

Sustainable waste management



Prepared for the Auditor General for Scotland and the Accounts Commission
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Note:

Prior to September 2007 the Scottish Administration was generally referred to as the Scottish Executive. It is now called the Scottish Government. When dealing with the earlier period this report refers to the Scottish Executive. Recommendations for the future refer to the Scottish Government.

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Summary



Waste management is a vital local service.



About the study

1. Collecting household waste is a vital and universal household service. It is unique among council services in being provided to all homes on a weekly basis. The Accounts Commission last reviewed councils' waste management services in 2000 in its report *Benchmarking Refuse Collection*. Since then, there have been major changes in waste management, driven mainly by the European Union Landfill Directive 1999 ('the Landfill Directive') which sets targets for all member states to reduce the amount of biodegradable municipal waste disposed to landfill.

2. The overall aim of the study is to review the work of councils, the Scottish Environment Protection Agency (SEPA) and the Scottish Executive in reducing the amount of waste being sent to landfill and to make recommendations to improve the economy, efficiency and effectiveness of waste management. In particular, the study seeks to answer the following questions:

- What progress has been made in developing sustainable waste management?
- Has the investment to date from the Strategic Waste Fund (SWF) achieved value for money in increasing rates of recycling?
- What changes are required to meet the Landfill Directive (and how much will they cost)?
- Are the Executive, councils and SEPA in a position to deliver the changes required?

3. The study has been undertaken as a single exercise covering councils, SEPA and the Scottish Executive. The study also draws on statutory performance indicator information, which includes the collection of audited information on the amount of waste recycled by each council. There were four main strands to the study:

- Desk research and data analysis – drawing on existing data sources

to collect national and international information and reviewing documentation.

- Questionnaires – to gather information from councils on the cost of waste management services and other issues relating to waste management.
- Fieldwork visits to six councils (Clackmannanshire, Dundee City, Glasgow City, Highland, Perth and Kinross and South Lanarkshire) including structured interviews with senior managers and practitioners and visits to waste management facilities.
- Interviews with key officers and waste practitioners including the Executive, SEPA, the Scottish Waste Awareness Group (SWAG), REMADE, community groups and the waste industry.

Key messages

- Scottish councils need to achieve rapid reductions in the amount of biodegradable municipal waste disposed of in landfill to meet the requirements of the Landfill Directive. However, this is made more difficult by the increasing amount of waste being generated by Scottish households (Part 2).
- Significant progress has been made in meeting interim recycling targets but increasing the recycling rate further will provide great challenges. Investment by the Executive via the Strategic Waste Fund has helped councils increase the percentage of municipal waste which is recycled and composted from seven per cent in 2001/02 to 25 per cent in 2005/06. The system offering the best value for money will depend upon the level of recycling required. Co-mingled collections appear to achieve higher recycling rates (Part 3).
- In contrast to the progress on recycling, the slow progress

in developing residual waste treatment facilities means there is a significant risk that the Landfill Directive targets may not be met. In particular, early delays and a lack of organisational capacity within councils and the Executive to deliver change have slowed progress. This will make it difficult to build the residual waste treatment facilities required to achieve the Landfill Directive targets, in particular the 2013 target (Part 4).

- The increases in the amount of recycling have led to increased costs. The cost of recycling increases with the recycling rate and the value of the materials collected falls. This eventually limits the economic viability of recycling schemes. The cost to the SWF of supporting recycling would need to rise from £89 million per annum, to achieve the present 25 per cent recycling rate, to an estimated £271 million in 2020 to achieve 55 per cent recycling. Over this period the estimated waste management expenditure by councils would need to grow from £351 million in 2005/06 to an estimated £580 million per year in 2019/20, if current targets are to be met, depending on the choices made between recycling and residual waste treatment (Part 5).
- Councils, the Scottish Government and other agencies need to work more effectively together to make rapid progress in waste minimisation, recycling and waste treatment to achieve the Landfill Directive targets. There is an urgent need to build organisational capacity within councils and the Scottish Government to achieve this. Councils, SEPA and the Scottish Government should consider ways in which they can work with the waste industry and others to deliver the waste treatment facilities required to achieve the Landfill Directive targets (Part 6).

Part 1. Setting the scene



Sustainable waste management means less reliance on landfill and greater amounts of recycling and composting.



Context

4. Waste Management needs to be considered in the wider context of the Scottish Executive's environmental strategies as set out in *Choosing Our Future: Scotland's Sustainable Development Strategy*,¹ in particular, the move towards the sustainable use of resources and the need to reduce carbon emissions. This is particularly important in light of the Stern Review's assessment of the economic costs of the impacts of climate change,² and the costs and benefits of action to reduce the emissions of greenhouse gases that cause it.

5. Historically, Scotland, in common with the rest of the UK, has relied on landfill³ for the disposal of municipal waste. Although landfill was a cheap option for disposing of waste, it is now considered the lowest environmental priority option for treating and disposing of waste. The introduction of landfill tax by the UK government in 1996 means that it is no longer a cheap option. The standard rate of tax is currently £24 a tonne and will increase by £8 a tonne per year until at least 2010/11.

6. The introduction of the European Union Landfill Directive ('the Landfill Directive') in 1999 set targets for all member states to reduce the amount of biodegradable municipal waste⁴ disposed to landfill. These have driven the changes in waste management in the UK and the increases in recycling over the past five years.

7. Waste management services and facilities provided by councils include:

- routinely collecting domestic and commercial refuse (referred to in this report as mainstream refuse collection)
- separately collecting recyclable materials such as paper, cardboard and glass for recycling
- collecting garden waste for composting
- promoting recycling and educating people so that councils can successfully implement waste management services
- facilities to promote recycling (recycling centres, civic amenity sites and local recycling facilities)
- special uplift services for bulky domestic refuse, providing skips for removing domestic and commercial refuse and special arrangements for the collection of hazardous or clinical waste.
- Material Recycling Facilities (MRF)⁵ and bulking-up facilities
- waste treatment facilities, including composting facilities, energy from waste plants (EfW), mechanical biological treatment plants (MBT) and operating landfill sites described in detail in [Exhibit 17, page 30](#).

8. [Exhibit 1 \(overleaf\)](#) shows the relationship between the major aspects of the waste management service.

9. Many agencies are involved in waste management which makes planning and implementing changes complex ([Exhibit 2, page 7](#)). Further

details are included in a glossary of terms at [Appendix 2](#).

10. The basis of Scotland's approach to waste management and meeting the requirements of the Landfill Directive is set out in the National Waste Strategy which was published by the Scottish Environment Protection Agency (SEPA)⁶ and adopted by the Executive in 1999. The principles that underpin the strategy are:

- Sustainability – meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- Self-sufficiency and the proximity principle – waste should be managed and disposed of as close as practicable to where it is generated.
- The waste hierarchy – to move as close as possible to the top of the hierarchy by minimising the waste generated, reusing waste materials, recycling, and, where this is not possible, disposing of waste in ways that unlock or recover energy, for example in energy from waste (EfW) plants ([Exhibit 4, page 10](#)).
- Best Practicable Environmental Option – a method of option appraisal used to examine the best way of dealing with various types of waste in the light of social, environmental, economic, practicality and other policy issues.

11. Since 1999, various developments have been taken forward in the National Waste Strategy (the timeline in [Appendix 3](#) describes these in detail).

¹ *Choosing Our Future: Scotland's Sustainable Development Strategy*, Scottish Executive, December 2005.

² Stern Review on the *Economics of Climate Change*, HM Treasury, October 2006.

³ Landfill (rubbish tip) is an area designated to receive solid wastes, such as municipal waste or construction debris. Modern landfills are also lined to prevent toxic leachate from entering the groundwater. They usually have gas wells to safely extract methane and in large landfills, this methane may be piped to a generator to make electricity.

⁴ Collected municipal waste is all waste for which councils make arrangements. There are some exclusions, the main ones being: abandoned vehicles, road maintenance waste, industrial waste and construction and demolition waste.

⁵ A MRF is a facility for sorting waste and recyclables by mechanical processes such as blowers and electromagnets followed by manual sorting on conveyor belts.

⁶ SEPA is Scotland's environmental regulator and adviser, responsible to the Scottish Parliament through ministers. As well as having a role in controlling pollution, SEPA works with the Executive and others to protect and improve the environment.

Exhibit 1

The waste management service

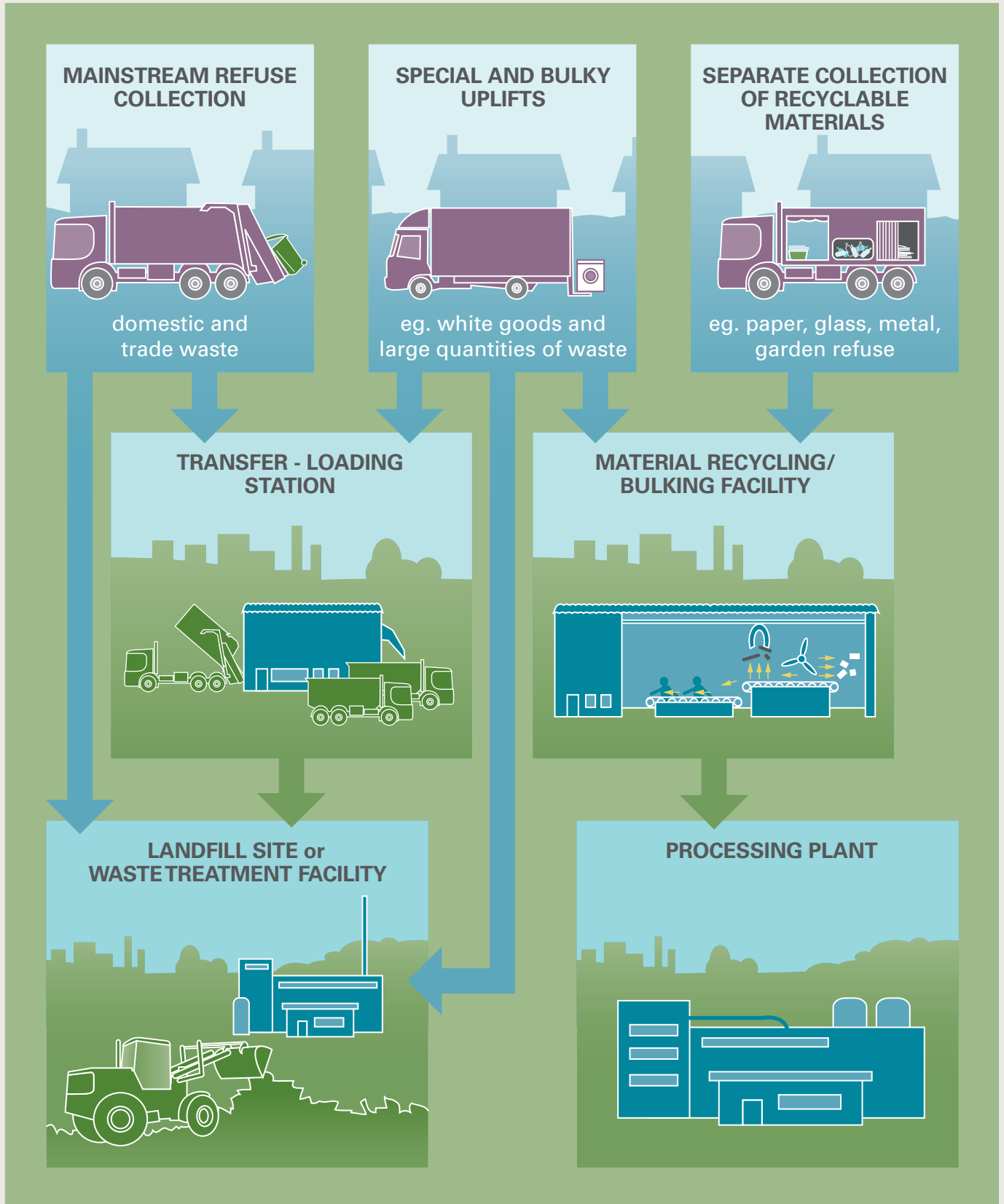


Exhibit 2

There are a large number of agencies involved in delivering sustainable waste management

Funding	Planning	Regulatory	Delivery	Advisory	
Scottish Executive funding of Strategic Waste Fund Phases 1 and 2 and for charitable and voluntary sectors	Scottish Executive Councils Scottish Environment Protection Agency	European Union Scottish Executive Scottish Environment Protection Agency Health and Safety Executive	Councils The waste industry Community organisations and the voluntary sector Scottish Waste Awareness Group Waste and Resources Action Programme	The Confederation of Scottish Local Authorities Scottish Executive Scottish Environment Protection Agency The Improvement Service	Improvement and Development Agency The waste industry Waste and Resources Action Programme Scottish Waste Awareness Group REMADE

Source: Audit Scotland

12. In 2000, SEPA set up, chaired and facilitated 11 Area Waste Groups. These comprised councils and other stakeholders, including environmental groups and the waste industry, to implement the National Waste Strategy. At the end of the process SEPA drafted Area Waste Plans setting out a framework for consistently implementing the National Waste Strategy and taking into account the Best Practicable Environmental Option.

13. In 2003, SEPA and the Executive brought the Area Waste Plans together to create a National Waste Plan. In addition to setting out how the Landfill Directive targets could be met, it set out the following additional targets, including interim recycling targets to:

- increase the amount of municipal waste which is recycled or composted to 25 per cent by 2006, and 55 per cent by 2020
- reduce landfilling of biodegradable municipal waste to 1.5 million tonnes per year by 2006 (85 per cent of the amount sent to landfill in 1995)

- stop the growth in the amount of municipal waste produced by 2010
- provide segregated kerbside waste collections to over 90 per cent of households by 2020
- recover energy from 14 per cent of municipal waste
- provide widespread waste minimisation advice to businesses
- develop markets for recycled material to help recycling become viable and reduce costs.

14. After 2003, the Executive took responsibility for delivery of the National Waste Plan (NWP) and set up the Strategic Waste Fund to fund councils to deliver the Area Waste Plans. SEPA's role in this process diminished to its core advisory, regulatory and planning role. The relationship between the main environmental policies and waste strategies and plans is shown in [Exhibit 3 \(overleaf\)](#).

15. Councils spent £351 million gross (£194 million net) on providing waste management services in Scotland in 2005/06. This represents about two per cent of total council spending and an increase of 97 per cent on spending since 1998/99. The Strategic Waste Fund, established in 2000, has added a total of £201 million over the period to 2005/06 with current expenditure of £89 million per annum.

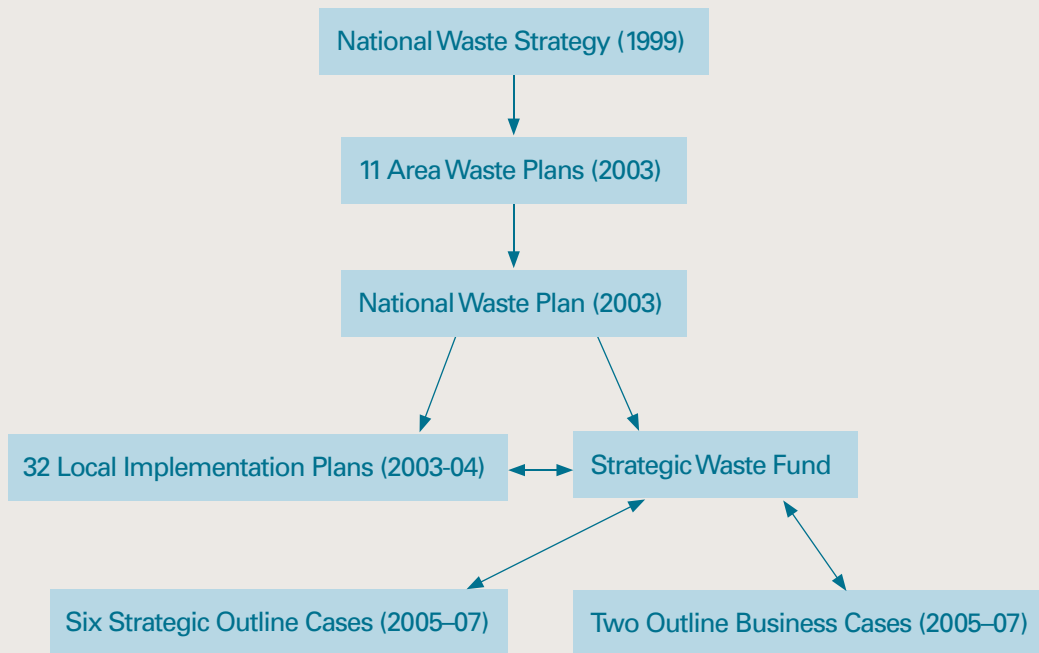
16. The majority of waste management expenditure (53 per cent) is on disposal with 47 per cent being spent on collection. This is funded through general council funds, the SWF and from income generated from waste services and selling materials collected. The breakdown is shown below:

- General council funds – £194 million
- SWF – £89 million
- Income generated from waste services and the sale of materials – £68 million.

Exhibit 3

The relationship between the main environmental policies and waste strategies and plans

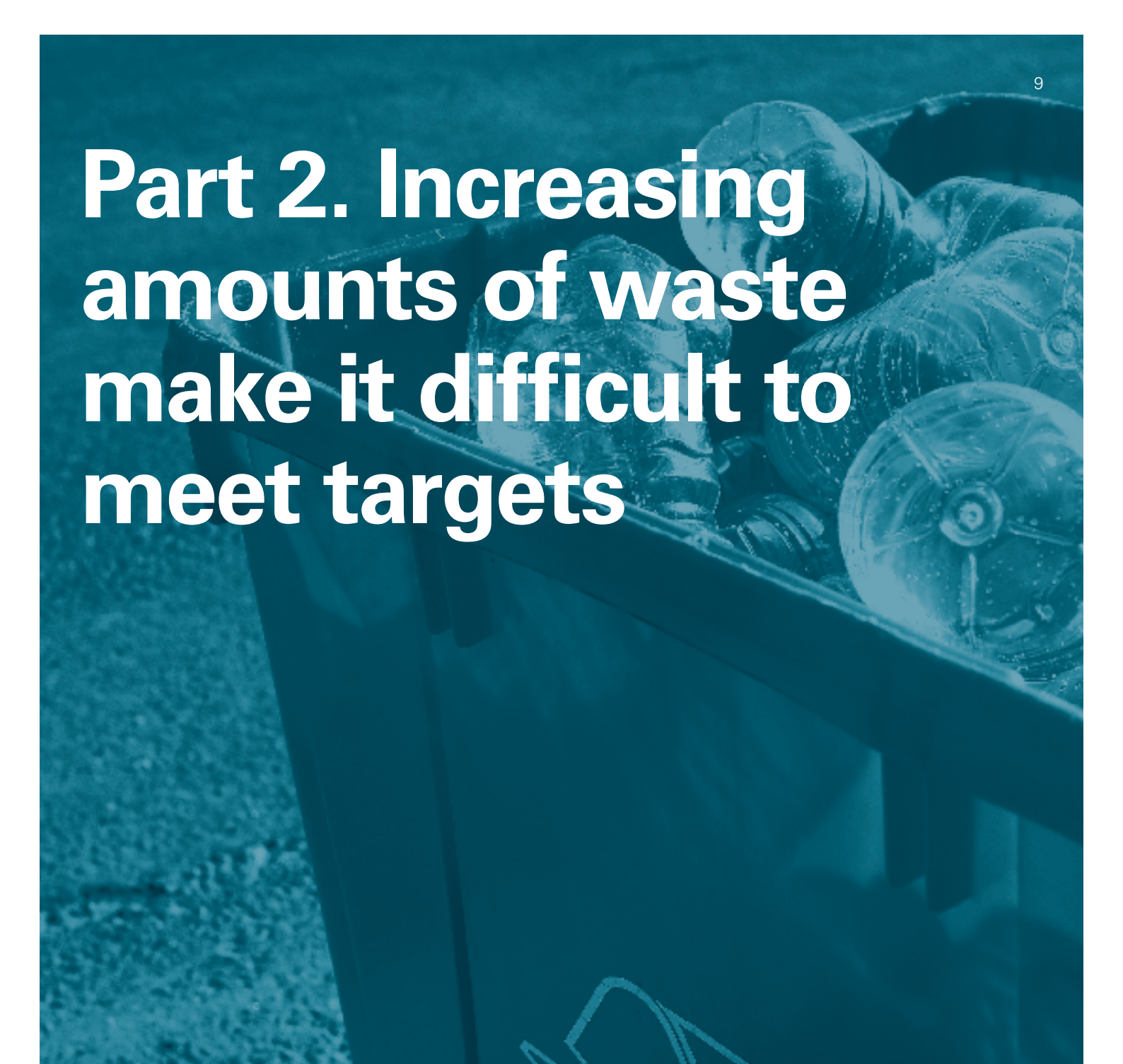
Scotland's sustainability strategy *Choosing our future* (2003)



Source: Audit Scotland


We examine these costs in more detail in [Part 5](#) of this report.

17. The Environmental and Rural Development Committee of the Scottish Parliament held an inquiry into the National Waste Plan in 2003. The Committee identified a number of significant challenges, for example improvements to the planning system, developing markets for recycled materials and increasing the use of composting.



Part 2. Increasing amounts of waste make it difficult to meet targets

Scotland sends more waste to landfill than most EU states but progress has been made to reduce reliance on landfill.



Moving as far as possible up the waste hierarchy is key to sustainable waste management

18. The international community first considered global environment and development needs at the UN Conference in Stockholm in 1972. Twenty years later the UN Conference on Environment and Development, the Earth Summit in Rio de Janeiro, agreed Agenda 21⁷ and the Rio Declaration which led to two legally binding conventions on biological diversity and climate change.

19. Subsequently, the UK government introduced a landfill tax to discourage the disposal of waste in landfill sites and set a (non-statutory) target that councils should recycle 25 per cent of household waste by 2000. This target was not achieved.

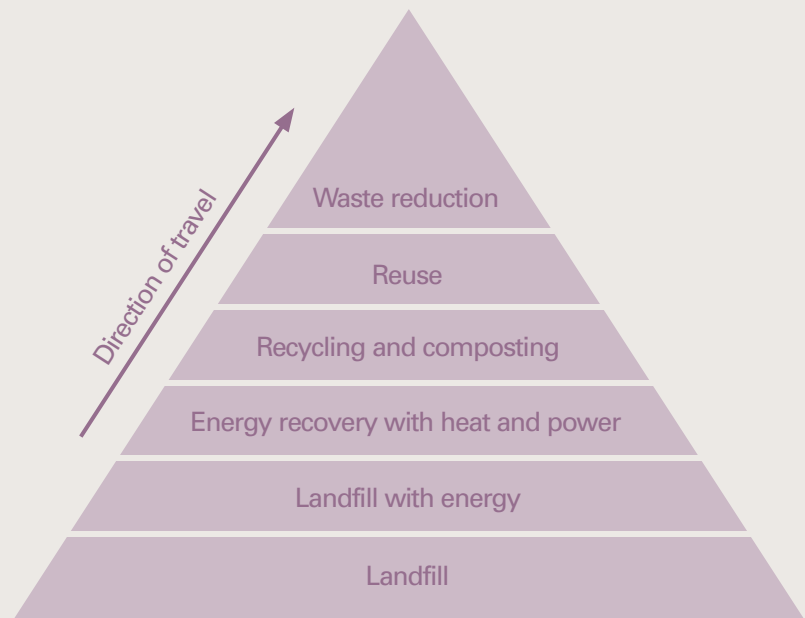
20. Sustainable development now forms the centrepiece of UK public policy and features in almost all policy areas. Sustainability, self-sufficiency and the proximity principle, and the waste hierarchy are key principles that underpin the National Waste Strategy. The waste hierarchy (Exhibit 4), summarises the objectives of sustainable waste management which are to:

- minimise the amount of waste generated
- optimise the amount of material that can be reused or recycled
- minimise the amount of waste disposed of in landfill sites.

21. The aim is to move from the bottom to the top of the hierarchy and to eliminate landfill as far as possible. In Scotland, most of the movement has been in diverting material from landfill via recycling and composting. Limited progress has been made so far in reducing waste or by recovering energy with heat and power (only undertaken by plants in Dundee and Shetland).

Exhibit 4

The waste hierarchy, based on the '3Rs' – Reduce, Reuse, Recover (followed by unavoidable disposal), is the cornerstone of sustainable waste management



The EU Landfill Directive is the key driver in encouraging sustainable waste management

22. Various laws are in place to bring about more sustainable ways to manage waste. The key driver is the EU Landfill Directive which has set clear targets for member states to reduce the amount of biodegradable municipal waste to be disposed of in landfill.

23. The EU responded to growing environmental concerns and set out its policy on waste in the 1975 framework directive (75/442/EEC). This called on member states to 'take appropriate steps to encourage the prevention, recycling and processing of waste, the extraction of raw materials and possibly of energy therefrom and any other process for the re-use of waste.' The Framework Directive also instructed member states to encourage waste prevention,

recycling and reprocessing and to set out details of these measures in waste management plans.

24. Further directives on waste followed and the Landfill Directive set firm targets for reducing landfill. Article 5(2) requires member states to reduce the amount of biodegradable municipal waste going to landfill to (tonnages for Scotland in brackets):

- Seventy-five per cent of the 1995 amount by not later than 17 July 2010 (not more than 1.32 million tonnes)
- Fifty per cent of the 1995 amount by not later than 17 July 2013 (not more than 0.88 million tonnes)
- Thirty-five per cent of the 1995 amount by not later than 17 July 2020 (not more than 0.62 million tonnes).

⁷ Agenda 21 is a programme of the United Nations related to sustainable development. It is a comprehensive plan of action to be taken globally, nationally and locally by organisations of the UN, governments and major groups in every area in which humans impact on the environment. The number 21 refers to the 21st century.

25. Currently Scottish councils send 1.54 million tonnes of biodegradable municipal waste to landfill compared to an estimated 1.76 million tonnes in 1995. Because of their historic dependence on landfill, countries such as the UK have been given an extension whereby the target dates are extended by four years (the dates in [paragraph 24](#) include the four-year extension).

26. The Scottish Executive is responsible for achieving Scotland's targets for reducing landfill agreed with the UK government. In turn, the Executive has set targets for councils who are responsible for collecting and disposing of municipal waste.

27. The risk of not meeting the Landfill Directive targets is that the UK could become the subject of proceedings that could eventually lead to fines. It is difficult to determine the extent of any fine at this time but the Prime Minister's Strategy Unit suggested that the UK could be fined up to £180 million a year.⁸ No estimates are available on the risks to Scotland.

28. The Landfill Directive is not the only law designed to bring about a more sustainable approach to managing waste. Others include the EU Waste Electronic and Electrical Equipment (WEEE) Directive, which aims to reduce the amount of this equipment going to landfill, and the End of Life Vehicle Directive.

Scotland sends more waste to landfill than most EU states but progress is being made to reduce this

29. Scotland's historical reliance on landfill for the disposal of municipal waste makes it much more difficult to achieve the Landfill Directive targets in comparison to other EU countries. [Exhibit 5](#) compares the percentage of municipal waste sent to landfill in selected EU countries in 2003 (the latest year for which EU data is available). This shows that Scotland

Exhibit 5

The percentage of municipal waste sent to landfill in 2003 in selected EU countries



Notes: EU15 – excluding new accession states.
EU25 – including new accession states.

Source: Audit Scotland. Eurostat news release 30 May 2005. Excludes new accession states, Scotland data is 2003/04 data

disposed of more waste via landfill than most EU countries and more than the UK as a whole. Since then the Scottish position has improved and in 2005/06 around 73 per cent of municipal waste was sent to landfill.

30. In 2006, consultants working for the National Audit Office⁹ identified six common features of countries that have made greater progress in reducing dependence on landfill. These are:

- Greater acceptance of generating energy from waste as an alternative method of waste disposal – the UK (and Scotland) is characterised by objections and mobilisation of public opinion against new waste facilities. For example, the proposals for an energy from waste facility in Aberdeen met with widespread opposition. Speeding up the
- Encouraging investment in facilities through strategic planning and clear guidance on measurement of waste and operating standards of facilities – recent planning legislation and current environmental legislation provides for strategic planning and clear guidance on measurement of waste and operating standards of facilities.

construction of facilities for the treatment of residual waste will depend on addressing public concerns at the planning stage.

- Timely and clear promotion of preferred alternatives to landfill – in Scotland recycling has been promoted as an alternative to landfill, but there has been very little promotion of the need for facilities for residual waste treatment, for example energy from waste.

⁸ *Waste not, Want not, A strategy for tackling the waste problem in England*, Prime Minister's Strategy Unit, November 2002.

⁹ *Reducing the reliance on landfill in England*, National Audit Office, July 2006.

- Provision for municipalities to charge for waste collection – there are no plans in Scotland to charge for the full waste collection service at present. Research has been commissioned into its possible effects and the UK government plans to consider whether charging could be adopted in England. Scottish councils have the power to charge for bulky uplifts and garden waste. In practice most councils charge for bulky uplifts but few charge for the collection of garden waste. Alternate weekly collection of residual waste and recyclables is becoming increasingly common and provides an additional incentive to recycling in many councils.
- Comparatively high landfill costs through taxes or high industry costs – landfill costs are significant and are rising because of the landfill tax escalator.¹⁰
- Infrastructure development risks shared between private investors and central or local Government – Public Private Partnerships (PPP) allow local government and private investors to share the risk of developing infrastructure.

31. Scotland is making progress in most of the areas identified with the exception of acceptance of energy from waste as an alternative to landfill and the potential for charging for waste collection.

32. The UK is unusual within the EU in that there is no direct charge for refuse collection. Charging for residual waste collection would introduce the 'Polluter Pays' principle into waste management, encouraging residents to recycle and to reduce how much they throw out. Such schemes are supported by many, including the Chartered Institute of Wastes Management and the Local

Government Association (LGA) in England.

33. However, charging for waste collection is controversial and there are concerns that it could increase fly-tipping or dumping as people try to avoid payment. In addition many properties in Scotland such as tenements have communal arrangements for waste collection, making charging of individual householders difficult. There are also concerns that groups such as low-income households, large families and pensioners could be disadvantaged by such a scheme.

Recommendation

- The Scottish Government and councils should undertake research to assess the contribution that direct charging for waste management could make to increasing recycling and waste reduction.

There is scope to further reduce reliance on landfill...

34. The composition of the waste generated by the average Scottish household is shown in [Exhibit 6](#). Biodegradable waste includes kitchen and garden waste, paper and cardboard. Other items such as textiles and the content of vacuum cleaner bags are partially biodegradable. Metals, glass and most plastics are non-biodegradable. This information needs to be treated with some caution however, as the sample of councils used in the analysis is small.

35. The percentage of waste that is biodegradable will vary depending on the nature of the properties within the council area and the extent and type of recycling schemes in place. For example, the percentage of household waste such as food and garden clippings can vary between

12-38 per cent, while paper content can vary between 20-30 per cent of the total.

36. It is important that councils regularly analyse waste, particularly where new recycling or home composting services are being introduced. The Landfill Allowance Scheme (Scotland) Regulations 2005 assume that 63 per cent of municipal waste is biodegradable when calculating the amount of biodegradable municipal waste that is sent to landfill¹¹ by each council.

37. Although in theory over 80 per cent of household waste could be recycled, difficulties in collection, separation and finding markets for materials make this very hard to achieve economically.

Recommendation

- To measure progress with waste management initiatives councils should undertake regular waste analyses, particularly where new recycling or home composting services are being introduced.

...but the increasing amount of waste generated by Scotland's population makes achieving Landfill Directive targets more difficult

38. Councils have much to do to meet the Landfill Directive target as the amount of waste generated by Scottish households continues to rise. The reasons for this growth include increases in the number of households (up by 4.4 per cent between 2001 and 2006)¹² and economic growth. In some councils collection of garden waste for composting generated a one-off increase in the amount of waste collected.

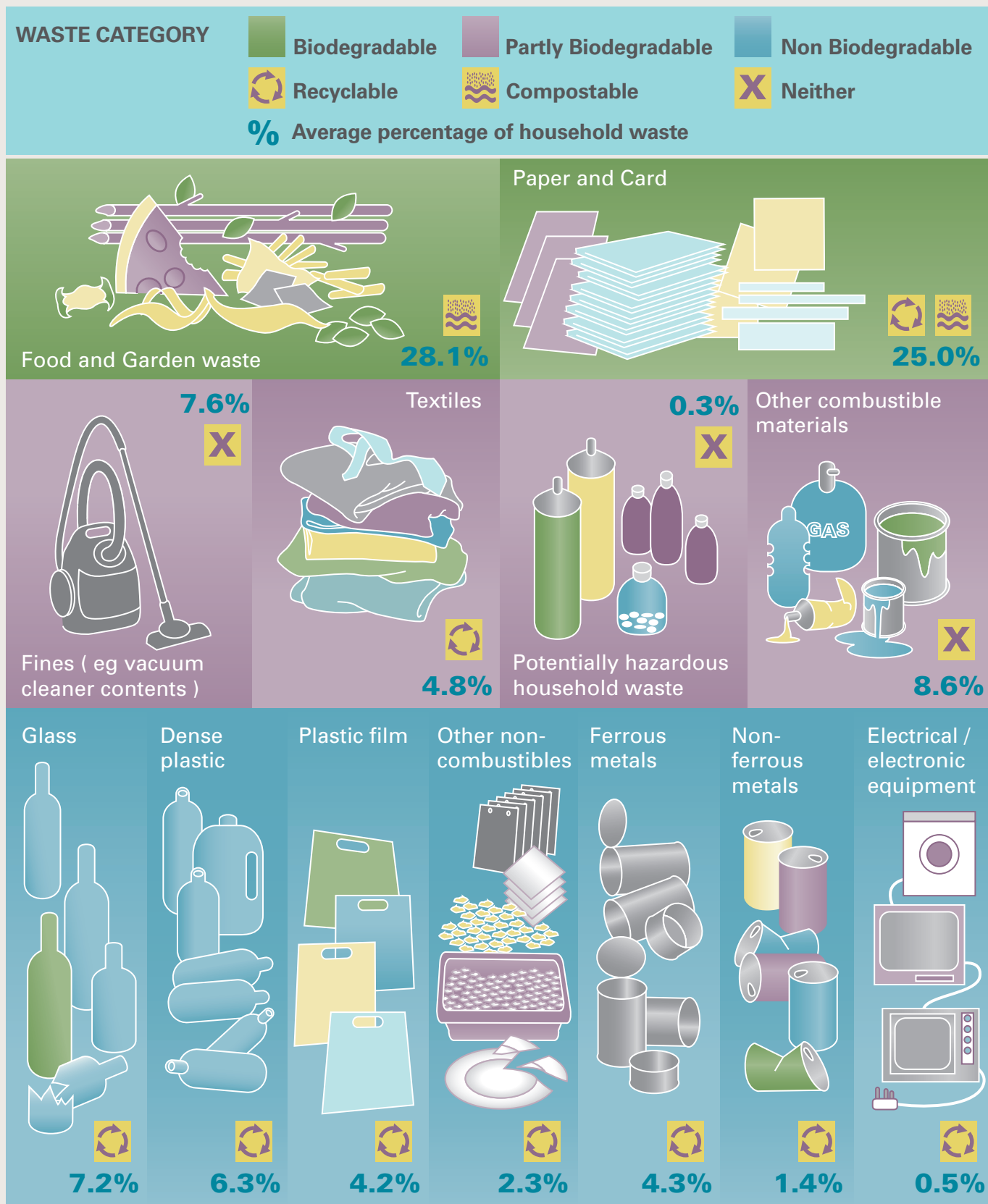
¹⁰ The tax is currently £24 a tonne and will increase by £8 a tonne per year until at least 2010/11.

¹¹ Landfill Allowance Scheme (Scotland) Regulations 2005, Interim Guidance.

¹² Household Estimates for Scotland 2006, General Register Office for Scotland, March 2007.

Exhibit 6

Analysis of the contents of a typical Scottish household's waste



Source: SEPA Waste data digest 5, July 2005

39. The average household in Scotland produces just over 1.1 tonnes of waste per year and long-term trends suggest that this has been growing by 1.25 per cent per year,¹³ although there has been some levelling off of waste arisings in recent statistical returns prepared by SEPA. At this current annual growth rate SEPA estimates that total annual waste generated could increase from 3.3 million tonnes in 2003/04 to around 4.3 million tonnes by 2020.¹⁴

40. The Executive has recently published proposals for reversing this growth¹⁵ with a variety of measures included in a 20-point plan based on the following principles:

- Waste avoidance – preventing waste generation by reducing unnecessary consumption.
- Waste reduction – by designing and consuming products which generate less waste.
- Reuse – reusing products for their original purpose or for an alternative use.
- Qualitative waste prevention – by making the waste produced less hazardous.

41. The Executive has estimated that the reductions in waste generated resulting from the 20 action points in the plan could amount to 13,500 tonnes in 2006/07 and 122,500 tonnes in 2009/10.

42. Other initiatives contributing to the waste prevention plan include:

- the Courtauld commitment by leading retailers to reduce packaging waste and identify ways of reducing food waste – the Executive is supporting the Waste and Resources Action Programme

(WRAP) to work with retailers, and others, as part of the Courtauld Commitment

- the real nappies campaign – to encourage greater use of reusable nappies the Executive and SEPA are working with community sector groups and others to reduce the waste impact of disposable nappies (which make up about 2.6 per cent of household waste).

43. However, councils' waste plans continue to assume an increase in biodegradable municipal waste until 2020. In December 2006, the Executive estimated that Scottish councils will need to divert around 2.22 million tonnes of biodegradable municipal waste from landfill by 2020 to achieve the Landfill Directive target.

Recommendation

- The Scottish Government should monitor the progress of its waste reduction plan and report annually on the progress being made in halting waste growth.

Community organisations have a part to play in waste minimisation but their role needs to be clarified

44. Community organisations and the social enterprise sector (for example, Alloa Community Enterprises) are playing an increasing part in diverting waste from landfill. This is mainly through minimising waste, such as the real nappies campaign and reusing items such as furniture. In 2006, there were around 180 community organisations across Scotland which helped divert 73,000 tonnes of waste from landfill¹⁶ more than double the amount diverted in 2003 (34,868 tonnes). **Exhibit 7** illustrates the contribution that community groups can make to waste minimisation.

Exhibit 7

The Furniture Project (Tayside)

The Furniture Project is a recognised charity and a company limited by guarantee. It incorporates local projects in Dundee, Perth and Angus. Perth Furniture Project has operated in the Perth and Kinross area for around ten years. Working in partnership with Perth & Kinross Council, housing associations, various referring agencies and local voluntary organisations, the Furniture Project hopes to maximise the benefits that it can bring to the whole area.

It was among the first projects of its kind to offer referred clients the opportunity to come and choose their own furniture. It is also possible to select complementary items including rugs, lamps, pictures and various soft furnishings. The new Perth centre is also home to Starterpacks, a partner organisation that redistributes smaller items such as crockery, cutlery, bedding and other home furnishings. The project accepts around 200 donations every month and prevents around 1,000 tonnes of unwanted household goods a year from being landfilled.

45. We found that 20 councils reported a slight or significant increase in their use of community groups since 2002. However, the scale and nature of engagement with councils varies across the country. This in part reflects the varying capacity of community groups to contribute in a systematic way to councils' activities but also reflects councils' differing attitudes towards these groups.

46. Maintaining consistent funding is a significant problem for community groups. Many provide work experience and training and receive funding from a variety of sources. It can be difficult

¹³ *Waste Data Digest 4*, SEPA, Summer 2007.

¹⁴ *Waste Data Digest 4*, SEPA, Summer 2007.

¹⁵ *Household Waste Prevention Action Plan (Scotland)*, Scottish Executive, February 2007.

¹⁶ *Report highlights scale of community recycling in Scotland*, Community Recycling Network for Scotland press release, March 2007.

for groups to ensure long-term, coordinated funding, making longer term planning difficult.

47. The Executive has prepared guidance to help streamline the application process to the Strategic Waste Fund for waste management partnerships between Scottish councils and not-for-profit partners. The key feature of the process is to approve Strategic Waste Fund applications from councils on behalf of not-for-profit based organisations so long as the cost to the Strategic Waste Fund is less than £150 per tonne diverted from landfill.

48. The Community Recycling Network for Scotland (CRNS), a membership organisation for community recyclers in Scotland, has helped to build capacity by providing information and support to community-based, not-for-profit organisations. It is supported by the Executive and Communities Scotland and aims to build a stronger community recycling sector to create social, environmental and economic benefits. It has been asked by the Executive to provide advice to community sector groups applying for support in developing proposals prior to submission to a council.

49. A recent evaluation of the INCREASE Programme¹⁷ found that over 70 per cent of respondents found the support provided by the CRNS good or excellent. It also found that over 55 per cent of respondents thought the administration of the funding was good or excellent, while 20 per cent encountered problems or found the administration could be improved. Their most common complaints were that:

- the application process was bureaucratic and time-consuming

- claims in arrears and deadlines for claims were difficult for small organisations.

Recommendation

- The Scottish Government and councils should continue to support community recycling, strengthen the framework in which they operate and build capacity by providing long-term funding for successful groups. This could be achieved through service level agreements and by encouraging partnerships with councils and the private sector.

Three councils have been penalised for failing to meet landfill diversion targets and some councils could face substantial fines in future

50. To provide an incentive to councils, Scottish ministers have set landfill allowances under the Landfill Allowance Scheme (LAS) for each council for each year up to the first Landfill Directive target year in 2009/10. Part 4 of the Waste and Emissions Trading Act 2003 sets out the following penalties (the minister has the discretion to waive all or part of the penalty) for exceeding landfill allowances:

- £10 per tonne for the financial year 2005/2006
- £25 per tonne for the financial year 2006/2007
- £50 per tonne for the financial year 2007/2008
- £150 per tonne for subsequent years.

51. In 2005/06, Scottish councils sent 52 per cent (1.54 million tonnes) of their biodegradable municipal waste to landfill, around 40,000 tonnes (2.7 per cent) more than the target figure.

Three councils – Aberdeenshire, Scottish Borders and Dumfries & Galloway exceeded their landfill allowances for the 2005/06 financial year. Scottish Borders Council was fined £10,630; Aberdeenshire Council £38,200 and future landfill allowances of 8,058 tonnes were cancelled for Dumfries & Galloway.

52. Although these fines are small, the steep escalation in penalties in future years will mean that councils not achieving their targets will face increasing fines. Many councils view the potential penalties for missing targets as a major risk area.

17 The INCREASE Programme is a £10 million investment scheme set up in 2004 by the Scottish Executive to support community-based organisations in the delivery of sustainable waste management projects.



Part 3. The public is recycling more than ever

The system offering the best value for money depends on the level of recycling required. Co-mingled collections appear to achieve higher recycling rates.



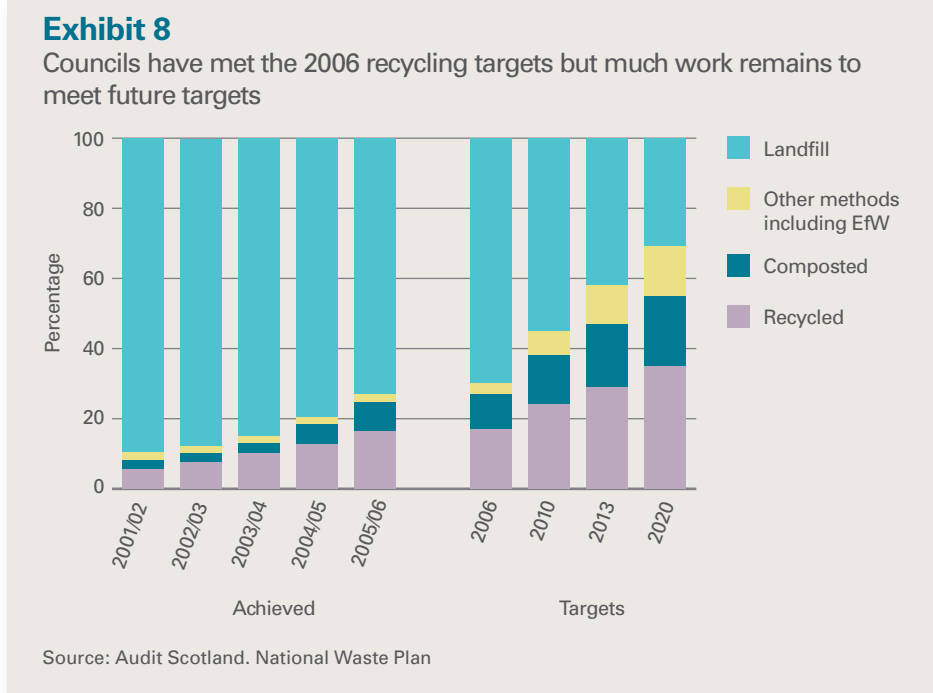
53. Given the historical reliance on landfill, recycling rates have traditionally been low in Scotland. To help achieve the Landfill Directive targets the Executive has set interim targets for increasing recycling and composting of 25 per cent by 2006 and 30 per cent by 2008. A target of 55 per cent has been set for 2020 with 50 per cent coming from collections of compostable and recyclable material from kerbside and recycling centres, and five per cent coming from residues such as ash resulting from incineration of materials which cannot be recycled or composted.

54. The £201 million in Strategic Waste Fund support to date has resulted in significant increases in recycling and the first interim recycling target of 2005/06 has been met. However, further increases are required if councils are to avoid Landfill Allowance Scheme penalties and landfill tax, both of which will rise sharply until 2010. The speed with which separate collections were introduced resulted in a large variety of schemes being employed.

The percentage of waste recycled and composted in Scotland has risen from seven per cent in 2001/02 to 25 per cent in 2005/06

55. Nationally, rates of recycling and composting have grown rapidly from seven per cent in 2001/02 to 25 per cent in 2005/06 and the interim recycling target has been met (Exhibit 8). This exhibit also shows that significant challenges remain if Scotland is to achieve its share of the Landfill Directive targets.

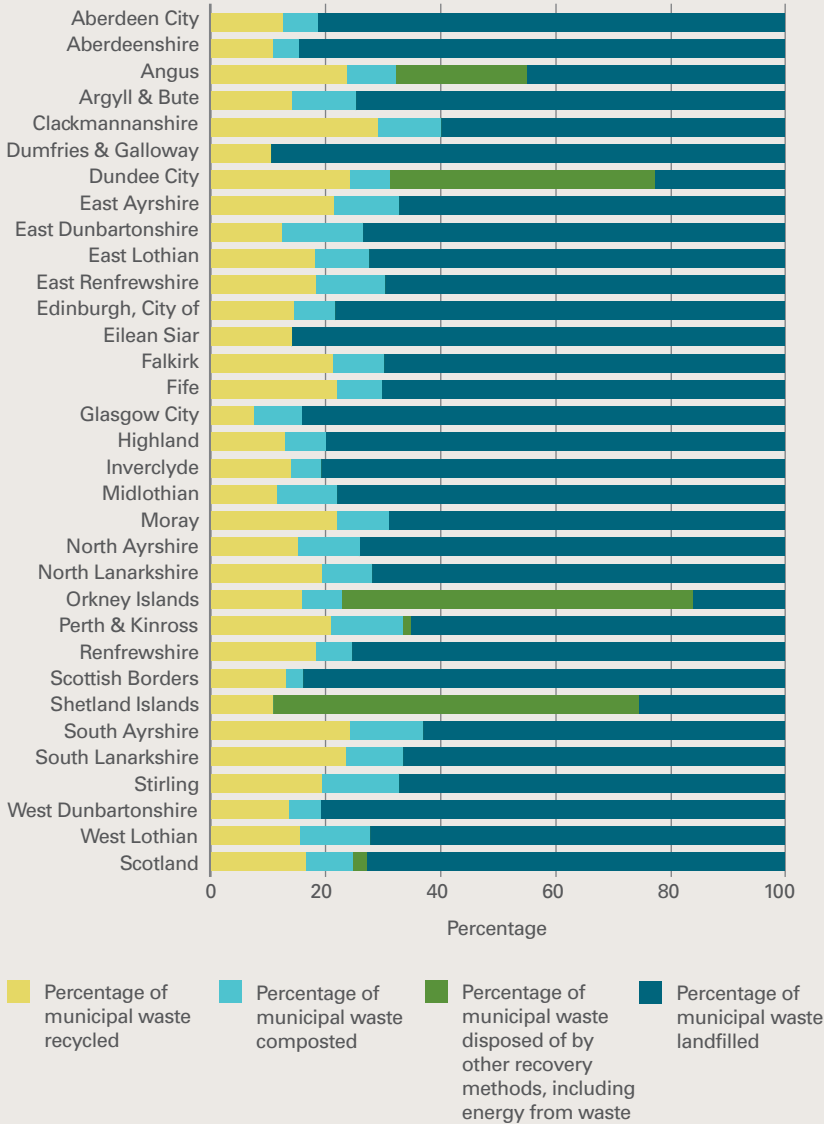
56. Targeted funding of recycling schemes through the Strategic Waste Fund has led to increases in recycling rates in Scottish councils by:



- allowing councils to expand kerbside recycling collections. For example the Strategic Waste Fund support of separate collections allowed Clackmannanshire to increase recycling and composting rates from six per cent in 2002/03 to 40 per cent in 2005/06 and in Fife from five per cent in 2002/03 to 21 per cent in 2005/06¹⁸
 - funding public education campaigns – all councils have undertaken public education campaigns to improve awareness of sustainable waste management with the majority of these supported by the Strategic Waste Fund and provided by the Scottish Waste Awareness Group. In addition, the Scottish Waste Awareness Group has conducted surveys to assess public awareness of recycling and waste issues in all 32 councils
 - funding the upgrading of 69 civic amenity sites to recycling centres over the past three years and increasing the number of recycling points.
- 57.** Recycling rates vary across councils in Scotland, from ten per cent in Dumfries & Galloway to 40 per cent in Clackmannanshire (Exhibit 9, overleaf). Eleven councils recycle more than 30 per cent; and ten recycle less than 20 per cent. A number of factors have led to this variation including:
- demographic factors such as rurality where the distances travelled make recycling expensive
 - councils where recycling is more expensive and difficult because of large numbers of tenements and flats, for example Glasgow, have received lower funding to date. (To reflect this, Glasgow, Edinburgh, Aberdeen and Dundee have been set lower long-term recycling targets of 45 per cent.)
 - some councils putting together more robust bids for Strategic Waste Fund support – some early bids were too expensive to meet the Executive's benchmarks

Exhibit 9

Council recycling and composting rates 2005/06



Source: Audit Scotland

- the availability of plants for treating waste which is not recycled or composted. Some councils already have access to Energy from Waste plants (Orkney, Shetland, Dundee and Angus) and this is reflected in the low use of landfill by these councils. Other councils, for example Dumfries & Galloway, will have facilities for the treatment of residual waste coming on stream soon.

The public is willing to participate in recycling but access to recycling facilities varies across Scotland

58. The public in Scotland have shown they are willing to recycle waste. In 2006, 81 per cent of the public in Scotland recycled waste, up from 50 per cent in 2002. We found that, when councils introduced separate recycling collections, in 13 council areas more householders than anticipated took part. Fewer than anticipated took part in just five councils.

59. Exhibit 10 shows levels of public participation by authority. The differences reflect factors such as local access to services, property type and levels of funding for education. Participation rates are particularly low in Glasgow, Dundee and North Lanarkshire reflecting the proportion of tenement and high-rise properties within their housing stock limiting the scope for kerbside collection.

60. The most common way for the public to recycle is by using a kerbside collection service (81 per cent of those recycling). This is followed by recycling points (48 per cent) and recycling centres (43 per cent). People may use more than one method of recycling.

61. Localised campaigns have played a key role in educating the public about recycling. Support from the Scottish Waste Awareness Group through, for example, the development of a campaign model and standard materials, has helped councils in running targeted campaigns to accompany the roll-out of new services. The most common methods used by councils to promote recycling are leaflets, posters, community events and council magazines. We found that councils valued the assistance from the Scottish Waste Awareness Group with 74 per cent finding the service useful or very useful. Funding by the Executive for education and awareness has varied among councils, however, and this may have contributed to differing public participation levels across councils.

62. In 2005/06, 75 per cent of Scottish households had access to a kerbside recycling collection, including:

- waste such as paper and glass
- garden waste
- both of these.

63. Coverage varies by area and property type. REMADE found that 83 per cent of households in urban areas have access to a dry recyclables collection compared to only 63 per cent in rural areas.¹⁹ Kerbside services are also more prevalent in non-tenement/flatted properties than other property types. We found that 88 per cent of households in non-tenement/flatted properties have a kerbside collection compared with 27 per cent of households living in tenements and only 13 per cent in high-rise properties.

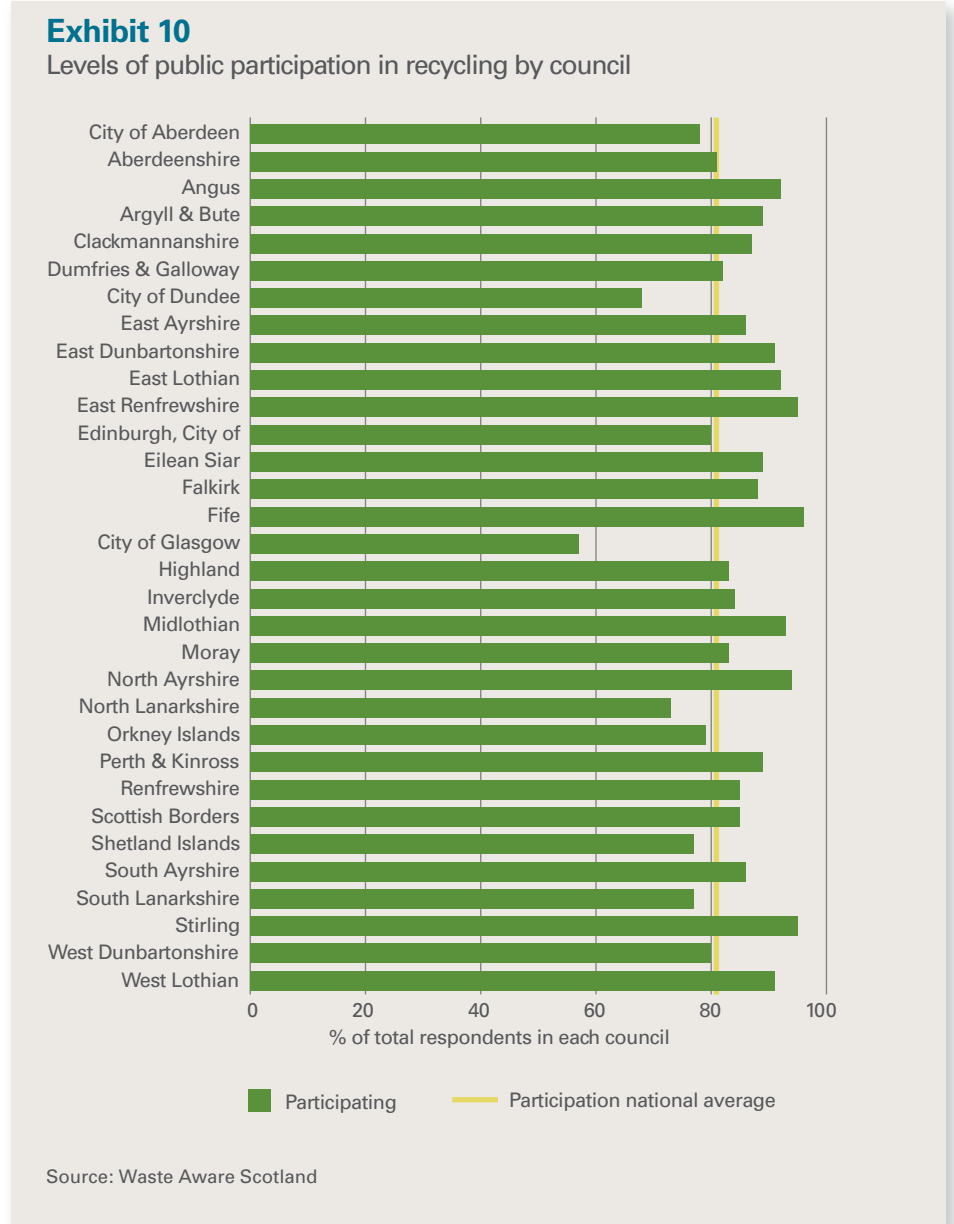
Kerbside collections of garden waste are common but there is scope to increase home composting

64. Twenty-seven of the 32 councils currently operate systems for collecting and composting garden waste, mainly by providing household garden waste bins. Almost everyone who has one uses it.²⁰

65. For compost to be regarded as a product (which can then be used for a variety of purposes), the material must obtain the quality standard PAS100. This means that the material has been separated from any other types of waste at source (eg, in a separate bin). Much of the compost which councils create at present does not reach the PAS100 standard, which limits its uses as it is still regarded as waste.

66. Composting waste will make an increasingly significant contribution to meeting Landfill Directive targets – with a target of 20 per cent composting by 2020. This means that markets for compost must be identified.

67. Around 30 per cent of waste is potentially compostable at home; however, home composting of garden and kitchen waste is much less prevalent than the use of a garden waste bin. Currently, 14 per cent of the Scottish public home compost and another 16 per cent say they are willing to participate in



the future.²¹ Home composting has the scope to significantly reduce the amount of waste that a council has to collect.

68. A number of community groups and councils are active in promoting home composting and community composting. The best results are obtained when the householder is given clear advice on how to use the home composting bin. In addition, green waste collections should be designed to ensure that they do not

attract waste which would otherwise be home composted.

69. The Executive has funded WRAP to provide home composting bins in a number of areas in Scotland, through council and community sector partners. Preliminary results from WRAP suggest that home composting can lead to the average household putting just under one quarter of a tonne less waste a year out for collection. In addition, the Scottish Waste Awareness Group,

19 *Kerbside Collections – Factors for Success: A Review of Scottish Kerbside Recycling Schemes to identify factors delivering high recyclable recovery*, REMADE, 2007.

20 Public Attitude Survey, SWAG, 2006.

21 Public Attitude Survey, SWAG, 2006.

working with WRAP, run a home composting campaign.

70. Home composting is more sustainable than the collection of garden waste in the long term as it reduces the amount of waste generated and complies with the National Waste Strategy self-sufficiency and proximity principle. If home composting is to become more common, additional targeted campaigns to make the public aware of the benefits of home composting will be required and incentives for home composting such as the provision of subsidised composting bins should be introduced or extended.

Recommendation

- The Scottish Government and councils should work together with the Scottish Waste Awareness Group to develop a programme to encourage householders to use home composting.

A wide variety of materials are collected for recycling

71. The most common materials collected by councils are paper, aluminium and steel cans, garden waste, glass and plastics. Exhibit 11 shows the materials currently collected through kerbside collections and the number of councils collecting each material.

There are three main collection systems for recycling but a wide variety of schemes

72. There are currently 67 recycling schemes in operation across Scotland, using 41 types of receptacle, collecting differing combinations of 20 materials. There are three main types of container: wheeled bin, boxes and bags. There is little consistency in the colour coding of bins and containers used to collect particular recyclables. The average

Exhibit 11

Materials currently collected by Scottish local authority kerbside collection systems

Material	Biodegradable?	Number of councils with collection	Percentage of councils with collection
Paper	Yes	31	97
Aluminium cans	No	28	88
Garden waste	Yes	27	84
Steel cans	No	27	84
Cardboard	Yes	22	69
Glass	No	19	59
Plastic bottles (HDPE)	No	15	47
Plastic bottles (PET)	No	14	44
Yellow Pages	Yes	11	34
Plastic bottles (all types)	No	10	31
Textiles	Partly	9	28
Glass (mixed)	No	6	19
Food and drinks cartons	Partly	4	13
Thin card	Yes	4	13
Aerosols	No	3	9
Household batteries	No	2	6
Aluminium foil	No	1	3
Food waste	Yes	1	3
Handbags & shoes	Partly	1	3
Plastic food containers	No	1	3

Source: Waste Aware Scotland

amount of waste such as paper and glass which is recovered from separate collections in Scotland is 2.07kg per household per week. In England and Wales the figure is about 50 per cent higher at 3.21kg per household per week.²²

73. Council officers believe that one of the reasons there is such a wide variety of schemes is that many councils introduced pilot schemes for separate collection that were rolled out without a full evaluation of the options available. The review of separate collection systems²³ was

²² *Kerbside Collections – Factors for Success: A Review of Scottish Kerbside Recycling Schemes to identify factors delivering high recyclable recovery*, REMADE, 2007.
²³ *Separate Waste Collection Systems Best Practice Review*, Scottish Executive, June 2003.

published too late by the Executive to influence many council plans. The review provided a framework for councils to develop their own area-specific collection schemes to best suit the local conditions. It suggested that collection schemes should be designed to collect as wide a range of materials as practicable and that the use of pilot and trial schemes should form an essential part of the process.

74. Representatives of the waste industry felt that the Executive missed an opportunity to rationalise recycling schemes by not being more prescriptive about the types of recycling schemes they would fund. They suggested the Executive should have insisted that councils in an area group use the same separate collection system for the same housing types. This would have allowed them to use the same bins and vehicles and to share strategic Material Recycling Facilities.

75. They also stated that, as a condition of funding, councils should market test kerbside collections in order to achieve better value for money. This supports our findings in paragraph 86 on achieving Best Value.

76. The host of separate collection schemes currently employed can be broadly categorised into three main systems (many councils operate more than one system):

- Source segregation where users put recycled waste into separate containers (ten councils).
- Kerbside sort where material is sorted as it is collected (13 councils).
- Co-mingled collection where recycled waste is collected together and sorted afterwards (16 councils).

77. In addition, some councils combine these separate collection schemes with alternate weekly collections of waste that cannot be recycled or composted (residual waste) to boost recycling and reduce costs (Exhibit 12).

Exhibit 12

Alternate weekly collections

Eighteen Scottish councils have now moved away from a weekly collection of residual waste to a model whereby households receive a waste collection every week, but with residual waste collected fortnightly. For example, dry recyclables (eg, paper, glass) may be collected in week one, residual waste in week two, dry recyclables/garden waste in week three and residual waste again in week four.

The move to alternate weekly collections has proved controversial among some sections of the public and media. The key issues cited include potential adverse health effects from storing residual waste for two weeks and lack of storage capacity in households that produce larger amounts of waste. However, a recent report by Defra²⁴ found that '...no significant adverse health effects are likely to be caused by alternate week waste collections of residual and biodegradable waste, provided common sense steps...are taken'.

There is evidence that alternate weekly collection of residual waste increases the amount of recycling collected.²⁵ Having a good communications strategy and implementing the changes sensitively are central to successfully introducing alternative weekly collections.

The system offering the best value for money depends upon the level of recycling required. Co-mingled collections appear to achieve higher recycling rates

78. Exhibit 13 (overleaf) summarises the advantages and disadvantages of each kerbside collection system and provides information on value for money measures of efficiency, effectiveness and economy. The information is collected from Audit Scotland's survey of councils and from REMADE's recent report *Kerbside Collections – Factors for Success*.²⁶ REMADE surveyed all 32 Scottish councils to gather data on kerbside recycling; with 29 full sets of data being gathered. The information covered the financial years 2004/05 and 2005/06.

79. As Exhibit 13 illustrates, the average cost of service visits per annum and cost per tonne collected are broadly similar across the three systems. The amount of recycled waste that councils collect varies. This ranges from 1.43kg per household per week from source segregation to 2.35kg per household per week from co-mingled, suggesting that co-mingled provides advantages over the other systems in terms of the amounts of recycling that can be collected.

80. REMADE has identified a number of factors which affect the levels of dry recyclable that can be collected:

- Collection frequency (weekly, fortnightly, monthly): when councils put on more collections people put out more waste for recycling.
- Collection capacity (how much the container will hold): the greater the capacity the greater the yield of recyclables.

24 Defra report 2007 on environmental impact.

25 Local Government Association, Press Release, April 2007 – states that English councils which have adopted the alternate weekly collection system have an average recycling rate of 30 per cent compared to 23 per cent for those using weekly collections.

26 *Kerbside Collections – Factors for Success: A Review of Scottish Kerbside Recycling Schemes to identify factors delivering high recyclable recovery*, REMADE, 2007.

Exhibit 13

Measures of value for money of different types of kerbside collection systems

	Source segregation	Kerbside sort	Co-mingled
Efficiency – providing a service to households at the lowest cost Cost per annum	£25 per household per year	£29 per household per year	£24 per household per year
Economy – minimising the cost of collecting recyclables Cost per tonne collected (ideally would be by type of recyclables)	£125 per tonne	£122 per tonne	£121 per tonne (including £63 per tonne for material recycling facility (MRF))
Effectiveness – concerned with maximising the recycling rate (could also be kg recyclables collected per service visit)	1.43kg recyclables collected per household per week	1.98kg recyclables collected per household per week	2.35kg recyclables collected per household per week
Advantages	Recyclables do not require further segregation Recyclables are less likely to suffer from contamination and may command a higher market value and more stable markets No need to pay gate fee at a material recycling facility	A wider range of materials can be collected No need to pay gate fee at a MRF Recyclables less likely to suffer from contamination and may command a higher market value	A wide range of materials can be collected quickly Reduced collection costs as existing staff and vehicles can be used Opportunity for collecting a higher volume of recyclables.
Disadvantages	Lower recovery rates than other systems Requires greatest householder participation	Resource intensive (time, labour and cost) and therefore expensive	A fee has to be paid for each tonne of material using the MRF Recyclables likely to suffer from contamination and a less secure market

Source: Audit Scotland. REMADE

- The type of container used: eg, a two-bag system recovers an average of 0.37kg per household per week (kg/hh/wk) while a 'survival bag' co-mingled system recovers an average of 3.5kg/hh/wk.
- Number of materials recycled: the more materials that are collected the greater the overall yield of recyclables.
- Residual waste collection frequency: councils collect 60 per cent more recyclable waste when they collect recyclable waste one week and residual waste the next.

81. Therefore, the co-mingled system appears to perform best in terms of the amount of recyclables collected. However, various factors, such as those above, will affect how a collection system performs. In addition, the variety of kerbside recycling schemes operated by councils makes it difficult to assess value for money of the schemes and systems involved without a comprehensive technical evaluation of the systems available.

82. Two main factors will affect the long-term value for money that each system achieves:

- Markets for recyclable materials.
- The recycling rates that councils must achieve.

83. Source segregation and kerbside sorting systems are more labour intensive but produce cleaner recyclable materials which may have a higher market value in the long term. For example, the current market price for 'clean' source segregated paper is £54 per tonne, while the market for mixed paper is £34 per tonne ([Exhibit 15, page 24](#)). The two or three bin co-mingled system, where residual waste and materials for recycling are collected on alternate weeks, can be provided using existing staff and vehicles and is cheaper to operate. However, the market for these

recycled materials may be less secure in the long term and so the price received may eventually fall.

84. The level of recycling to be achieved will also affect decisions on the type of systems to use. The target is 30 per cent recycling or composting of municipal waste by 2008 and 55 per cent by 2020. Yet a system that performs well in achieving a 30 per cent recycling target may not be the best for achieving higher levels of recycling.

85. Therefore councils will need to look at systems that maximise the amount of recyclables collected. The available evidence so far suggests that the co-mingled system produces a greater quantity of material per household and may be best fitted to meet the higher levels of recycling required in the 2020 target.

86. The central requirement of Best Value is that a council demonstrates continuous improvement in the performance of its services. This means that a council needs to know how services are performing and whether they are improving over time. Regular Best Value reviews of services are an essential part of ensuring continuous improvement and ensuring efficient government. However, 13 councils have not undertaken a Best Value review of waste management in the past five years. A review of kerbside recycling systems should form a fundamental part of any future Best Value review of waste management services.

Recommendations

- The Scottish Government and councils should undertake a technical evaluation of kerbside recycling systems to identify the most cost-effective systems to achieve the levels of recycling required to meet the Landfill Directive targets.
- The Scottish Government should encourage councils to adopt a more consistent approach to recycling using a small number of 'best practice' schemes.
- Councils across Scotland should work together to standardise the type of containers used and adopt a common colour coding system across Scotland.
- Councils should ensure that current recycling systems offer Best Value by conducting option appraisals before extending recycling schemes. Option appraisals should include consideration of market testing as a way of demonstrating best value.

Developing markets for recycled materials is crucial to increasing recycling rates

87. A considerable percentage of material collected for recycling is processed outside of Scotland, including export overseas. However, accurate data is not available as some councils were unable to provide detailed information and several did not know the final destination of materials collected for recycling.

88. The National Waste Strategy states that 'increasing the quantity of waste recycled depends on developing markets for recycled materials; therefore there must be an end use for these materials'. However, the main driver for councils is to meet recycling targets, therefore their focus has been on increasing the collection of recyclables rather than on developing markets for the collected material.

89. For the past few years there has been a strong global market for recyclables which has allowed councils to find a market for all the materials they collect. Even so, in some cases the council has to pay to have recyclables taken away.

Councils risk damaging their reputations if they don't know where their recyclables are processed

90. Exhibit 14 (overleaf) shows the final processing destinations of recycled material collected from Scottish households. A council may not know the final destination of the recycled material, for example, where they are sold to an intermediary who then sorts and/or 'bulks up' the material to sell on. Recyclables may be reprocessed in Scotland, the UK, or overseas. For example, 60 per cent of UK paper exports now go to China with the tonnage increasing from 160,000 tonnes in 2002 to over 1.5 million tonnes in 2005.

91. Our survey of Scottish councils found that 44 per cent of paper collected by Scottish councils was reprocessed in Scotland, 25 per cent in Wales, three per cent in England and three per cent in China. The final processing destination of the remaining 25 per cent was unknown.

92. Councils who do not know the final destination of recyclables collected in their area risk damaging their reputation if their waste is badly managed by an intermediate. There is a big difference between legitimately exporting recyclables and dumping unsorted waste in developing countries. For example in one case a company was fined £55,000 and paid £85,000 costs for illegally transporting household waste from London and the Home Counties for processing in South East Asia.

93. There is no evidence of similar issues arising in any Scottish council. However, as a result of the above case SEPA is now working with Her Majesty's Revenue and Customs to increase enforcement of the Transfrontier Shipment of Waste Regulations.

Councils should work together to get better prices for recyclables

94. Exhibit 15 shows the different materials collected by councils and the range in price received for them. The current market price for each material is also shown. A number of factors affect the income councils receive from recyclables; the main ones are quality of recyclables (including freedom from contamination), transportation costs and market demand.

95. Materials which have been collected using a co-mingled system are often of lower quality and more contaminated than materials which have been segregated earlier. This affects the price councils will receive for a material. As Exhibit 15 shows, councils who collect clean paper receive a higher price on average than those which collect paper using a mixed system.

96. Market demand is an important factor in the price received. Although councils currently receive income for mixed quality paper, they are vulnerable if demand falls. A move among paper producers towards requiring higher quality paper may have a greater impact upon those councils currently using co-mingled systems than those collecting uncontaminated waste paper.

97. Scottish councils currently sell their recyclables individually. Only 12 councils have considered joint contracts with other councils to sell recyclables and work by REMADE in 2001 to develop a consortium stalled. REMADE is currently undertaking a study looking at how councils and community groups can obtain better prices for recycled materials. More than three-quarters of councils

Exhibit 14

Destination of recyclables collected by Scottish councils in 2005/06

Destination	Percentage of recyclables processed in each destination						
	Waste paper	Cardboard	Glass	Metal	Plastic	Garden refuse	Other
Scotland	44	26	69	55	45	70	81
England	3	3	2	6	51	2	0
Wales	25	0	0	0	3	0	1
Unspecified UK	0	0	2	0	0	2	0
China	3	0	0	0	1	0	0
Unknown/ Variable	25	71	27	39	0	26	18
Total tonnage	153,544	10,779	42,484	7,012	5,348	135,847	79,312

Note: Not all councils were able to provide this information.

Source: Audit Scotland

Exhibit 15

Prices per tonne received for recyclables by Scottish councils in 2005/06

		Market price	Average price received by councils (£)	Range of prices (£)		Number of councils
				Upper quartile	Lower quartile	
Paper	Clean	£54	£18.80	£20.50	£20.00	14
	Mixed	£34	£10.50	£15	£-4.00	13
Cardboard	Clean	£54	£16.60	£20.00	£0	16
	Mixed	-	£10.90	£12.00	£0	10
Glass	Clean	£24	£11.90	£17.00	£5.25	21
	Mixed	£10	£-24.20	n/a	n/a	2
Metal	Clean	-	£35.70	£30.75	£7.5	12
	Mixed	-	£-0.40	£2.5	£-17.5	8
Plastic	Clean	-	£45.00	£39.95	£15.00	8
	Mixed	£90	£38.30	£6.25	£-17.50	8
Garden refuse		£-20	£-16.80	£-19.25	£-22.87	22

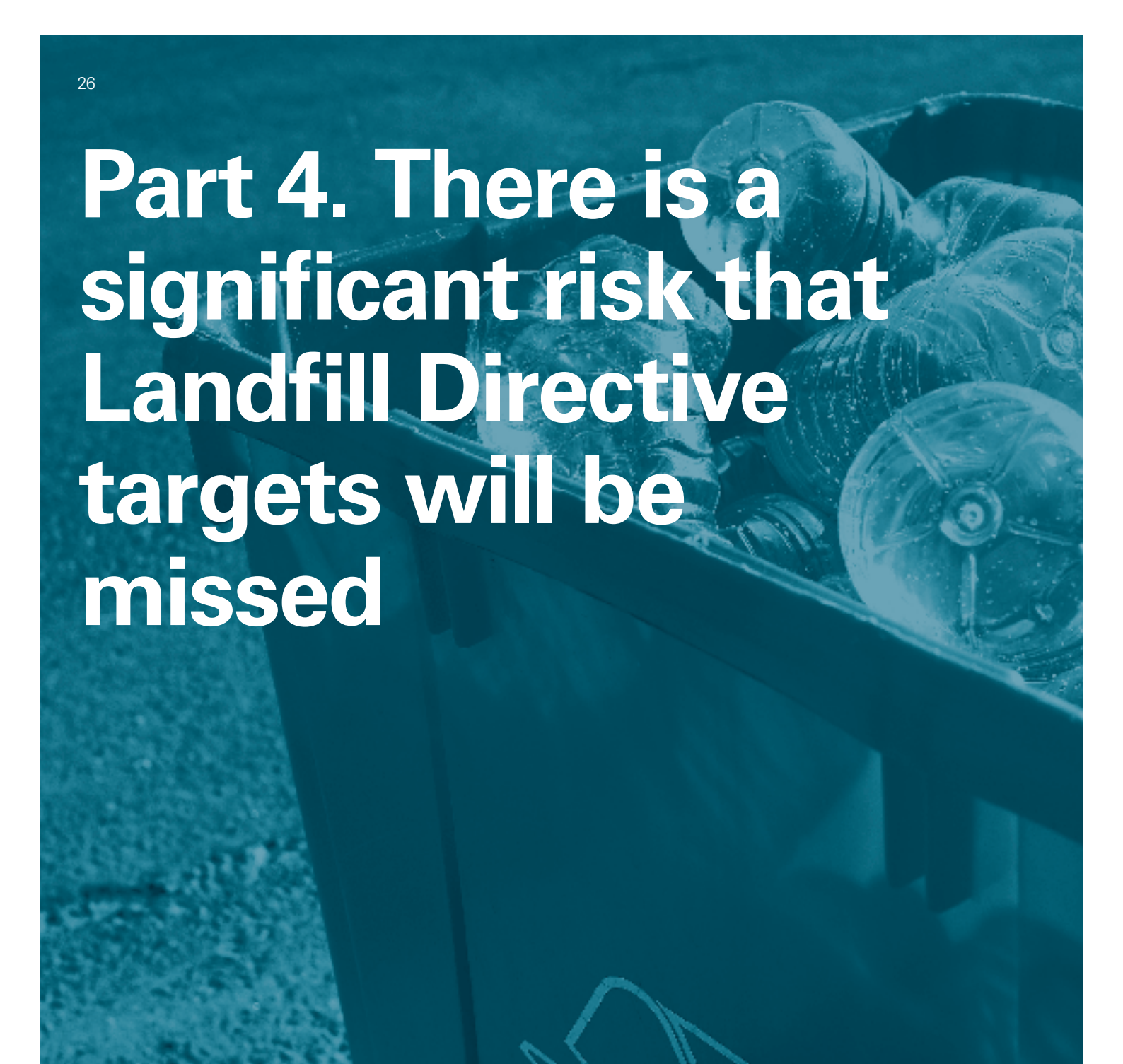
Source: Audit Scotland. <http://www.letsrecycle.com>

identified markets for recyclables as a barrier to improving recycling rates. If markets for recyclables are to be secured at the most advantageous price, councils should consider working together, perhaps on a material to material basis, in order to create economies of scale.

98. Market development is also essential to enable increases in recycling to take place. The National Waste Strategy identified the issues at an early stage: 'The fluctuations in price of these international markets can mean that recycling systems do not make money...' Therefore it is important that market development initiatives are coordinated with funding to increase recycling.

Recommendations

- Councils should ensure that they know the final destination of recyclables sold to intermediaries.
- Councils should examine the benefits of setting up consortia to market their recyclables.
- The Scottish Government and its agencies should look at further opportunities to develop secure, sustainable long-term markets to accommodate the planned increases in recycling.



Part 4. There is a significant risk that Landfill Directive targets will be missed

There have been delays in making decisions about the facilities required to meet long-term targets.


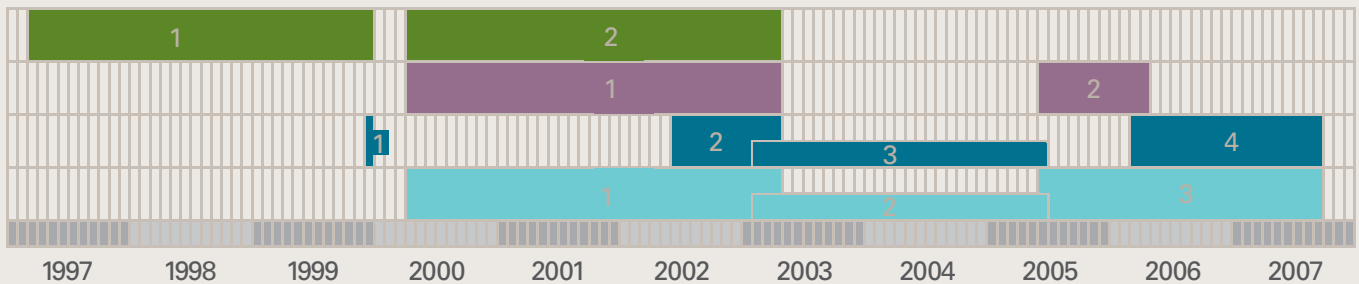


Exhibit 16

Progress in delivering sustainable waste management has been slow

**SEPA**

1. Produce National Waste Strategy (NWS)
2. Produce Area Waste Plans (AWPs) and National Waste Plan (NWP)

Area Waste Groups

1. Produce AWPs and NWP
2. Produce Strategic Outline Cases (SOCs) and Outline Business Cases (OBCs)

The Executive

1. Adopt NWS
2. Produce NWP (with SEPA)
3. Evaluate and fund SWF Phase 1 bids
4. Evaluate SWF Phase 2 bids

Individual councils

1. Involvement in Area Waste Groups (AWGs) with other stakeholders
2. Produce implementation plans (SWF Phase 1 bids). Introduce separate collections
3. From late 2005 involvement in SOC and OBCs

Source: Audit Scotland

99. Exhibit 16 summarises the overall progress made in Scotland since the decision in 1997 to produce a National Waste Strategy. Overall it took SEPA, the Executive and councils from the summer of 1997 until 2003 to produce the National Waste Strategy and National Waste Plan (and the associated Area Waste Plans).

100. Since then, the Executive's investment in kerbside recycling has enabled councils to achieve the interim 2006 recycling target of 25 per cent. However, delays in commissioning facilities for treating residual waste mean there is a significant risk that Landfill Directive targets will be missed.

The National Waste Strategy and National Waste Plan took a long time to deliver

101. The development of a National Waste Strategy began in the summer of 1997 and was published by SEPA in December 1999 and subsequently adopted by the Executive. The National Waste Strategy set out how a sustainable waste management

strategy could be implemented to meet the requirements of the Landfill Directive (Exhibit 16, Appendix 3).

102. The National Waste Strategy is being implemented through 11 Waste Strategy Areas, which combine councils with other stakeholders, including local environmental groups and the waste industry. These Area Waste Groups are chaired and facilitated by SEPA, which drafted the 11 Area Waste Plans.

103. Most council waste managers felt that the plans provided a sound basic framework for implementing sustainable waste management across Scotland but that they took a long time to deliver; three-quarters were positive that their council would take forward sustainable waste management. Several said that the Area Waste Plans could have been delivered more quickly if a statutory framework for their delivery had been in place. Work on Area Waste Plans began in April 2000 and was completed in April 2003.

104. In 2003, SEPA published plans for each waste strategy area and brought them together in a National Waste Plan, published jointly with the Executive in March 2003. The National Waste Plan:

- provides an integrated summary of the 11 Area Waste Plans
- includes an action plan to implement the changes required
- sets out how the Executive will work in partnership with other stakeholders.

There were delays in implementing the National Waste Plan

105. In 2003, the Executive asked councils to produce costed implementation plans for each Area Waste Plan. There were considerable delays after this point. We examined a number of council bids in detail to understand the reasons for delays in approving Strategic Waste Fund support, with the average time from bid submission to final approval being ten months.

106. Evidence from fieldwork shows that early guidelines to councils on the Strategic Waste Fund bidding process produced by the Executive did not properly describe the information they required to evaluate the bids. This meant that bids from councils varied considerably in structure and content making it difficult for the Executive to compare bids. Many did not contain adequate information for them to assess value for money. The Executive later provided revised guidelines and REMADE helped a number of authorities to put together the information required by the Executive.

107. In addition, the Executive did not wish to publish value for money guidelines for councils bidding for Strategic Waste Fund support as it felt that councils would bid up to the guidelines. When councils did not meet the Executive's value for money criteria they had to rework bids to meet (unpublished) guidelines, leading to frustration and delay for councils.

108. There have also been delays in making decisions about the level of infrastructure required to process residual waste. Splitting the implementation of the National Waste Plan into two phases provided a clear focus on putting in place kerbside recycling schemes. However, this created delays in investment in infrastructure to deal with residual waste.

There was a lack of organisational capacity in Scottish councils and in the Executive to deliver the changes quickly

109. There was a shortage of staff with the necessary skills and experience in councils to put together bids to the Strategic Waste Fund to the standard required by the Executive. Managing mainstream collection systems and landfill contracts is considerably less complex than implementing Area Waste Plans. These require the development of new systems of kerbside recycling and, in particular, Strategic Outline Cases (SOC) and Outline Business Cases (OBC) for infrastructure, which require different skill sets. In most

cases the Strategic Waste Fund paid for additional services rather than the additional organisational capacity required to deliver change. Waste managers were expected to develop bids in addition to their waste management 'day jobs', putting managers under considerable stress.

110. There was also a lack of organisational capacity in the Executive to process the bids quickly. In 2003, the Executive team managing the roll-out of the Strategic Waste Fund was relatively small and required additional waste management expertise. This issue has been tackled to a limited extent by seconding staff from SEPA and REMADE to help process the bids and provide additional waste management expertise. The current staffing comprises two teams, plus support staff, within the waste and pollution reduction division:

- The Waste Strategy Team comprising four staff.
- The Recycling Project Delivery Team comprising four staff.

111. All these factors led to significant underspends in the Strategic Waste Fund budget ([Exhibit 23, page 36](#)), including slippage in approving bids, slippage in spend on approved bids for recycling services and over-optimism about the speed with which progress would be made in commissioning residual waste infrastructure. Agreements on Phase 1 funding have now been reached for 31 of the 32 councils for funding recycling schemes to 2020, although additional funding has still to be agreed to achieve future recycling targets.

As a result of splitting the Strategic Waste Fund into two phases the deadlines for projects to deal with residual waste are extremely tight.

112. Because of the complexity of evaluating the large number of varying council bids for Strategic Waste Fund support, particularly those containing bids for capital infrastructure projects to deal with residual waste, the

Executive decided to split the Strategic Waste Fund process into two phases:

- **Phase 1** funding was available from 2003 onwards to set up separate collection systems for recycling and composting. These are introduced over a short timeframe (three to six months) and require intensive work on the part of the council in terms of advance publicity and communication with the residents involved. If handled badly, it can result in large numbers of complaints from residents.
- **Phase 2** funding to develop major infrastructure projects for dealing with the residual waste. This has involved councils working together to produce SOCs or OBCs for infrastructure projects. Funding these projects require a very long planning horizon, often five years or more, and can lead to significant local political campaigns from the residents affected. Funding has already been provided for some residual waste treatment infrastructure in Western Isles, Argyll & Bute and Dumfries & Galloway. The Executive formally requested Outline Business Cases for Phase 2 funding in June 2005.

113. This split provided a clearer focus on getting kerbside recycling schemes in place to meet the interim recycling target in 2006. However, it created a delay in funding the large-scale infrastructure investments needed to address the landfill challenge. The Executive felt that to do both at the same time would have led to confusion leading to across the board delays. However, major infrastructure projects take a long time to plan and deliver. The two-year delay in launching the process to develop residual waste treatment plants means that these plants may not be operational in time to contribute to achieving the 2013 Landfill Directive target.

114. In addition, councils who, at the time, wished to put together integrated bids where recycling schemes and infrastructure projects were developed together, or where the council wished to let an integrated contract for both waste collection and treatment, have been hampered by the two-stage approach. This has led to deferred bids for infrastructure to deal with residual waste, for example in Highland Council and in West Lothian Council.

Residual waste treatment facilities are unlikely to be delivered in time to achieve the 2013 Landfill Directive targets

115. Increased recycling and composting may allow Scottish councils to achieve the 2010 Landfill Directive targets. However, new residual waste treatment facilities are required to meet subsequent Landfill Directive targets and the delay described previously has made the achievement of the 2013 target very unlikely. Residual waste treatment rates may need to increase from four per cent of waste at present to 28 per cent in 2019/20 to meet the targets for that year.

116. Exhibit 17 (overleaf) describes options for separating and treating waste. In December 2006, the Executive estimated that plants capable of treating 1.14 million tonnes of residual waste were needed by 2020. Costs for this were estimated to rise from £48 million a year in 2012/13 to £79 million a year in 2019/20.

117. Energy from waste is the favoured option for many councils because it is a proven technology that is likely to be the least expensive and least risky option, in terms of achieving Landfill Directive targets. Given capacity requirements, there is a potential requirement for four to six facilities across Scotland. EfW also

has the benefit of helping Scotland to achieve its renewable energy obligations as it could generate significant quantities of electricity.

118. However, other technologies are available and, in terms of the 2020 targets, the Scottish Government and councils could delay final decisions until the various technologies have been tested and proven operationally. In any event, a PPP method of funding the infrastructure would be based on the number of tonnes treated and would not specify the treatment method.

119. To ensure economies of scale for major infrastructure developments the Executive has asked councils to work in larger groupings based on Area Waste Groups. Two groups of councils, the Lothian and Borders 'pathfinder group' (involving The City of Edinburgh Council, Midlothian Council, East Lothian Council, West Lothian Council and Scottish Borders Council) and the Lanarkshire Group (involving North Lanarkshire Council and South Lanarkshire Council) are further advanced and have prepared more detailed OBCs.

120. The remaining councils worked with consultants to put together SOCs over the period from October 2005 to January 2006. The Executive said it would respond to the SOCs by September 2006. But no announcement has yet been made.

121. In March 2007, the Executive announced the first tranche of funding, pending final Ministerial approval for residual waste treatment facilities. The Edinburgh, Lothian and Borders Group pathfinder project will receive £12.6 million a year to treat 300,000 tonnes of residual waste while North and South Lanarkshire Councils will receive £8.4 million a year for treating 200,000 tonnes of residual waste, equivalent to £42 per tonne treated in both cases.

122. The Executive has asked the councils involved to submit an OBC to the Executive by 30 September 2007. This leaves a timeframe of four-and-a-half years for councils to progress from the OBC stage to having operational facilities in place for the beginning of the 2012/13 financial year in order to meet the 2013 Landfill Directive target.

123. Exhibit 18 (page 31) shows the typical time assumed by the Executive to be required to move from OBC to operational waste management facilities. This suggests a timeframe of around six years to progress from OBC stage to operation, suggesting that at best the infrastructure will be in place around 18 months after the start of the target year. In addition, these estimates may be optimistic – the Executive estimated a 16.5 month timeframe from date of advertisement to contract signature compared to an average of 26 months suggested by a survey by the Office of Government Commerce.²⁷

124. Therefore the Lothian and Borders pathfinder project and the Lanarkshire project would need to complete their business cases and go through all of the steps outlined in Exhibit 18 to have treatment capacity available in April 2012. In addition, the overall capacity of these two projects is planned to be 500,000 tonnes per annum compared to an estimated requirement of 820,000 tonnes to achieve the 2013 Landfill Directive target, a shortfall of 320,000 tonnes.

125. The combination of tight timescales and the volume of waste that schemes currently in progress can treat suggests that Scotland will not be able to treat enough residual waste to meet the 2013 Landfill Directive target.

126. This is supported by our survey of councils (Exhibit 19, page 31).

Exhibit 17

Waste treatment options

1. Residual waste treatment options		
Energy from Waste (EfW)	Waste is incinerated under controlled conditions to prevent pollution and the production of toxins. Energy is recovered from the process in the form of electricity with heat recovery and the remaining ash can be recycled, for example for use in road building and construction.	A typical large-scale plant treating approximately 400,000tpa would have a site area of approximately 5ha, with a maximum building height of 30m and a stack height around 40-70m. The capital cost would be around £100 million with operating costs of about £5 million a year. ²⁸ Two EfW plants currently operate in Scotland in Dundee and Shetland.
Anaerobic digestion (AD)	Waste is decomposed by naturally occurring micro-organisms in the absence of air. Biodegradable wastes are converted into a stabilised residue and 'methane rich biogas' which can be collected and burnt as a fuel to produce electricity. AD can reduce the volume of waste by approximately 60%. It is particularly suitable for treating food waste.	A typical large-scale plant treating 40,000tpa would have a site area of approximately 0.6ha with a maximum building height of 10m. There is a recently completed plant in Eilean Siar.
Mechanical Biological Treatment (MBT)	This is the integration of several processes commonly found in other waste management technologies such as MRFs, and 'in-vessel composting' plants. It may also be employed to produce compressed pellets of 'refuse derived fuel'. However the outputs may have little market appeal.	A typical plant treating 50,000tpa would have a site area of approximately 1-2ha with a maximum building height of 20m. The capital cost would be around £13 million with operating costs of about £2.7 million a year. ²⁹ Three MBT plants currently operate in Argyll and Bute.
Thermal treatment (Pyrolysis)	Pyrolysis is the controlled combustion of waste in the complete or partial absence of oxygen at high temperatures. It reduces the volume of waste by approximately 90%, and produces gas for energy generation.	A plant treating approximately 50,000tpa would have a site area of approximately 1-2ha, with a maximum building height of 25m. The stack height will depend upon the requirements for air dispersion, but may range from 30-70m. No pyrolysis plants currently operate in Scotland.
2. Composting facilities		
Open Windrow Composting (OWC)	A biological process in which garden waste is broken down by naturally occurring micro-organisms to produce a stabilised residue.	A typical large-scale plant treating 25,000tpa would have a site area of approximately 2-3 ha. The height of windrows is usually no more than 3m high. Several OWCs operate in Scotland.
In-vessel composting (IVC)	'In vessel composting' is required for kitchen waste because of the animal by-product regulations. It is an aerobic, biological process in which garden and kitchen wastes are converted into compost which can be applied to the land.	A typical medium-scale plant treating 25,000tpa would have a site area of approximately 1-2ha with a maximum building height of 5m. Seven IVC plants currently operate in Scotland – one in Lanarkshire, two in Aberdeenshire, one in Fife, three in Argyll & Bute, and one under construction in Highland.
3. Recycling facility		
Materials Reclamation Facility (MRF)	This is a facility for sorting and separating waste and recyclables. Recyclables are segregated by mechanical processes, such as air blowers and electromagnets, followed by manual sorting on conveyor belts. However, there remains a need to treat residual waste by some other method.	A typical plant treating 50,000tpa would have a site area of approximately 1-2ha with a building height of 12m. A number of MRFs operate in Scotland.

Source: Audit Scotland. Waste Aware Scotland

28 Eligibility of Energy from Waste – Study and analysis, Ilex Energy Consulting, March 2005.

29 Eligibility of Energy from Waste – Study and analysis, Ilex Energy Consulting, March 2005.

There is a risk that councils without appropriate sites for waste facilities may have difficulty meeting targets because of potential planning delays

127. The aim of the planning system is to ensure that development and changes in land use occur in suitable locations and are sustainable. The statutory development plan for an area currently consists of the Structure Plan and the Local Plan (although this will change when the Planning etc (Scotland) Act 2006 commences, expected in 2008).

128. The new legislation³⁰ introduces the requirement for a 'National Planning Framework' for Scotland and provides for the Framework to be used to designate national developments. The Statutory Development Plan will comprise the Local Development Plan together with (within the four main city regions of Scotland only) the Strategic Development Plan. While the procedures for the new development plan system will be significantly different, the purposes of the two parts of the system will not change greatly:

- The Structure Plan (and the new Strategic Development Plan) – providing an overview of an area's development requirements and identifying the supply of land and major infrastructure to meet development needs and key environmental aims.
- The Local Plan (and the new Local Development Plan) – setting out the detailed policies and site-specific proposals for development, to guide day-to-day planning decisions.

129. The central guidance for the system comes from the Executive's Scottish Planning Policies. The planning policy for waste management has been subject to review over the last two years and a new Scottish Planning Policy for

Exhibit 18

Waste infrastructure procurement timetable (Scottish Executive scenario planning) – the Executive estimates that it may take around six years from Outline Business Case to commissioning facilities

Task	Time	Cumulative time	
		Months	Years
Outline Business Case finalisation	6 months	6	0.5
Issue OJEU notice	1 day	6	0.5
Pre-qualification	3.5 months	9.5	0.8
Competitive dialogue period	7 months	16.5	1.4
Final tender period	4 months	20.5	1.7
Clarification period	2 months	22.5	1.9
Preferred bidder appointment	1 day	22.5	1.9
Planning permission	12 months	34.5	2.9
PPC permission (in parallel with planning permission)	12 months	34.5	2.9
Contract award	1 day	34.5	2.9
Construction and commissioning	36 months	70.5	5.9

Source: Scottish Executive

Exhibit 19

Almost half of councils are concerned that they will miss the 2013 Landfill Directive target

	Very confident	Fairly confident	Unsure	Not very confident	Not at all confident
2010 targets	19%	19%	23%	13%	26%
2013 targets	13%	13%	32%	19%	23%
2020 targets	29%	13%	26%	16%	16%

Note: Base – 31 councils.

Source: Audit Scotland survey

waste was published in September 2007. The Policy states: 'There is now a need for a better fit between development plans and Area Waste Plans to secure shared Ministerial objectives.' It also deals with matters such as what facilities are provided for separating recyclable materials and collecting them – and how these should apply to new housing developments.

130. At a national level each new administration has a duty to review the National Planning Framework and may use it to designate national developments. Major waste management projects such as energy from waste plants may fall into this category.

131. The Scottish Environment Protection Agency also has a key role in the planning system with regard to waste management because it:

- helps to ensure that development plans meet the requirements of the National Waste Strategy and Area Waste Plans
- comments on planning applications to ensure that proposed developments support sustainable waste management
- comments on applications for waste infrastructure
- provides expert witnesses to Public Local Inquiries and supporting information for appeals against planning decisions.

132. The new planning legislation will be introduced over the period to the end of 2008. It will place greater emphasis on the importance of the development plan and on getting people involved in creating it. It is intended to provide clearer guidance to meet all types of development needs and more streamlined decision-making on proposals which comply with the development plan.

133. The need to meet the Landfill Directive targets means that significant new infrastructure will be required in the coming years. The lead time for procurement of residual waste facilities will vary depending on whether councils have suitable waste management sites under their control and with the appropriate planning permissions. Councils or groupings of councils that have not secured appropriate sites compliant with the statutory development plan may have difficulty in finding sites for waste infrastructure within a short timescale.

134. If the planning system is to perform better for waste management there will need to be better integration with Area Waste Plans and clearer policies and specific proposals for waste management developments in the resultant plans. The Executive will also need to consider how it will ensure that councils comply with the intentions of the new Scottish Planning Policy.

135. The full impact of the new planning legislation is difficult to assess at present. However, it should help to speed up decisions on waste infrastructure where it is included in a development plan (and the National Planning Framework).

136. The extensive secondary legislation which will set out many of the detailed procedures, including the approval process for national developments, has not yet been published. It has therefore still to be tested in principle. There is a risk that early waste management schemes could be delayed if they become test cases for the new legislation.

There is a need to involve waste industry experts in developing specifications for residual waste projects

137. Practitioners from the waste industry felt that the Area Waste Planning process was very helpful in that it encouraged discussion between the industry, environmentalists and councils. However, they indicated that this inclusive approach had not been apparent after the Executive had taken responsibility for delivering the National Waste Plan in 2003.

138. Waste practitioners and industry experts felt they had little input into the SOC/OBC bid process. As a result of this, opportunities for discussion with the waste industry about the advantages and disadvantages of the technologies available and the likely costs to test the market for residual waste treatment methods were missed.

Recommendations

- The Scottish Government and councils should work together to reach a decision on the level of recycling and the residual waste treatment facilities required to achieve the 2010, 2013 and 2020 Landfill Directive targets. An action plan showing the key milestones in this process should be published as a matter of urgency.
- The Scottish Government should publish procurement timetables for all major waste projects.
- The Scottish Government and councils should review their staffing arrangements for delivering sustainable waste management to ensure they are fit for purpose.

Part 5. Sustainable waste management incurs significantly increasing costs

Meeting recycling targets will require large-scale investment by the Scottish Government and councils.

139. Councils spent around £351 million (£194 million net) on waste management in 2005/06; about two per cent of overall council spending. Waste management costs have increased by around 97 per cent since 1998/99.

140. Exhibit 20 shows the impact of introducing separate collections for recycling and the changes that have taken place over time. Between 1990 and 1999 there were substantial productivity gains with falling costs and staff and vehicle numbers. Since 1999, costs have risen again due to increases in staffing and vehicles needed to manage waste in a more sustainable way through increased recycling and composting.

The cost of waste management has increased significantly between 1998/99 and 2005/06

141. Exhibit 21 shows the overall changes in the cost and funding of waste management between 1998/99 and 2005/06. Refuse collection costs have increased by 42 per cent while disposal costs increased by over 200 per cent. A significant part of this is due to the introduction of the landfill tax and increasing charges for waste disposal as landfill becomes more expensive.

142. Over the same period council income from waste services has more than doubled. This includes increased income from commercial waste (£21 million to £30 million) and the sale of recyclables (£1.6 million to £9 million).

143. Councils vary in the amount they spend per household, with half of the councils spending between £130 and £159 per household per year. Variations arise largely from differences in geography, the number of households covered by separate collections and whether the council owns its own landfill site.

Exhibit 20

Changes in waste management services reflected in earlier Accounts Commission studies

Indicator	1990	1999	1999 as % of 1990	2005/06	2005/06 as % of 1999
Tonnes of refuse collected	2.2 million	2.5 million	+13.6%	2.6 million	+4%
Gross cost of refuse collection	£141 million	£117 million	-17%	£166 million	+42%
Operatives employed	4,800	2,700	-44%	2,827	+5%
Vehicles employed	1,200	900	-25%	1,161	+29%
Main collection method	Backdoor	Wheeled bin		As 1999 plus recyclables	
Main disposal method	Landfill	Landfill		75% Landfill 25% recycling	
Service visits per week	3.6 million	2.9 million	-19%	3.9 million	+35%
Gross cost per tonne collected	£64	£39	-39%	£63	+62%
Tonnes collected per vehicle	1,800	2,800	+56%	2,150	-23%
Tonnes collected per operative	460	925	+101%	880	-5%
Cost of refuse disposal		£61 million		£185 million	+204%

Note: Costs for 1990 and 1999 have been increased to take account of inflation.

Source: Audit Scotland

144. The cost of refuse collection includes the cost of conventional collection (the regular collection of mixed waste), separate collections for recycling and the cost of bulky uplifts. The overall cost of mainstream refuse collection has grown from £100 million in 1998/99 (adjusted for inflation) to £118 million in 2005/06.

Exhibit 22 shows the variation in mainstream collection costs among councils and changes since 1998/99.

145. Over the same period, the cost of separate collections for recycling increased from £1.6 million to £45 million. However, increasing recycling brings about savings in

landfill tax and landfill gate fees as well as income from the sale of recyclables. The increase in costs associated with the increase in kerbside recycling has, to a large extent, been met by the Strategic Waste Fund.

The Executive has taken steps to ensure that the Strategic Waste Fund achieves value for money

146. The Executive has used the Strategic Waste fund to pay for council recycling by funding the net cost of council recycling schemes, ie the cost of the recycling scheme minus the savings from reduced landfill gate fees and landfill tax and income from sales of recyclables.

147. To ensure that bids were robust each bid was evaluated using a cost model developed by the Executive and REMADE and only bids where costs fell below a benchmark level were funded by the Executive. Bids that were above the benchmark level had to be reworked by councils until they met or fell below the benchmarks. This process led to slippage in spend on bids for recycling services and budget underspends in the Strategic Waste Fund, even after budget revisions took place when it became clear that the opening budget would not be spent (Exhibit 23, overleaf).

148. This funding mechanism gives a degree of assurance that the Executive is achieving value for money in operating the Strategic Waste Fund.

Increased recycling rates will lead to increased costs

149. The cost of increasing recycling rates is rising as recycling efforts are extended from quick wins in council areas where it is relatively cheap to introduce separate collections (eg, suburban estates), reflected in Exhibit 24 (overleaf), to areas where separate collections are more expensive (eg, tenements and high-rise housing and in rural areas).

Exhibit 21

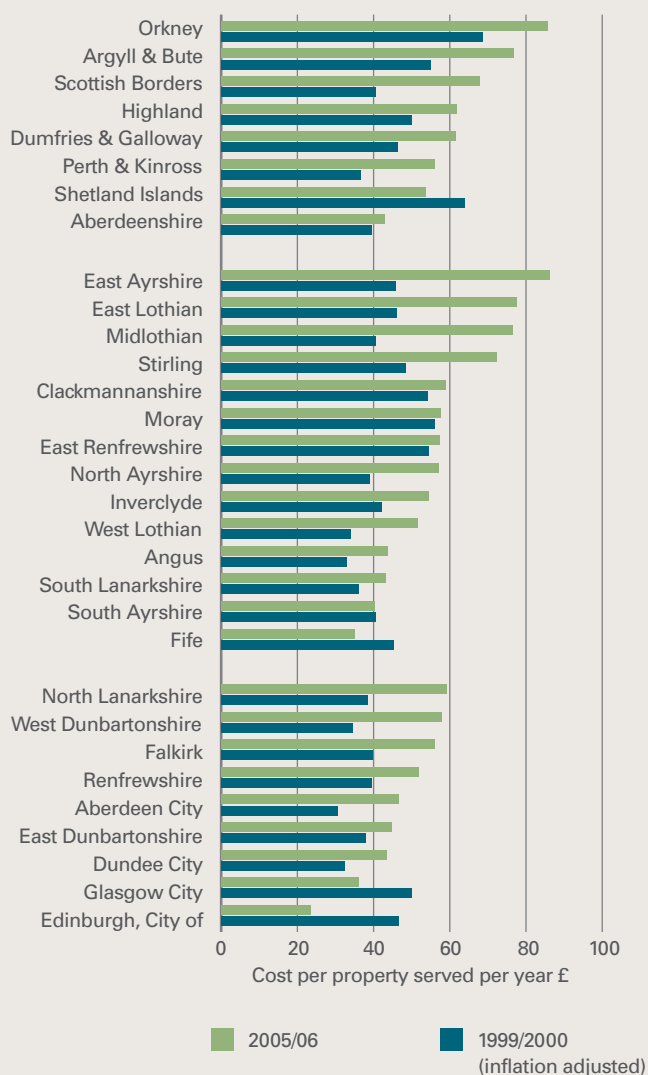
Changes in the overall cost of waste management between 1998/99 and 2005/06

	1998/99 (Increased to allow for inflation) (million)	2005/06 (million)	% Increase
Collection cost	117	166	42%
Disposal cost	61	185	204%
Total cost	178	351	97%
Income	33	68	106%
SWF support	-	89	-
Net cost to council	145	194	33%

Source: Audit Scotland

Exhibit 22

The cost of mainstream collection has increased in most councils since 1998/99



Note: Eilean Siar were unable to provide the information.

Source: Audit Scotland

Exhibit 23

Allocations to councils from the Strategic Waste Fund – Funding from the Strategic Waste Fund has increased significantly in recent years but the budget has frequently been underspent

Year	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Opening Budget (£m)	£3.0	£1.1	£16.0	£30.0	£90.0	£111.5	£120.1	£132.6
Closing Budget (£m)	£3.0	£4.2	£11.0	£35.5	£72.0	£90.4	£76.1	£93.9
Final Expenditure (£m)	£3.0	£2.8	£13.8	£22.9	£69.0	£89.4		

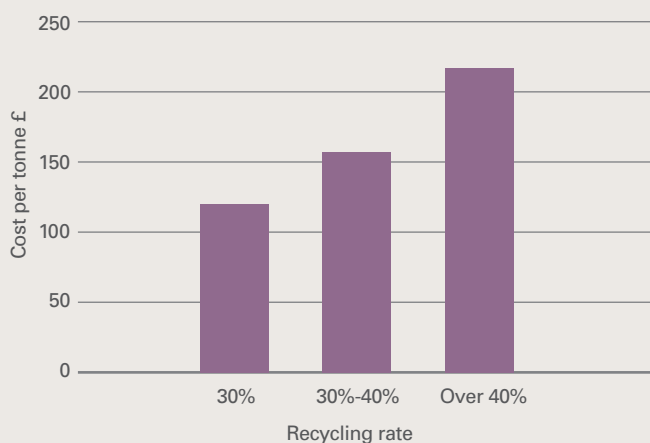
Source: Scottish Executive

150. In December 2006, the Executive's initial analysis of the cost of recycling schemes indicates that the average cost of a recycling rate of up to 30 per cent is £120 per tonne in today's prices, and that a rate of 30 per cent to 40 per cent costs £157. A rate of over 40 per cent costs £217 per tonne. Exhibit 24 shows how the marginal cost of recycling increases as the percentage of waste recycled increases. The estimated cost of residual waste treatment in an EfW plant is around £80 per tonne, therefore councils will need to balance the environmental benefits and increasing costs of greater recycling with residual treatment costs, including energy from waste. The Executive has been working on a more robust model of the cost of increasing recycling beyond the current 25 per cent.

151. The previous administration estimated in early 2007, that the Strategic Waste Fund support for council recycling would have to increase from £89 million per year in 2005-06 to £289 million per year in 2020 in order to meet the Landfill Directive targets. The cost of supporting residual waste treatment would also have to grow to around £79 million over this period. The cumulative cost of supporting council recycling from 2006/07 until 2019/20 could therefore rise to around £2.1 billion, with an overall cost, including residual waste treatment, of £2.4 billion. The overall annual cost of council waste management would need to grow from around £351

Exhibit 24


The cost of recycling increases with the recycling rate



Source: Scottish Executive

million in 2005/06 to an estimated £580 million in 2019/20 in order to meet Landfill Directive targets.

152. The costs depend on assumptions made about the balance of recycling and residual waste treatment. The actual choices made would depend on policy decisions made by the Scottish Government. The new administration has indicated that it is reviewing the estimates made by the previous administration and will need to take decisions itself about the resources it plans to allocate to waste management in future.



Part 6. The Scottish Government, councils and other agencies must work effectively together

Building organisational capacity is essential.



153. To meet the Landfill Directive targets and develop a more sustainable approach to waste management in general, Scotland needs to:

- increase recycling rates
- minimise the amount of waste going to landfill through residual waste treatment
- reduce the amount of waste generated
- reuse household goods (usually through community organisations).

154. In December 2006, the Executive estimated that achieving the Landfill Directive targets will require recycling and composting rates to increase from 25 per cent at present to 55 per cent by 2020, and residual waste treatment to increase from four per cent of waste at present to 28 per cent by 2020. In order to do this, and move Scotland up the waste hierarchy more generally, councils and the Executive must address a number of key issues.

Difficult choices about funding will need to be made

155. Achieving the Landfill Directive targets will require increasing year-on-year spending on waste management at a time when the increase in public expenditure is likely to slow. Therefore tighter spending rounds will require difficult choices to be made about national and local funding.

156. The cost of increasing recycling rates will rise as Strategic Waste Fund investment moves from funding quick wins to areas where separate collections of recyclables are more expensive. Councils and the Scottish Government will need to balance the

environmental benefits of recycling with the increasing costs of separate collections.

Increasing recycling rates will require changes to services

Existing services will need to change

157. Currently 75 per cent of households have access to kerbside recycling schemes, therefore increasing recycling rates will require increasing the types of material collected and increasing participation rates. In addition, the number of councils using alternate weekly collections of residual waste may rise to encourage more recycling.

158. Councils will also need to consider the collection of food waste. WRAP estimates that approximately 18 per cent of UK household waste is food waste (representing almost 30 per cent of biodegradable municipal waste), yet only around two per cent of this amount is currently collected separately.³¹ At present Perth & Kinross council is trialling the collection of food waste.

159. Retaining food waste separately for a week to two weeks before it is collected would, however, require a shift in current public behaviour towards food waste. Additional treatment costs associated with food waste and uncertainties surrounding market demand for end products are also issues which will need to be addressed.

New services will need to be introduced

160. The primary barrier to recycling identified by non-recyclers is that there are no services or facilities nearby.³² To increase participation, it may be necessary to extend kerbside services to some of the 25 per cent of households that do not currently have access, eg tenements.

161. Extending access to services will lead to increasing recycling costs. Space constraints for storing and collecting recyclables in tenements and flats make kerbside collection services much more expensive to provide than in other properties. A Scottish Executive pilot in 2006 trialled a variety of kerbside collection schemes such as backcourt bins and on-street bins in areas with many flats and tenements. If these schemes were introduced on a larger scale, the rate of recycling for these property types was projected to range from five per cent to 27 per cent and total cost per tonne would potentially range from £118 to £433, depending on the system employed. A benchmark cost of £180 per tonne is now being used by the Executive for flats and tenement properties; although no single system has been recommended due to the need to take account of existing residual and recycling services and local property types.³³

Public education and awareness campaigns are essential to increasing recycling rates

162. If recycling rates are to increase, then the number of people recycling must increase (at present 16 per cent of the Scottish public do not recycle)³⁴ along with the level of participation of those currently recycling. Extending kerbside services will make recycling facilities available to more people. However, to encourage people to take part it will be important to combine this with continued education and communication. Councils will need to become more knowledgeable about their recycling service users in order to target messages effectively.

163. The Scottish Waste Awareness Group notes that 'public engagement and subsequent levels of recycling will fall unless there is regular information provision on at least an annual basis'. A recent study into the impact of

31 Food waste report, WRAP.

32 Public Attitude Survey, SWAG, 2006.

33 Multi-Occupancy Study, Scottish Executive, 2006.

34 Public Attitude Survey, SWAG, 2006.

recycling advisers and education on contamination levels in recycling containers found that contamination of recycling containers in the study area dropped from 17 per cent to four per cent after increased education efforts.³⁵

The building of residual waste treatment facilities presents a number of challenges

Councils will need to ensure that residual waste treatment capacity is carefully planned

164. When councils are planning residual waste treatment plants they must carefully calculate how much waste these can treat:

- If a plant is too big, and the council has agreed contracts to provide a specific tonnage of waste, there is a risk that recyclable waste could end up in the treatment plant.
- If a plant is too small, waste will go to landfill and the council may face fines for missing targets.

165. The level of Strategic Waste Fund support is set to allow councils to achieve the Landfill Directive targets. These targets still allow a significant amount of biodegradable municipal waste to be disposed of in landfill. Increases in landfill tax combined with increases in gate fees as landfill capacity falls may make it more cost-effective, and more sustainable in terms of the waste hierarchy, for councils to look at ways of minimising the amount of waste going to landfill.

Public acceptance of the need for residual waste treatment is required

166. Public opinion on potential negative impacts of waste treatment facilities, in particular energy from waste plants, need to change if new facilities are to be built. The NAO found that two factors influence public acceptance. These were:

- the understanding of the waste management options available and the benefits that accrue from them
- strict enforcement of environmental regulations so the public can have confidence that plants are being operated to the highest environmental standards.

167. Councils and the Scottish Government need to involve the public in decision-making about plants for treating residual waste. This needs to include providing information on the costs and benefits of the options available.

Recommendation

- The Scottish Government and councils should look at ways of encouraging informed public debate on the options for meeting Landfill Directive targets, including the requirement for facilities to treat residual waste.

Councils and the Scottish Government will need to work closely with the market to successfully deliver new residual waste treatment facilities

168. Practitioners from the waste industry feel that the market has the capacity to deliver new residual waste treatment facilities. But councils and the Scottish Government need to consider ways of increasing competition by reducing the barriers for companies to bid for waste contracts:

- The high cost of tendering for projects may exclude smaller companies and limit bidders to a few major companies.
- If funding is to be secured for PPP projects, then companies must ensure the risks (eg, planning risk) are adequately shared with councils.

- Ongoing large-scale waste infrastructure investment in England will affect what is happening in Scotland – some companies may not wish to overstretch themselves.

169. In addition, the phasing of tender invitations may impact upon the number of bids received for each project. Companies may pick and choose what to bid for if a large number of invitations to tender are issued within a short timeframe.

170. The specification of PPP contracts based on what they are required to deliver means that it is up to the market to suggest the most appropriate means of delivery. Councils and the Scottish Government will also need to work closely with the market to ensure that the delivery options available in the market match the expectations and requirements of councils, SEPA and the Scottish Government.

Recommendation

- The Scottish Government should examine ways of reducing the barriers to entry into the market to ensure that there is adequate competition for residual waste treatment contracts.

Building organisational capacity is essential to delivering Landfill Directive targets

171. We identified a lack of organisational capacity within councils to put together bids for separate collections. Managing conventional collection systems and landfill contracts is considerably less complex than the implementation of Area Waste Plans which required the development of new systems of kerbside recycling. In particular developing and implementing SOCs and OBCs for residual waste treatment requires different skills.

172. The requirement to put in place infrastructure to deal with residual waste will be considerably more complex than introducing recycling schemes, and will need to take place in parallel with extending recycling schemes to meet the Landfill Directive targets.

173. The Scottish Government, councils and SEPA need to work together to build organisational capacity to deliver residual waste treatment facilities. Councils face a steep learning curve and would benefit from closer collaboration to pool skills and resources, and to achieve economies of scale. There is also a need to ensure that knowledge and experience gained in pathfinder schemes is not lost.

174. The Scottish Government should therefore consider the ways in which the second phases of Strategic Waste Fund projects are delivered. The recent announcement of a national delivery unit to provide management and support across the programme is a valuable step forward.


Recommendations

- The Scottish Government should work in partnership with councils and other agencies to ensure the effective procurement of residual waste facilities including:
 - setting up a recognised pool of staff with procurement expertise to ensure that expertise gained in early projects can be usefully employed in later procurement exercises
 - ensuring the lessons learned from completed projects are passed on
 - coordinating the procurement of facilities for the treatment of residual waste.
- To facilitate the progress of residual waste treatment facilities, councils and the Scottish Government should make clear to the public the long-term benefits of technologies for the treatment of residual waste, including energy from waste.



Part 7. Recommendations

An action plan should be published as a matter of urgency.



Recommendations for the Scottish Government

175. The Scottish Government should monitor the progress of its waste reduction plan and report annually on the progress being made in halting waste growth.

176. The Scottish Government and its agencies should look at further opportunities to develop secure, sustainable long-term markets to accommodate the planned increases in recycling.

177. The Scottish Government should publish procurement timetables for all major waste projects.

178. The Scottish Government should examine ways of reducing the barriers to entry into the market to ensure that there is adequate competition for residual waste treatment contracts.

Recommendations for councils

179. To measure progress with waste management initiatives councils should undertake regular waste analyses, particularly where new recycling or home composting services are being introduced.

180. Councils across Scotland should work together to standardise the type of containers they use and adopt a common colour coding system across Scotland.

181. Councils should ensure that current recycling systems offer best value by conducting option appraisals before extending recycling schemes. Option appraisals should include market testing as a way of demonstrating best value.

182. Councils should ensure that they know the final destination of recyclables sold to intermediaries.

183. Councils should examine the benefits of setting up consortia to market their recyclables.

Recommendations for the Scottish Government and councils

184. The Scottish Government and councils should undertake research to assess the contribution that direct charging for waste management could make to increasing recycling and waste reduction.

185. The Scottish Government and councils should continue to support community recycling, strengthen the framework in which they operate and build capacity by providing long-term funding for successful groups. This could be achieved through service level agreements and by encouraging partnerships with councils and the private sector.

186. The Scottish Government and councils should work together with the Scottish Waste Awareness Group to develop a programme to encourage householders to use home composting.

187. The Scottish Government and councils should undertake a technical evaluation of kerbside recycling systems to identify the most cost-effective systems to achieve the levels of recycling required to meet the Landfill Directive targets.

188. The Scottish Government should encourage councils to adopt a more consistent approach to recycling using a small number of 'best practice' schemes.

189. The Scottish Government and councils should work together to reach a decision on the level of recycling and the residual waste treatment facilities required to achieve the 2010, 2013 and 2020 Landfill Directive targets. An action plan showing the key milestones in this process should be published as a matter of urgency.

190. The Scottish Government and councils should review their staffing arrangements for delivering sustainable waste management to ensure they are fit for purpose.

191. The Scottish Government and councils should ensure that the national planning framework is used effectively to minimise planning delay in the provision of new facilities.

192. The Scottish Government and councils should look at ways of encouraging informed public debate on the options for meeting Landfill Directive targets, including the requirement for facilities to treat residual waste.

193. The Scottish Government should work in partnership with councils, SEPA and other agencies to ensure the effective procurement of residual waste facilities including:

- setting up a recognised pool of staff with procurement expertise to ensure that expertise gained in early projects can be usefully employed in later procurement exercises
- ensure that the lessons learned from completed projects are passed on
- coordinating the procurement of facilities for the treatment of residual waste.

194. To facilitate the progress of residual waste treatment facilities councils and the Scottish Government should make clear to the public the long-term benefits of technologies for the treatment of residual waste, including energy from waste.

Appendix 1.

Study advisory group members

Member	Organisation
Richard Grant	Head of SEPA Sponsorship and Waste Division, Scottish Government
Simon Stockwell	SEPA Sponsorship and Waste Division: Waste Strategy Team Leader, Scottish Government
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Bill Proctor	Environmental Information Unit Manager, SEPA
Bruce West	Head of Strategic Finance, Argyll & Bute Council
Karen Anderson	Waste Manager, West Lothian Council, (and Chair, Chartered Institute of Wastes Management (Scotland))
John Paterson	Development Manager, City of Edinburgh Council
Ken Morin	Caledonian Environment Centre, Glasgow Caledonian University (formerly Faber Maunsell) representing the CBI
Stephen Freeland	Policy Executive, The Scottish Environmental Services Association (SESA) representing the waste industry
Dr Jennifer McQuaid-Cook	Director, Centre for Environmental and Waste Management University of Paisley
Prof Jim Baird	Caledonian Environment Centre, Glasgow Caledonian University
Dr Nikki Souter	Campaign Manager, Scottish Waste Awareness Group
Dr Dan Barlow	Head of Policy, WWF Scotland
Iain Gulland	Community Recycling Network for Scotland

Appendix 2.

Glossary

Alternate weekly collection	Councils collect recyclables one week and residual waste the next to encourage people to reduce and recycle their waste and reduce costs.
Anaerobic digestion	A residual waste treatment process that uses oxygen-free conditions to create a compost-like product.
Biodegradable Municipal Waste	Biodegradable waste means any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard. Biodegradable Municipal Waste is municipal waste that is biodegradable.
Compost	Material formed by the aerobic breakdown of organic waste.
Defra	Department for Environment, Food and Rural Affairs.
EfW – Energy from Waste	The incineration of waste using the energy produced to generate electricity. The heat generated can also be used to heat homes or commercial buildings.
In-vessel composting	A technology that uses heated vessels to turn organic waste into compost – essential for composting food waste.
Kerbside collection	Council collection of recyclables from residents' homes.
Landfill	An area designated to receive solid wastes, such as municipal waste or construction debris. Modern landfills are also lined to prevent toxic leachate from entering the groundwater. They usually have gas wells to safely extract methane and in large landfills, this methane may be piped to a generator to make electricity.
MRF – Materials Recycling Facility	A facility for sorting waste and recyclables by mechanical processes, such as blowers and electromagnets, followed by manual sorting on conveyor belts.
MBT – Mechanical Biological Treatment	A technology that uses biological treatment to turn organic waste into compost.
Municipal waste	Defined in Article 2(b) of the Landfill Directive as: "waste from households, as well as waste which, because of its nature or composition, is similar to waste from households"
REMADE – Recycling Market Development	Remade Scotland is an initiative which seeks to stimulate, develop and strengthen markets for recycled materials in Scotland.
Residual Waste	Waste that is not recycled.
SDC – Sustainable Development Commission	The Sustainable Development Commission is the Government's independent watchdog on sustainable development, reporting to the Prime Minister and the First Ministers of Scotland and Wales.
SEPA – Scottish Environment Protection Agency	Scotland's environmental regulator and adviser, responsible to the Scottish Parliament through ministers. As well as having a role in controlling pollution, SEPA works with the Executive and others to protect and improve the environment.
SNIFFER	The Scotland & Northern Ireland Forum for Environmental Research identifies and manages environmental research on behalf of members – the Scottish Environment Protection Agency (SEPA), Environment and Heritage Service (EHS), the Scottish Executive, Scottish Natural Heritage (SNH) and the Forestry Commission and other stakeholders.
SWAG – The Scottish Waste Awareness Group	A national campaign that aims to change public attitudes and behaviour towards waste. Local campaigns are being run to encourage people to Reduce, Reuse and Recycle.
WRAP – Waste and Resources Action Programme	A body charged with creating new markets for recycled products and helping to promote recycling.

Appendix 3.

Chronology of progress in developing and implementing the National Waste Strategy in Scotland

Year	Date	Title
1996	01/04/1996	SEPA established and takes over the enforcement and regulation of waste disposal and treatment. It has the statutory role of developing the National Waste Strategy.
1997	07/03/1997	Consultation on National Waste Strategy: Scotland (SEPA).
1999	18/05/1999	Consultation on draft National Waste Strategy: Scotland (SEPA).
1999	August	Publication of National Waste Strategy (SEPA) – provides a framework within which Scotland can reduce the amount of waste which it produces and deal with the waste which has been produced in more sustainable ways.
2000	30/11/2000	Strategic Waste Fund set up (Scottish Executive). The Strategic Waste Fund is a specific grant scheme established by the Executive for the implementation of the National Waste Strategy: Scotland.
2000	September	National Waste Strategy: Supporting guidance (Scottish Executive). This is a framework document, establishing the approaches and methods to be employed to arrive at Area Waste Plans (local and regional solutions) and supporting information arising from Priority Waste Stream Project outputs (national solutions).
2002	02/02/2002	Strategic Waste Fund – Guidance for Councils (Scottish Executive) Guidance document for Councils detailing the purpose of the Strategic Waste Fund and the application procedure.
2002	02/07/2002	Scottish Waste Awareness Group, containing representatives from the public, private and voluntary sectors, was set up to examine ways to ensure the National Waste Strategy is delivered, and to promote waste minimisation and recycling.
2002	12/09/2002	<i>Building a Better Scotland, Spending Proposals 2003/2006: What the money buys</i> (Scottish Executive). This document includes the following targets: Ensure progress towards sustainable management of Scotland's waste and achievement of EU landfill reduction targets by 2010, 2013 and 2020; Target 4: Increase the amount of waste collected by councils which is recycled or composted to 25% by 2006; Target 5: Reduce landfilling of biodegradable waste collected by councils to 1.5 million tonnes by 2006.
2003	24/02/2003	The National Waste Plan 2003 (SEPA/Scottish Executive). The National Waste Plan establishes the direction of the Executive's policies for sustainable waste management to 2020. It is built around a major commitment of funding by the Executive to transform Scotland's record on waste reduction, recycling, composting and recovery. It sets out challenging but realistic objectives to achieve fundamental change in the way we manage Scotland's waste.
2003	19/06/2003	<i>Separate Waste Collection Systems – Best Practice Review</i> (Scottish Executive), The findings from this study provide best practice guidance for the development of separate waste collection systems in Scotland.
2004	18/10/2004	New recycling targets for councils (introduced by the Executive). Targets for recycling/composting municipal waste extended to 30% by 2008.
2006	04/06/06	Publication of Strategic Outline Cases (Scottish Executive) for the treatment of residual waste in six areas of Scotland.
2007	27/02/07	Household Waste Prevention Action Plan (Scottish Executive).
2007	14/03/07	Way forward for recycling - announcement of funding for residual waste treatment (Scottish Executive).
2007	31/08/07	Scottish Planning Policy, SSP10: Planning for waste management (Scottish Executive).

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