounced presence in the central belt – with SITA more visible in the North East. SITA, Viridor and Shanks each have some Local Authority related business

SITA signed a 25 year contract with Aberdeen City Council in 2000 – the development of MBT and EFW facilities at Altens Industrial Estate was given partial approval in 2004 – the EFW element of the proposal not receiving planning permission. SITA also manage transfer stations, civic amenity and landfill provision for Aberdeen City waste.

Viridor have a seven year contract with South Lanarkshire Council for kerbside recyclables and other waste recycling as well as landfill services. A new £2 million recycling facility is planned for Bargeddie. In addition Viridor provide landfill services for City of Edinburgh Council on a long term contract as well as landfill services to East Lothian Council.

Shanks have seen the most significant activity in marketplace in last few years through both sale of landfill assets and acquisitions of collection and recycling businesses in the central belt. Shanks have purchased Eden Waste Recycling, Cleanaway Scotland and John Hannay & Sons in the last 48 months. In addition the landfill business (other than Shanks Avondale) was sold off to WRG, which subsequently came into the ownership of

the Spanish Group FCC

The company currently have two long term contracts with Argyll and Bute Council and Dumfries and Galloway Council. The Argyll and Bute treatment facilities include three MBT facilities and landfill restoration. Dumfries and Galloway are served by an Eco Deco BMT plant

Viridor meanwhile has followed the acquisition of Enviroscot a number of years ago with the acquisition of MacGlass of Dalkeith

Independent Waste Management

Scotland has a few thriving independent companies, of these the two largest are Oran Waste Services (previously Snowie) and William Tracey Limited. Both companies have new terms of ownership and subsequently have a mandate to invest and grow. Oran acquired Snowie in 2005, and the DCC Group acquired a 50% stake in William Tracey in 2006. Central to the ability of either of these companies to invest and grow will be the opportunities that are presented in the Local Authority marketplace.

William Tracey has already made substantial investment in the Allglass plant and woodchip production plant. In addition the company has also invested in landfill and composting activities.

Oran has invested in the dry household recycling plant at Grangemouth, and has expanded their plastics recycling activities with the acquisition of GR Services. Oran are also looking to open an animal rendering plant in Kintore and have acquired the site of the old Kilbagie Paper Mill

Although there is another tier of waste management companies and specialist service companies that will bid for Local Authority contracts, it seems likely that it is the two central belt majors, Shanks and Viridor, and the two largest independents, William Tracey and Snowie that will have the greatest ability to bid for services and make steady and progressive investments

As we have seen over the last few years in Scotland, investments by the majors have primarily been made through acquisitions and a consolidation of the market – this is both as a result of short term and low value Local Authority business that does not allow for capitalisation of funds – with most contracts operating on low margins – thus not attracting significant interest. This has allowed the more fragmented “third tier” of waste management companies and specialist service providers to prosper through managing smaller, short term, and highly regionalised contracts. However, the extent to which significant investment can be made will be limited due to the low margins of that business

To this extent, it is our opinion that the continuing high costs of waste management and

recycling operations will eventually squeeze out a number of the smaller operators, as they find it difficult to invest in a climate of short term, low margin business. As such, the process of consolidation that has been experienced to date will likely continue, especially if there is a lack of substantial opportunities for the larger operators to capitalise funds in long term projects – choosing acquisitions instead as a means of investment

6.4 Barriers to Growth in Enterprise Numbers and Employment

Enterprise and employee numbers may now be reaching saturation point, as the industry is now in a period of acquisition and consolidation.

The business climate in the solid waste management industry in Scotland over the last few years has been one of acquisition and consolidation – this inherently reduces overall enterprise numbers, although there will be an increase in the number of business units per enterprise. This trend of consolidation and acquisition is expected to continue. For instance as the recycling market has matured from 1998 – 2004 there has been a reduction in the average number of employees per business unit of over 40% despite an increase in the number of business units from 47 to 81.

Opportunities for new market entry are limited, both by access to opportunities and financial barriers to entry – this will limit new business numbers.

As the majority of municipal recycle collection services are located in the public sector it is clear that Local Authorities may experience an increase in employment numbers from additional collection schemes. Growth in the private sector of collection and disposal is limited by access to development of services presently operated by Local Authorities.

Although there is growth in investment into recycling businesses this is not always likely to result in an increase in employment as investment is often aimed at increasing automation and fixing costs and reducing operational expenses to increase margins.

There is evidence that enterprise numbers and employment within solid waste management and recycling businesses in Scotland has grown in the sector, but may now be reaching a saturation point for the tonnages being recovered. The industry in Scotland is characterised by consolidation and acquisition, and the current focus of the recycling industry is not on increasing employment but a move towards greater automation and fixing of cost.

6.5 Barriers to Growth in Capital Investment

Access to tonnage and economies of scale is presently the key driver for investment, hence activity in acquisition and consolidation.

The opportunities that have been identified show that the remaining opportunities in

the Local Authority marketplace will likely require considerable capital investment – although such investment will be dependant on whether these opportunities are presented to the market in a fashion that stimulates those companies that have the financial strength to invest.

There are three major waste management companies and two large independents operating in the Local Authority market in Scotland who are looking to invest and grow.

It is unknown if any of the third tier of independent waste management companies will have the financial strength to invest in opportunities if that require a large scale capital build – or significant investment in processing plant.

Capital investment per enterprise has been low in the non scrap recycling area relative to collections and disposal – and most of the major capital investment over the last few years has been acquisitions.

Capital investment in recycling is predominantly utilised as a means of increasing capacity for processing. To date the low margins experienced in the sector show that increasing capacity is not the major issue for investment – rather acquiring a critical mass of tonnage for a sufficient contract length has been the primary concern – another reason for strategic acquisitions.

It is therefore considered that, should these opportunities not be presented to the market in a fashion that will stimulate these key players, it is unlikely that any significant investment into additional infrastructure will be made.

Viridor's planned investment into Bargeddie is evidence of this – where the recycling collection service operated by the Council is not new and contracts for services have been let before – but contract length and a critical mass of tonnage have facilitated significant investment (over £2 million) into new dry recycling facilities.

There has been some investment over the last few years in infrastructure for the processing of organic wastes – most significantly with TEG Environmental at Binn Farm and Scottish Water at Deerdykes.

The long term success of these investments however, will be dependant on acquiring the long term treatment contracts and tonnages required to facilitate profitability.

6.6 Barriers to Growth in Productivity

Key sources of income for recycling operators have not risen sufficiently to allow for high levels of productivity. The nature and value of contracts has not allowed for security of investment in productivity enhancing plant.

Gross value added (GDP at basic prices) is often the best method of assessing productivity and the contribution made to an economy by an industrial sector.

Present data suggests that there is room for improvement in the GVA of the non scrap recycling sector. In order to increase the GVA of a sector, either the value of sales must be increased relative to costs, or costs are reduced relative to sales and turnover. In the non scrap recycling sector, and in particular in dry recycling, this would mean that the costs of operations would be reduced, or that the value of recyclate would increase, or both.

From 1998 – 2004 the average expenditure per business unit on goods materials and services has fluctuated, but a straight comparison between the start and end dates of the review period shows a drop of over 10%. This drop in expenditure on goods materials and services belies the fact that this still accounts for around 60% of turnover in 2004. Total labour costs on average have also fallen in 2004 by 20% on 1998 levels and wages have not risen to the same extent as those in collection and disposal or scrap.

To this extent it would appear that non scrap recycling companies are ensuring that GVA is maximised by controlling costs, and ensuring that labour costs are controlled

Nevertheless, this should be correlated to the fluctuations in average turnover per company, which in 2004 was around 16% less than 1998 levels. Data for recyclate prices from 1998 – 2001 are fairly unreliable, but since 2002, prices for most recyclates have not increased dramatically, with a 5 – 10% swing on most materials. To this end the value of materials has not increased significantly to allow any vast increases in turnover. Although data is scarce to allow a full analysis, it would appear that the other main source of revenue to any recycling facility, gate fees, have also not risen significantly since 1998.

Indeed the nature of small scale, short term contracts between 2000 and 2004, engendered competition for recyclate tonnage, and such competition has succeeded in driving down gate fees to levels below landfill. As such, the two key sources of income for recycling operators have not risen sufficiently to allow for high levels of productivity.

It is also unknown, but given our modelled costs unlikely, whether present gate fees cover the actual cost of processing recyclates, including transport and costs of sale – as such, sale of recyclates actually subsidises processing costs, reducing further any net benefit.

Key investment that could facilitate increases in productivity, such as investment in automated plant and a reduction in workforce numbers, has been problematic for many operators as the nature and value of contracts has not allowed for security of investment. Growth in productivity through higher GVA is therefore hindered by fairly static prices for recyclate, gate fees that may not cover processing costs, lack of security to invest in productivity enhancing plant.

7 Key Research Findings

7.1 Economies of Scale

Findings on both investment and relative gross value add in the recycling sector appear to present issues around economies of scale'

Data for expenditure shows that relative to turnover, the non scrap recycling sector spends less on goods materials and services and less in capital expenditure. At the same time gate fees and prices of recyclate have not risen sufficiently to grow profit and the gross value add of these operations is significantly (over 30%) lower than the average for a manufacturing sector business. In addition, the present investment criteria in Scotland's waste management sector appear to be one of acquisition and consolidation.

This data suggests that there are simply not enough opportunities to invest, and that any investment on present terms will result in low margins, thus hindering further investment. If revenues do not rise significantly, as has been the case, then businesses must find greater economies of scale in order to maximise margins – hence the present climate of acquisition and consolidation.

In order to create opportunities to invest, either more local authority related business must come to tender, or measures are taken to ensure that arisings of recycling tonnage from other sectors have a greater surety, thus de risking greater investment and maximising margins.

7.2 Creating Conditions for Investment

Investment in solid waste management and specifically in the recycling sector has been hindered by two key aspects, risk and access to market data.

In order to reduce investment risk, there is required a greater surety that services and treatment facilities will be required in both the short and long term – and that tonnage will be forthcoming from both the public and the private sector. Public sector investment in waste and recycling has been unprecedented since the introduction of municipal recycling targets. It is suggested here that without policy levers that give assurances on the necessity of services and infrastructure in the commercial and industrial waste streams, such investment in private sector waste management is unlikely to rise significantly.

Investments in the waste sector are also hindered by access to market data, increasing risk and lowering confidence. Market data on the municipal waste stream has increased dramatically since the introduction of both targets and segregation of materials, as different streams undergo compositional analysis and services and plant can be optimised to operate effectively. It is suggested that access to this key data in the commercial and industrial streams is vital to ensuring growth and investment.

7.3 Limit on Opportunities

Our analysis of present opportunities has shown that, at present, the majority of opportunities exist in provision of infrastructure to the public sector, specifically in materials recovery and biological treatment.

Opportunities in reprocessing infrastructure are limited, due to issues of economies of scale, value of exports and existing infrastructure in the UK. In addition, producer responsibility legislation, specifically WEEE and ELV has seen the development of value added services within existing businesses – and opportunities for new entrants are limited.

As a result, opportunities outwith the public sector are limited. If there is to be a further stimulation of local opportunities then measures must be taken to increase the quantity and diversity of tonnage arising across Scotland.

8 Assessment of Present Scottish Government Strategies

Stimulation of growth and investment in Scotland's solid waste management sector does require strategic interventions by Government

The vast majority of measures undertaken to date have been aimed at municipal waste, this has stimulated investment into Local Authority services and infrastructure

8.1 Strategic Waste Fund

The Strategic Waste Fund (SWF) assisted the development of recycling and composting in Scotland. The SWF operated until March 2008 whereupon the ring fence around the funds was removed, with the SWF being distributed through the main local government settlement.

The SWF was a specific grant scheme established by the Government for implementation of the National Waste Strategy in Scotland. This made provision for specific funds within the scheme to assist local authorities to implement their respective Area Waste Plans (AWPs).

The objective was to decrease the amount of municipal solid waste (MSW) sent to landfill by means of waste reduction, reuse, and recycling, composting or residual waste treatment.

Examples of facilities plant and equipment or services which may be constructed or purchased included, introduction of waste reduction initiatives, introduction or expansion of separate collection and treatment of municipal waste recyclate, provision of composting equipment, provision or upgrading of recycling and materials reclamation facilities, promotion of waste awareness and education activities.

The allocations to local authorities either as capital grants, revenue grants, and contributions towards unitary charges linked to public private partnership (PPP) procurements or a combination thereof.

A crucial aspect of the way in which the fund operated was that some evaluation was required to ascertain what the best use of public funds is; a best value assessment of plans and projects is often required when assessing how funds should be spent in order to meet targets.

To this end, it can often be the case that, following a best value evaluation process, the best use of such funds may be for the Local Authorities to undertake collection services (as is broadly the case in Scotland), build and operate infrastructure and sell recyclates themselves. As such, the Local Authority may be able to achieve national or EU targets without contracting to the private sector. This will however, ensure that the economic benefits of such expenditure will be felt by infrastructure and vehicle suppliers, rather than the operational solid waste management sector. To this end and where this is the

case, there will be little economic growth impact in the private solid waste management sector.

8.2 National Recycling/Composting Targets

The new SNP administration has established the principle that Scotland will pursue a 'zero waste' strategy which aims to maximise recycling, minimise waste and ensure that products are made to be reused, repaired or recycled back into nature or the marketplace. In reviewing the National Waste Plan the recycling and composting targets for Scotland have been redefined:-

- 40% recycling/composting of municipal waste by 2010.
- 50% recycling/composting of municipal waste by 2013
- 60% recycling/composting of municipal waste by 2020
- 70% recycling/composting of municipal waste by 2025.
- Stop growth in the amount of municipal waste by 2010.
- Reduce landfilling of Biodegradable Municipal Waste (BMW) to 5% by 2025.
- Provide segregated kerbside waste collections to over 90% of Scottish households by 2020

As these targets are based in municipal solid waste, this makes the responsibility for the capture and recycling of materials, either by recycling or composting incumbent on the Local Authorities

Recycling targets do produce more material for collection and processing, although, as the targets are not material specific, Authorities can decide how best to achieve them

To this end, recycling and composting targets force Authorities to focus on heavy, large volume materials such as green waste, paper and card and glass

Whilst paper and card both have a high value, we have no localised processing capacity in Scotland, and therefore rely on export and haulage to England and Wales for reprocessing – this entails additional costs which are often sourced from the revenue of the material itself and thus diminishes the value that can be added to the operation

Green waste collections can assist greatly in meeting national targets, but the key source of revenue for composters will always be gate fees as the value of end products are low – to this end, unless there is an increase in the gate fee revenue, growth in capital investments or increases in employment will only result from subsidies and grants

Glass is the only high value commodity for which Scotland has processing infrastructure and to that extent increased collections can facilitate better economies of scale for existing operations and contribute to growth

However, this is only the case where segregated cullet collections are in operation. Collections of mixed cullet will consign the material to lower value applications such as construction materials, and therefore not benefit from the maximum possible value add

In addition to these issues, one of the major complaints with regards to the implementation of ever higher recycling targets is that the drive to increase the quantity of materials recovered from the waste stream, hinders the quality of materials that can be recovered, reducing their value, and therefore the contribution to revenues. There is limited evidence to suggest that this is the case, although it is our belief that more research is required to assess the economic impact of quality issues in increasing recycling tonnages

Another key issue with recycling targets and the delivery of economic growth in solid waste management is that despite high targets, it is still problematic for a single local authority to collect sufficient material that would allow sufficient economies of scale to a processing plant. For example, no single local authority presently collects more than 25,000 tonnes of dry recyclates from the kerbside, and therefore the economies of scale required to create greater added value and growth in recycling activities, can only be achieved by ensuring contracts with a number of authorities or collecting tonnage through other means. To this end, to achieve economies of scale, either a process of partnership working with a number of authorities is achieved, or that similar materials are sourced by the operator from alternative commercial and industrial sources

8.3 Business Waste Framework

The National Waste Plan sets out the direction of Scotland's waste strategy up to 2020. The focus has been mainly on municipal waste and includes ambitious recycling and composting and waste prevention targets. A new National Waste Management Plan will be getting prepared during 2008.

The Business Waste Framework outlines the Scottish Government and Scottish Environment Protection Agency's approach to business waste. While the municipal waste elements of the National Waste Plan have been underpinned by significant financial support, this is not applicable for business waste as the 'polluter pays' principle is well established and requires that waste producers pay for the collection and disposal of the waste they produce. This means that public money should be directed to providing support and advice and intervening where there is a particular need to stimulate trends, or evidence of market failure.

The Business Waste Framework seeks to achieve a number of aims, which are listed below.

- To reduce the amount of business waste by at least 200,000 tonnes a year
- We will also work to increase recycling capacity for business waste
- Develop a data strategy which will include collating robust data on commercial and industrial waste.
- Saving businesses in Scotland over £7.5m a year through waste minimisation and diversion from landfill.
- Both the Government and SEPA have received a number of representations from small business about what they perceive as a lack of recycling facilities for business. Recycling facilities for Small and Medium Size Enterprises (SMEs) may be provided by local authorities, the community sector and the private sector.
- The Scottish Government and SEPA will work with all relevant bodies to improve recycling services for SMEs and the wider business community.
- The Scottish Government and SEPA to ensure advice on waste regulation are accessible to business and its application is fair and consistent.
- WRAP run capital grant competitions on recycling and composting infrastructure on behalf of the Government. Infrastructure funded by WRAP can include business waste as a feedstock.
- The Scottish Government and SEPA will continue to improve the planning system to encourage sustainable waste management.
- The Scottish Government will monitor the state of the markets for recycled materials and ensure business opportunities are highlighted

Despite these measures, it would appear that the single economic instrument that is being used to underpin these activities will be the Landfill Tax. To this end, all such landfill reduction activities relating to business waste are likely to be related more directly to weight rather than being material specific and therefore linking this activity to actual treatment facilities, plant and processes will be problematic. In addition the costs benefits of diverting materials out of the business waste stream will be determined by the cost of landfill, which by European standards is comparatively low.

A central issue here is that the average incremental increase in rates at landfill to a business waste producer is likely to be fairly slim, as the vast majority of commercial enterprises in Scotland are small (0 – 49 employees) and do not produce significant tonnages of waste as individual enterprises.

When faced with accepting these small incremental rises in disposal, or paying for the

provision of two, even three distinct waste services - it is problematic to assume that this will be to the financial benefit of all businesses – until such time as landfill reaches such a high rate that an equilibrium is found

It is also incorrect to suggest that all business waste is collected and charged at a known rate per tonne – this is clearly not the case in most instances for Eurobin customers, where rates are agreed on a per lift basis. To this end, business customers are unlikely to be aware of the actual cost of waste disposal

In addition, it is unlikely that lift rates on Eurobins will alter significantly if material is taken out for recycling, indeed it is likely that residual waste uplift rates will remain at the same or a higher rate (due to landfill tax increases) – and businesses will need to pay for the existing residual service PLUS a recycling service

It may therefore be in the interests of the business to maintain a single bin, single rate service

In our opinion the mechanics of the commercial and business waste market and the aims and objectives of the Business Waste Framework are not complicit with each other and this will limit economic growth in recycling in this sector

If there is no significant driver other than the landfill tax to force materials out of business waste then the levels of recycle supply are likely to fluctuate in tandem with how much businesses are willing to pay for a diverse range of waste services. This can hinder investment planning.

As landfill gate fees fluctuate from region to region, segregated collections of some materials will be more prevalent than in others as economics dictate the efficacy of having a recycle collection – in addition the nature of business activity ranges from region to region, and therefore the materials available for recycling will vary – this could make achieving economies of scale that are vital for business success problematic.

A new group, the Core Business Group, has been established to take forward the issues arising from the framework.

9 Proposed Strategies for Consideration

It is clear from our analysis that growth in the overall economic contribution of the solid waste management sector is dependant on increasing the levels of productivity, through greater gross value added, in the non scrap recycling sector – this can only be achieved through cutting costs, increasing turnover, or achieving better and more productive economies of scale

In addition, any further contribution in the collection and disposal services sector will be dependant on the opportunities to develop new and existing services – we have identified that only limited opportunities presently exist for service development. From analysing existing strategies in the context of the research presented thus far, we have identified three key strategies that we strongly suggest should be considered

9.1 Proposed Strategy 1: Material Landfill Bans

Achieving economies of scale in treatment and processing facilities is vital - material landfill bans on priority materials would assist in achieving this by increasing the quantity of tonnage requiring services and infrastructure

As identified in our European analysis (see annex) other European countries have introduced widespread landfill bans, often in relation to material which can be recycled, composted or incinerated.

The Scottish Ministers have already identified that it could be argued that there is already scope for landfill bans for some materials where there is already a strong recycling or composting market: such materials include clear container glass, scrap metals, green waste, paper/card, plastic bottles, untreated wood and textiles.

The Scottish Ministers intend to produce an annual report on the scope to introduce more landfill bans. The first such report will be produced by 31 December 2007.

Whilst it may be the Scottish Ministers' view that further landfill bans, using the powers under the Pollution Prevention and Control Act 1999 should be introduced for clear environmental or health reasons, it is our opinion that there are also clear economic and business reasons to introduce such measures.

It is clear that achieving economies of scale in treatment and processing facilities is vital to achieving better productivity from the non scrap recycling sector – material landfill bans on priority materials from both the public and private sector would assist in achieving this.

Material landfill bans would also stimulate more comprehensive recycling collections in commercial and business waste, without dependence on landfill tax being the main arbiter of viability and participation – this could engender more investment and/or employment into the collection sector.

9.2 Proposed Strategy 2: Mandatory Source Segregation for Businesses

Mandatory source segregation is already prevalent in other countries and waste streams. This would assist in development of new services and reduce some treatment costs. Data collected could be used for more realistic long term business planning and assist in reducing investment risk

Mandatory source segregation has already been enforced with regards to construction wastes in the Clean Neighbourhoods and Environment Act (England only at present) through Site Waste Management Plans.

Mandatory source segregation also already exists in Clinical Wastes management, as some materials carry a human health risk, whilst some are suitable for recycling.

Mandatory source segregation can assist in achieving higher rates of recycling as this allows specialist materials services to be offered rather than single mixed recycling services – this is imperative given the vastly diverse nature of business wastes – and would also allow specialist high value niche services to be offered.

It is assumed here that mandatory source segregation in tandem with material landfill bans would also ensure that data and statistics could be collated on recycle stream arisings, which could facilitate more informed and realistic long term investment planning.

9.3 Proposed Strategy 3: Greater Private Sector Involvement in Local Authority Services

To achieve real productivity and economies of scale, private sector investments and public sector provision must be complicit with each other

To date Scotland has not had the same level of contracting for waste collection and treatment services as England, Wales and elsewhere in the EU

It is clear that in some instances the best use of funds from the Strategic Waste Fund may be for the Local Authorities to undertake collection services, build and operate infrastructure and sell recyclates themselves – this will however, diminish the possibility of these funds contributing to the economic growth of the solid waste management sector.

If the private sector is excluded from waste collection it is likely that commercial wastes will be the main focus of attention, both for development of services and building of infrastructure – this may not always be complicit with Local Authority needs.

To achieve growth through service provision and provide savings and productivity through economies of scale – commercial provision and Local Authority provision must be complicit – most likely through materials prioritization.

To this end, it is our opinion, that more work is required to engender more partnership working between Local Authorities and the Private Sector.

10 Recommendations

From this research a number of further actions are recommended:

1. Further research is required on the environmental and financial impact of landfill bans on certain priority materials
2. Further research and analysis is required on the environmental, financial and business impact on mandatory source segregation of recyclates
3. A consultation process is required to assess the synergy of existing and future public and private sector business plans, in order to assess the most economically effective route to higher recycling and greater GDP contribution
4. An industry consultation is required to assess the full datasets required to negate investment risk and facilitate growth

11 Annex 1 - Programmes funded by the Scottish Government

The Strategic Waste Fund provides funding to various organisations to support the delivery of the NWS to increase awareness, provide support and to evaluate treatment options. The following organisations provide this assistance:

- Community Recycling Network Scotland (CRNS)
- Envirowise
- Remade Scotland
- Scottish Waste Awareness Group (SWAG)
- Waste & Resources Action Programme (WRAP)
- SEPA

The following graph provides an estimate of the overall FTE (full time equivalent) jobs between 2003 and 2007 for these organisations. However the total job numbers are around 100.

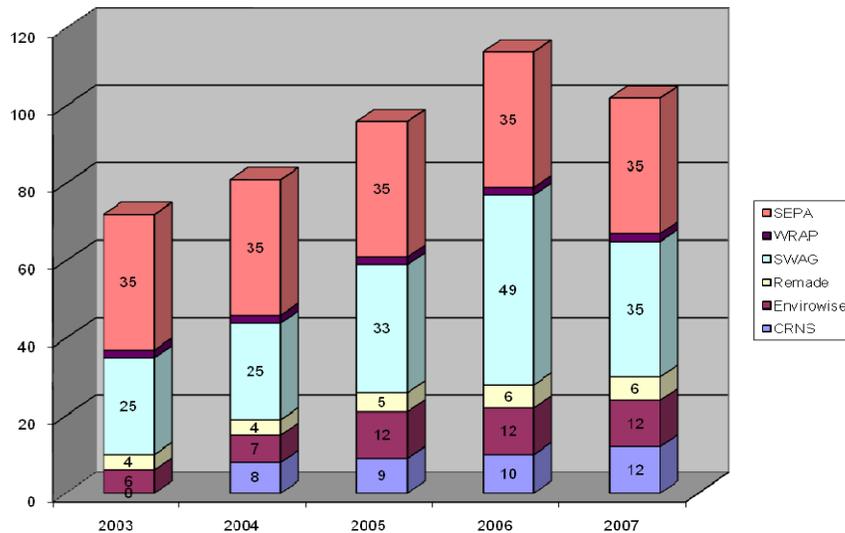


Figure 4 Jobs in Organisations supported by the Government

Community Recycling Network Scotland (CRNS)

CRNS aims to promote and support the community recycling sector in Scotland, creating social, environmental and economic benefit. Established in 2004, CRNS began with 8 employees, this figure increased to 12 in 2007; an increase of 50% in 3 years.

The community sector represents a significant employer in the waste management sector and is part of the process of increasing the skills of the workforce.

Envirowise

Envirowise, established in 1994 offers UK businesses free advice and support on ways to comply with regulation – minimising waste, reducing environmental impact –and, in turn, increasing profits. Envirowise employed 6 staff in Scotland in 2003. This figure increased to 12 employees in 2005 where it has remained stable.

Remade Scotland

Created in 1999, the programme has been providing support and sustainable solutions to both Local Authorities and the Waste Industry throughout Scotland.

In 2002/03 Remade Scotland utilised 6 individuals. The ongoing support to Local Authorities and Scottish Government is being delivered jointly with other organisations such as SWAG, CRNS and WRAP, as part of an integrated program able to provide a wealth of expertise on waste management issues.

Scottish Waste Aware Group (SWAG)

SWAG, established in 2000, was set up to change public attitudes and behaviours towards domestic waste. It provides the public with information relating to waste from its website. SWAG provided data on employee numbers for the past 3 years. In 2005, SWAG employed 33 staff and in 2006 the number jumped to 49. This increase in staff can relate to programmes in place at the time. For example, SWAG may need to carry out focus groups and door-to-door surveys which in turn may require extra staff.

Waste and Resource Action Programme (WRAP)

WRAP, established 2000/01, is a UK wide programme funded by a number of organisations. It provides information, support, specialist advice and funding for capital investment.

WRAP has had representation in Scotland via one full-time member of staff. There has been a number of temporary staff (based in England) employed for programmes such as the Real Nappy Programme and Home Composting Programme in Scotland.

Scottish Environment Protection Agency (SEPA)

SEPA is the regulatory body for environmental issues in Scotland. Many of the employees within SEPA may be required to carry out broad environmental tasks – not specifically waste. This is the reason why this report has focussed on the National Waste Strategy Unit (NWS) which was funded by the Scottish Government.

The National Waste Strategy Team accounted for approximately 35 people

Waste and Resources Strategy Unit is part of the National Waste Strategy Team and accounted for approximately 10 employees.

12 Annex 2: European Analysis

Background

In evaluating the potential opportunities and impact of solid waste management and recycling in Scotland a study of selected European nation's approaches to promoting investment, economic opportunity and job creation in the solid waste management sector was undertaken to provide a comparison with the Scottish picture.

Five countries were studied to ascertain the drivers for investment, presentation of economic opportunities and policies for job creation in solid waste management

A previous study on Employment Effects of Waste Management Policies was inconclusive as the gains and losses due to the impacts of regulation proved difficult to model.

Available data is ambiguous. Industry experts indicate that there is a general trend towards reduced but higher quality employment, in the course of productivity increases as processing technologies become more sophisticated.

Germany

Landfill

No landfill tax but instead impose Landfill bans for packaging or other recyclables

Landfill ban on untreated waste since 2005

Pay as you throw schemes in operation in almost a quarter of German households by volume and weight

Instruments

The majority of support for waste and recycling has been legislation driven

Extended Producer Responsibility Scheme (Green Dot Scheme) in place

Deposit refund scheme for beverage containers operated since 2003

Direct local (municipal), transparent waste taxation

Fiscal incentives such as differential charging can be imposed within regions

National Targets and Policies

Full recovery of waste by 2020

Business waste

Mandatory commercial waste source separation

MSW considered along with all waste produced in the municipality i.e. industrial, construction, commercial (Municipalities are tasked with the disposal of industrial and commercial wastes)

Grants and Subsidies

Germany does not have specific policies for creating employment in sustainable industries

However, it has a strong track record of supporting the development of markets for sustainable technologies

Ministry for the Environment provides aid for innovative projects that reduce environmental damage. Ministry for the Environment has also financially supported the installation of a metal recycling plant

Ministry for the Environment gives funding on a national and local level to enterprise that carry out tasks from closed loop infrastructure to placing environmentally friendly products in the marketplace

Community group recycling initiatives are often subsidised by Municipalities or the Federal State

Industry structure

Municipal ownership of all landfills and of most EfW, MBT and composting facilities has reduced risk and uncertainty in the development of infrastructure by providing guaranteed minimum tonnages on a long term contractual basis.

Shared risk between municipality and contractor

Creation of special purpose vehicles (SPVs) by the municipality and the contractor with provision for “prudential” style borrowing

Contracts are secured for additional waste streams to reduce gate fees for the municipality

Other Information

High and stable prices for paper and card act as an incentive for community group recycling initiatives

France

Landfill

Operates a landfill tax but is not as high as in some other EU countries e.g. in The Netherlands

Instruments

France uses municipal taxes and fees to fund municipal collection infrastructure

The tax (TEOM: local waste management tax paid by people subject to the tax on buildings) or fee (REOM: theoretically linked to the actual service and thus should take into account the amount of waste produced – in some municipalities this is weight related) paid for the collection and treatment of household waste cover 86 % of the costs paid by householders and different levels of local authorities. (Figures from ADEME for 2004)

Separate collection schemes / sustainable MSW management – reduction of VAT on waste management services: from 20.6% to 5.5%: incentive for Local Authorities to put in place separate collection schemes

Financial support to waste management can be given to municipalities or groupings by 3 types of sources: other local authorities (regional, departmental governments), the State (through the environment agency ADEME), for dry recyclable, private organisations in charge of supporting separate collection of waste for valorisation

Producer responsibility compliance scheme for packaging run by Adelphe and Eco-Emballages, Green Dot – set up by state, run by LAs

National Targets and Policies

50% MSW recovery – under review

New policies announced in 2005: include: Reducing the amount of waste produced including reducing the number of carrier bags distributed. Expanding recycling by controlling costs particularly for used tyres and waste from electrical and electronic equipment. Encouraging the espousal of waste management and sharing information more efficiently by ensuring the proper application of regulations governing incineration; continuing to curtail unauthorised dumping; and by promoting better structuring of waste management

Linkage between waste and energy policy – advantage in that the public associates waste with a positive social outcome i.e. heat and electricity

National Strategy for Sustainable Development 2003 pledged to improve procurement policies through favouring green procurement

All 99 departments have waste plans

Business Waste

Enterprises use private specialist companies for their waste management

MSW (which contains small business waste) is considered along with all waste produced in the municipality i.e. industrial, construction, commercial (Other waste streams are accepted in order to increase income)

Instruments appear to be focussed on MSW but a landfill ban on untreated waste would encompass business waste

C&D waste given priority

Grants and Subsidies

Aids and grants are available in the Ile-de-France area through the regional syndicate SYCTOM for a number of waste related enterprises from collection infrastructure to clean technologies e.g. the AD project at Seine St Denis

Central subsidy of €0.76/T to EfW

Industry Structure

Creation of special purpose vehicles (SPVs) by the municipality and the contractor with provision for “prudential” style borrowing

Contracts are secured for additional waste streams to reduce gate fees for the municipality

Waste infrastructure financed by municipal syndicates with fees determined on a regular basis. Mostly publicly owned but operated by the private sector.

Other Information

ADEME (French Environment and Energy Management Agency) states that employment in the solid waste sector in France doubled between 1992 and 2005

ADEME states that Investment is increasing because of regulations

Incineration of waste has taken place in Paris since the 19th Century

District heating often from EfW

The Netherlands

Landfill

High landfill tax

Landfill bans for packaging and recyclables

Landfill bans on combustible waste

Pay-as-you throw schemes for household waste (DIFTAR) operated by some municipalities – 21% of authorities take part with volume or volume/frequency the most common methods

Instruments

Direct local (municipal), transparent waste taxation

Producer responsibility agreements (negotiated), packaging covenants

Mandatory public participation

Mandatory corporate or industrial source separation

Deposit-refund programmes – bottles (beer, soft drinks, milk, dairy and PETP), batteries

Pre-paid levies on some goods e.g. electric and electronic appliances

Certification schemes for certain recyclates

Vehicle disposal levy

Knowledge transfer e.g. the inventory of waste prevention products within companies and grants to drive innovation and research

Stimulating programme for waste separation and prevention of household waste – knowledge, campaign

VAMIL (Voluntary Depreciation on Environmental Investments) as a financial incentive

Fiscal mechanisms have been used to ensure consistency with the waste hierarchy (e.g. higher taxes for methods lower down the waste hierarchy)

National Targets and Policies

86% of waste to go to useful purposes by 2016

The NWMP states that for trade in waste rights as a financial incentive there must be a

liberalised market with free access and withdrawal and there must be clear quantitative targets

Waste Management Council for national planning

Business Waste

Inventory of waste prevention projects within companies – reference document for those planners who want to start with waste prevention and are looking for specific examples of ways to get involved

The remit of strategic planning at national and provincial level extends to all waste streams

(Consideration of MSW along with all waste produced in the municipality i.e. industrial, construction, commercial)

Grants and Subsidies

Grants for research into waste prevention in SMEs

2001 government grants schemes for innovative collection techniques and for reuse and recycling

The latter scheme is aimed at supporting the development of markets for secondary plastics and is financed by the business community and government.

Incentives are also used as a 'prod', a positive stimulus in the form of a financial contribution to activities that result in structural improvements in the management of waste. This instrument will be used a great deal in the years to come (National Waste Management Plan).

Industry Structure

Historic municipal ownership of nearly all disposal and treatment capacity within the country

Inter-regional municipal projects are common - these generate the necessary economies of scale

Shared risk between municipality and contractor

Contracts are secured for additional waste streams to reduce gate fees for the municipality

Other Information

Some voices in the waste management industry believe that there is still a need to make the price of recyclates more attractive than those of virgin materials. There appear to be no specific mechanisms to achieve this in the National Waste Management Plan.

4th Environmental Policy Plan states there is a “shortage of policy instruments. Market mechanisms can hardly be used to tackle large environmental problems because environmental costs are not yet reflected in prices”

(50% less energy tax on energy generated through incineration plants)

Ireland

Landfill

Ireland has a landfill tax but it is not as high as in e.g. the Netherlands

Gate fees for landfilled waste are high

Pay-as-you-throw has been encouraged since 2005

The uncertainties of the pay-by-use picture (due to a lack of regulation) may be at least responsible for the slower evolution of in household waste recycling rates.

Instruments

Environment Fund created from Plastic Bag Levy – in turn funds Capital Grants Schemes for collection infrastructure

Legislation (PR) on packaging, end of life vehicles/tyres, WEEE, Batteries

Producer responsibility for packaging, construction & demolition and farm plastics

National Targets and Policies

National Development Plan (NDP) 2007-2013 – Environmental sustainability is one of four horizontal principles. Waste Management is one of the main environmental challenges highlighted for attention.

Previous NDP (2000-2006) had expected that many waste infrastructure projects would proceed through PPP but only a small number proceeded. Private funding was the principle model.

Markets Development Group formed by the Department of Environment, Heritage and Local Government in 2004 and tasked with promoting the development of markets for recycled materials

MDG made up of representatives from a cross-section of stakeholders including the Environmental Protection Agency, industry and enterprise representatives, and

governmental representatives

MDG drew up multi-annual programme with five year blueprint, launched during first quarter of 2007 - Market Development Programme for Waste Resources 2007-2011

Green procurement will form part of the strategy

Business Waste

Legislation requires any person who carries on activities of an agricultural, commercial or industrial nature to take all reasonable steps as are necessary to prevent or minimise the production of waste

Grants and Subsidies

State investment now appears to be starting for research and innovation in field due to new Markets Development Group

As a result of the MDG investment in recycling markets, including material specific projects, programme communications, and research and development

The MDG will also provide seed funding for specific projects, new recycling concepts, and will encourage innovation and partnership among the stakeholders

Expenditure (approx. €8 million over the period 2007 – 2011) will be spread across the various technical and market development activities, and will include incentives for R&D, feasibility studies, and demonstration trials

Local authority waste infrastructure projects are part-funded by the Environment Fund but there is no funding for private sector waste projects.

Industry Structure

Lack of infrastructure – very few reprocessing plants therefore heavily reliant on export markets for treatment of recyclable material

No national cohesion - decisions on the roll-out of infrastructure have been made mainly within county boundaries and not based on national criteria e.g. industry economies of scale, the development of critical mass and the existence of transport corridors

Unlike the private sector, local authorities do not require collection permits in order to collect waste

Local authorities are required to undergo a less onerous registration process for certain waste activities than the permitting process required of private sector operators for the

same activities

Concerns from waste management industry over potential conflict of interest with local authorities as service or infrastructure provider and as regulator of the sector. Such a situation causes uncertainty in the market.

Competition Authority found the market was not working for the consumer due to low cost efficiency so suggests competitive tendering

Lack of infrastructure and cohesion - the encouragement by the government to extend pay-by-use has resulted in a number of rate structures with many different companies and methods involved. Competition is only locally effective – many households have no choice.

National Development Plan relies on the private sector providing the bulk of investment in the waste infrastructure but regulatory system differs for public and private operators (which acts as a disincentive to the private sector) and the potential for abuse of the system exists while local authorities can be regulators and competitor in the waste management services market (Forfas, Eunomia)

Other Information

Low population density in many areas leaves limited scope for sufficient economies of scale to justify the construction of major waste management facilities

Spain

Landfill

Landfill tax only in Catalonia (and Madrid)

Recyclable or recoverable wastes are not allowed to be disposed

Instruments

Mandatory corporate or industrial source separation

EPR - Licence fees for packaging – Responsibility is on the last holders/ owners of industrial/ commercial waste. At regional and central level, financial or fiscal measures can be put in place to promote that packaging responds to the Prevention Plan

Regulations for packaging, end of life vehicles, tyres, batteries

Product stewardship and voluntary agreements

Green energy tariffs exist for biogas

National Targets and Policies

Waste policy developed by Spanish Environmental Advisory Council (CAMA)

National Waste Plan to be adopted by the end of 2007

The new plan acknowledges the failure of previous waste plans and sets out ambitious targets.

Clear targets for composting/recycling (50% by 2006) and thermal treatment (18% by 2006) of MSW were set out in the 2000 National Waste Strategy but were not underpinned by any national fiscal mechanism and have thus been very ineffective in stimulating development of new infrastructure

Government has set aside budget for specific waste plans (including those for WEEE and batteries) and also research and development projects on the prevention and reuse of waste.

Plan aims to reduce waste (by using economic instruments) but does not call for a national landfill tax

To introduce separate collections in municipalities above 5000 inhabitants by 2001, above 1000 inhabitants by 2006 (Previous National Waste Plan)

Food waste should be separately collected starting from big producers (restaurants, canteens etc) (Previous National Waste Plan)

Estimate of MSW going to landfill by 2006 – 33.1% (Previous National Waste Plan)

Business Waste

Focus mostly on MSW

Grants and Subsidies

Grants in Catalonia for separate bio-waste collection

Industry Structure

Waste collection infrastructure – 60% of the provision is in the hands of large construction groups

Other Information

Greater acceptance of use of mixed-waste derived compost on land as a result of desertification

(2000 National Waste Plan foresaw 17.7% incineration by 2006)

Conclusions on European Perspective

There do not appear to be any specific policies among the European countries analysed for the creation of jobs or specific opportunities in the solid waste management sector, rather, free market forces and the creation of an investment climate has been central to economic development in the sector. As such the approach of other European countries differs to that of Scotland.

Investment has been achieved in some countries by introducing landfill bans on packaging and other recyclables

Extended producer responsibility schemes have been introduced, where producers are physically or financially responsible for materials after their useful life have been utilised as a means of stimulating investment

Mandatory schemes for industrial and commercial source separation means a greater front end recycle yield to manage, assisting in economies of scale and financial viability of plants

Creative utilisation of tax systems such as high landfill tax, reduction in waste services VAT or environmental levies on products have assisted in economic development

Direct and transparent municipal waste taxation in some countries allows the municipality to inform the public of the costs of different approaches to waste management and vary its rate according to local requirements. This allows LAs to promote and display the advantages of certain approaches.

One aspect common in some of the higher performing countries (Germany, Netherlands) is a culture of shared risk between the municipality and the contractor. Both parties have an incentive to deliver and risk is seen as less of an issue than in the UK due to the certainty brought about by the planning systems and policy mechanisms in these countries.

Strategic planning of infrastructure in higher performing countries like Germany and the Netherlands extends to all waste streams

The creation of special purpose vehicles (SPVs) by the municipality and the contractor with provision for “prudential” style borrowing reduces risk

Contracts secured for non-MSW waste streams can reduce gate fees for the municipality

There is often a link between waste and energy policy which demonstrates to the public a positive social outcome from waste management

Deposit and refund programmes can engender a “commodity culture” among householders and yield more materials, assisting in economies of scale for facilities

Financial support to business is offered from Government sources in a number of countries – ranging from direct aid for innovative technology development, to grants for knowledge transfer, to Capital Grants schemes for collection infrastructure. Central to the European perspective therefore, is the ability to use these measures as tools to bring about positive investment climate in recycling

The following table summarises and compares the main actions and measures taken by each of the countries.

	Germany	France	The Netherlands	Ireland	Spain	Scotland	
Disposal – landfill tax	None	€9 / tonne	€84 / tonne.	€19 / tonne	Av €10 / t in Catalonia €7 / tonne in Madrid.	€36 / tonne	
Disposal Costs and/or Gate fee (normalised range)	€35-200/tonne	€31-85/tonne - disposal	€43-100 / tonne	€35-78 / tonne	€6-40 / tonne	€12-53 / tonne	
Av Total disposal and/or gate fee (from range)	€118/tonne	€58/tonne	€75/tonne	€57/tonne	€23/tonne	€32/tonne	
Pay As You Throw	✓	✓	✓	✓	✗	✗	
Source segregated / co-mingled	Source separated.	Co-mingled in some areas	Kitchen & garden waste separated.	Both	Source seg. bio. - Catalonia	Both	
Producer responsibility	Batteries, Packaging, WEEE, ELVs	Packaging Waste	WEEE, Tyres, Batteries, Packaging Waste, ELVs	Packaging WEEE	Licence fees for packaging.	Packaging Waste	
Deposit refund programmes	✓ – beverage containers	✗	✓ Bottles - voluntary Batteries	✗	✗	✗	
Legislation focus	All waste	MSW (containing small businesses), producer	Extends to all streams	MSW, producer, commercial (through PR), C&D	MSW, (industrial/commercial producer), C&D	MSW	
Landfill Bans	✓	✓	✓	✗	✓	✗	
Material specific targets		✓ - paper			[✓- New Draft – pack.]		
BMW targets				✓	✓		
Packaging targets	✓				✓		
Recycling targets			✓	✓	✓	✓	
Landfill diversion targets	✓	✓	✓	✓	✓	✓	
EU Landfill Directive target (BMW)	2016 target already met	2009 target met in 2005	2016 target already met	First target likely to be postponed until 2010	Thought to be near to meeting 2010 target		
Other targets				✓	✓		
2005 MSW Statistics (IPPN)	Landfilled	14.81%	36.1%	1.44%	60%	53.1%	75.6% (SEPA 05/06)
	Diverted (incl. rec., comp., reuse)	60.57%	30.02%	65.38%	40%	41.04%	24.4% (SEPA 05/06)
	Incinerated	24.63%	33.89%	33.17%	0%	5.86%	0% (SEPA 05/06)

Summary and Comparison of main Policy Actions taken by various European Countries

