



National Audit Office

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COMPTROLLER AND
AUDITOR GENERAL**

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MARCH 2010

Department for Environment, Food and Rural Affairs

Reducing the impact of business
waste through the Business Resource
Efficiency and Waste Programme

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National Audit Office

Department for Environment, Food and Rural Affairs

Reducing the impact of business waste through the Business Resource Efficiency and Waste Programme

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Amyas Morse
Comptroller and
Auditor General

National Audit Office

2 March 2010

Over 280 million tonnes of waste were produced in England in 2006. The Government considers that the continued disposal of such materials in landfill sites is not sustainable because it can result in greenhouse gas emissions, other pollution and loss of valuable resources.

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Contents

Summary **4**

Part One

Business waste in England **8**

Part Two

The impact of the Business
Resource Efficiency and Waste
Programme **11**

Part Three

The Department's management of
the Business Resource Efficiency
and Waste Programme **24**

Appendix One

Methodology **29**

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This report can be found on the
National Audit Office website at
www.nao.org.uk/businesswaste10

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Summary

1 Over 280 million tonnes of waste were produced in England in 2006. The Government considers that the continued disposal of such materials in landfill sites is not sustainable because it can result in greenhouse gas emissions, other pollution and loss of valuable resources. The Government therefore aims to reduce the tonnage of waste sent to landfill, and it introduced a Landfill Tax in 1996 to encourage recycling and other methods of waste disposal. Part of the £2.4 billion Landfill Tax receipts collected between 2005-06 and 2007-08 were ring-fenced to spend on initiatives to encourage businesses to use resources more efficiently.

2 Businesses generate the majority of waste produced each year. Commercial and industrial waste amounted to 76 million tonnes in 2006, and construction, demolition and excavation waste a further 102 million tonnes. By comparison, municipal waste, which mainly comes from households, amounted to 28 million tonnes in the same year.

3 The Department for Environment, Food and Rural Affairs (the Department) established a Business Resource Efficiency and Waste Programme (the Programme), which ran from March 2005 to April 2008 at a cost of £240 million. This report examines the impact of the Programme in addressing business waste. Although the Programme has finished, its impact is important as the Department continues to fund initiatives in this area through its ongoing expenditure. The Department allocated £156 million for such work in 2008-09 and a further £58 million in 2009-10.

Our key findings

4 **The Department's approach to business waste lacks the structure and coordination of its approach to municipal waste.** The 1999 EU Landfill Directive included measures to reduce the amount of biodegradable municipal waste sent to landfill. In response, the Department put in place a highly structured approach based on:

- statutory targets for local authorities;
- funded initiatives to encourage recycling;
- a system of tradable landfill allowances and sanctions; and
- allocation of funding to help local authorities invest in waste treatment infrastructure, primarily via the Private Finance Initiative. The Department has allocated nearly £3 billion to date.

5 By contrast there are no binding targets for businesses and no overall targets to reduce the tonnage of commercial and industrial waste sent to landfill. The Department's approach to reducing business waste has largely depended upon increases in the Landfill Tax, the implementation of EU Directives on specific types of waste, such as electrical equipment, and the initiatives funded through the Programme.

6 The tonnage of business waste sent to landfill has reduced, but the rate of decline of commercial and industrial waste lags behind the rate of decline for other types of waste. Data from landfill operators indicate that the overall tonnage of business waste sent to landfill fell by 9.9 million tonnes (22 per cent) between 2005 and the end of 2008:

- Most of this reduction (7.6 million tonnes) was in construction, demolition and excavation waste. This waste tends to be inert and less likely to generate greenhouse gases in landfill.
- The tonnage of commercial and industrial waste sent to landfill reduced by 2.3 million tonnes (11 per cent). The reduction is relatively small in comparison to the 4.1 million tonne (22 per cent) reduction in municipal waste over the same period. Commercial and industrial waste, like municipal waste, typically includes biodegradable materials likely to generate greenhouse gases in landfill. In the 2007 Waste Strategy, the Department set an expectation of a 20 per cent reduction in commercial and industrial waste by 2010. Achieving this expectation would require a greater rate of progress than has been achieved so far.

7 The Department lacked comprehensive and timely data on business waste to target its initiatives effectively. Effective targeting depended upon data on the overall tonnages of waste generated, recycled or sent to landfill by business, and information on the impact of Programme initiatives. The last comprehensive survey of business waste was conducted in 2003. The Department did not commission subsequent surveys because of concerns about cost and the burden on business, although it has since announced an intention to carry out a survey by autumn 2010. The data on the impact of the Programme's initiatives were not calculated on a consistent basis, and took a long time for the Department to collate and analyse.

8 The Department did not establish sufficiently robust arrangements to oversee the performance of those organisations delivering the Programme's initiatives. The Programme sought to achieve a range of outcomes, such as reductions in waste sent to landfill, reductions in greenhouse gas emissions, and more efficient use of water and energy by businesses. The Department therefore used a range of performance measures, rather than a single primary metric. The Department did not, however, establish these performance measures until after the Programme had commenced. In 2009 the Department announced that it is simplifying arrangements by bringing different activities together, by April 2010, under the leadership of Waste and Resources Action Programme (WRAP).

9 In the absence of sufficient data it is not possible to determine the impact of the Programme on reducing commercial and industrial waste. Our survey indicates that the increases in the Landfill Tax itself are likely to have made a sizeable contribution to the 2.3 million tonne reduction by the end of 2008. The tax rate represents over half the average fee rate charged to dispose of a tonne of waste in landfill. The bodies funded through the Programme reported that they helped businesses divert 5.7 million tonnes of waste from landfill. The Department cannot determine how much of this reduction was in commercial and industrial waste because of the inconsistencies in how the data were compiled. The Department has not undertaken a formal evaluation of the Programme.

10 Where businesses have utilised the services available from the Programme they have benefited from the advice and support. On the basis of the impacts reported to the Department, the Programme may have generated more than a two-fold return to those businesses that were supported. The reported cost savings and increased income arose from efficiency improvements and opportunities to market materials that might otherwise end up as waste.

11 Some of the initiatives funded through the Programme should generate longer term impacts. The available evidence indicates that some of the longer term projects funded under the Programme are beginning to produce benefits. An initiative to develop a Compost Waste Quality Protocol, for example, reportedly enabled 700,000 tonnes (26 per cent) of composted waste to be classified as a product so that it can be used in gardens and in agriculture in 2007-08. In the long term, the Quality Protocol should make it easier to sell and use compost derived from waste. In other cases, however, it is hard to assess the impact of longer term initiatives because it is difficult to separate out the effects of external factors.

12 Awareness of the Programme's services was concentrated in a minority of businesses. Our survey of five business sectors found that 208 out of 328 respondents (63 per cent) had taken some action to reduce the waste they sent to landfill. Only 24 respondents (7 per cent) were aware, however, of the waste minimisation initiatives available through the Programme and only 16 (5 per cent) had accessed them. Other surveys of specific sectors conducted for the Department indicate that general awareness of the initiatives may be higher than this and one survey suggested that up to 18 per cent of respondents may have accessed the help available. The Department noted that take-up was broadly comparable to another similar scheme.

Conclusion on value for money

13 There are indications that the Programme may have generated cost savings and increased income to those businesses that participated and had some effect in reducing business waste, but it is not possible to conclude whether the £240 million of expenditure delivered value for money because:

- The Department did not have comprehensive and timely data to target resources effectively and did not establish specific, quantified objectives for the Programme.
- Our survey found low awareness amongst businesses of the support available through the Programme. Given that businesses had to apply for assistance it is reasonable to suppose that the Programme's initiatives were insufficiently targeted on the areas of greatest impact. The Department does not accept that awareness was low, however, as the take-up was broadly comparable to another similar scheme.
- As no evaluation of the Programme has yet taken place the Department has not been able to establish sufficiently which initiatives had the greatest impact and thus warrant ongoing funding.

Recommendations

a To better target and monitor ongoing and future funding of initiatives to reduce business waste, the Department should:

- undertake a formal evaluation of the Programme in order to inform the priorities and direction of the new single delivery body;
- use the data from its proposed survey of commercial and industrial waste to improve the targeting of future initiatives and direct resources to where they are most needed; and
- identify whether in future it could monitor change more cost-effectively by, for example, identifying a cohort of key organisations to measure change in business waste over time.

b To drive efficiency and performance from its delivery bodies the Department should:

- put targets and performance measures in place from the outset in any future funding arrangements;
- set up and validate data collection and collation arrangements, so that useful data are produced on a timely basis;
- use performance data to challenge the funded bodies effectively; and
- remind its senior officials of the need to balance demands for urgent action adequately against the risk that expenditure may not be managed effectively in these circumstances.

c To achieve more substantial reductions in the tonnage of business waste sent to landfill, the Department should:

- set clear objectives and targets for reducing the tonnage of waste produced and the tonnage sent to landfill;
- identify opportunities for integration between its business and municipal programmes, including encouraging:
 - shared recycling and treatment infrastructure where this will result in economies of scale; and
 - joint collection and disposal of commercial and industrial waste; and
- task its Waste Strategy Board with monitoring and challenging the level of coordination between the municipal and business waste programmes.

d To improve awareness of its services amongst key waste producers, the Department should:

- Draw up and implement specific engagement strategies with key organisations and business sectors, setting out the interventions that are likely to prove effective, the anticipated results, and the mechanisms for monitoring success.

Part One

Business waste in England

1.1 Over 280 million tonnes of waste were produced in England in 2006. As **Figure 1** shows, municipal waste represented only around ten per cent of this total, whereas commercial and industrial waste comprised some 76 million tonnes (27 per cent) and construction, demolition and excavation a further 102 million tonnes (36 per cent). According to surveys of businesses by the Environment Agency and the Department for Communities and Local Government in 2002-03, 48 per cent of commercial and industrial waste and 32 per cent of construction, demolition and excavation waste is sent to landfill.

1.2 The Government considers that the disposal of waste in landfill sites is not sustainable. The disposal of biodegradable waste in landfill can result in greenhouse gas emissions, and the compression of different materials can increase the risk of volatile organic compounds, such as benzene and vinyl chloride, leaching into neighbouring areas. There were 613 million cubic metres of remaining capacity at 466 permitted landfill sites in England at the end of 2008, which the Environment Agency estimated would be sufficient for around eight years at 2008 rates of disposal. In practice, the Environment Agency anticipates that further landfill sites are likely to become available in time, but relying on disposal rather than the reuse and recycling of waste products (such as aluminium or glass) increases the demand for the extraction and production of new materials, with consequential environmental impacts including greenhouse gas emissions.

1.3 The Government introduced a Landfill Tax in 1996 on all users of landfill sites to encourage greater use of recycling and other forms of waste treatment. The 2004 Spending Review announced that the £15 tax per tonne would increase by £3 per tonne each year between 2005-06 and 2007-08. As **Figure 2** on page 10 shows, total Landfill Tax receipts over the period 2005-06 to 2007-08 were around £2.4 billion. Increases in the rate of Landfill Tax led to total additional tax receipts of approximately £423 million over the same period. Landfill Tax represents over half the average fee rate charged to dispose of a tonne of waste in landfill.¹ To keep the Landfill Tax increases broadly revenue neutral, a part of the additional funds was ring-fenced to be returned to the business community through initiatives to help businesses make more efficient use of resources. Between 2005-06 and 2007-08, these initiatives were coordinated through the Business Resource Efficiency and Waste Programme (the Programme), established by the Department for Environment Food and Rural Affairs (the Department). The ring-fence around the additional Landfill Tax receipts was removed in April 2008.

¹ WRAP. Gate Fees Report: *Comparing the cost of alternative waste treatment options*, (2009).

Figure 1
Sources of waste generated in England, 2006

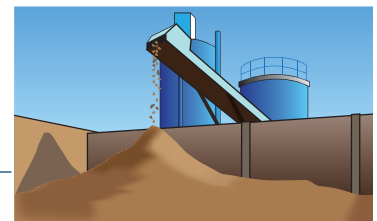
Total waste: 282 million tonnes¹



Municipal – 10%
Municipal waste is made up largely of household waste but can also include some commercial waste where the local authority provides a commercial or 'trade' waste collection service in its local area. Around 70 per cent of municipal waste is thought to be made up of biodegradable materials such as food, vegetation and paper.



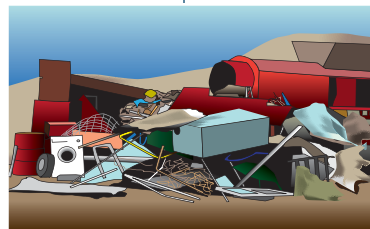
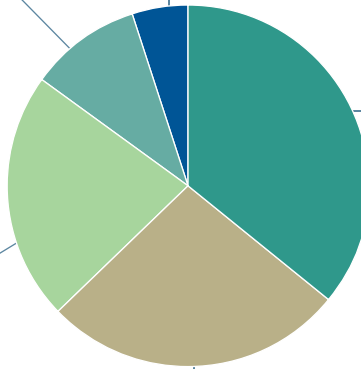
Other – 5%
Other waste includes waste from farming and also sewage and other sludges.



Construction, Demolition and Excavation – 36%
The construction, demolition & excavation sector generates more waste in England than any other sector. Much of this waste is inert, but the sheer weight and volume can cause problems with transportation and disposal. This sector is the largest generator of hazardous waste, around 1.7 million tonnes per annum.



Mining and Quarrying – 22%
Waste from mining and quarrying consists of materials such as topsoil and waste rock. Some of these wastes are inert and hence not likely to present a significant pollutant threat, though they can cause smothering of river beds; also piles of such waste can collapse if stored in large quantities. These wastes may also contain dangerous substances, such as heavy metals. Mining and quarrying waste is not controlled under UK waste regulations.²



Commercial and Industrial – 27%
Many of the waste materials produced by commerce and industry are similar to those produced by households: food, glass, plastics, paper and cardboard. There are also significant quantities of wood, metals, minerals and chemicals, some of which are hazardous. Mixed industrial and commercial waste is thought to contain a large proportion of biodegradable material, though the exact proportion that is biodegradable is not known.

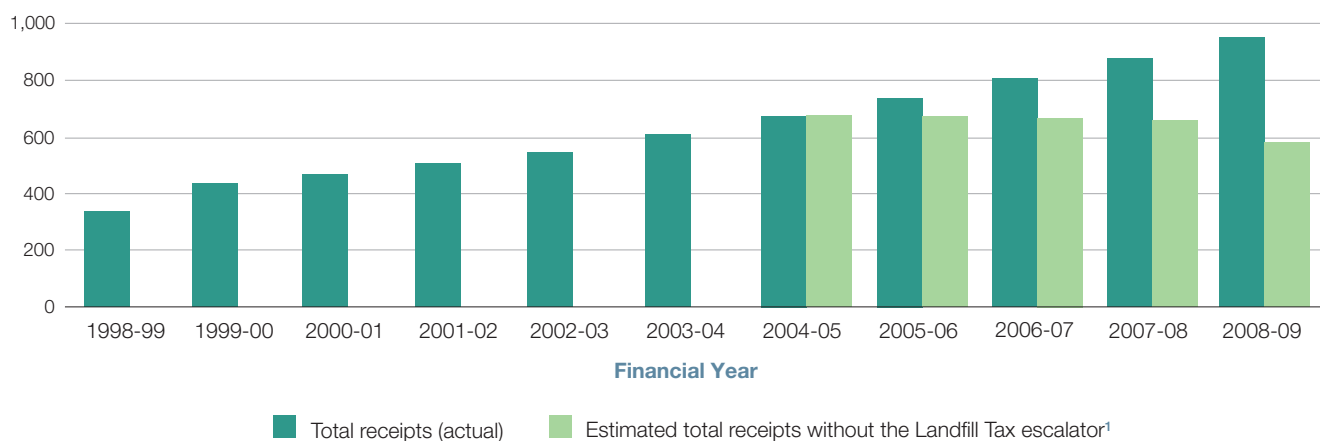
Source: National Audit Office and Department for Environment, Food and Rural Affairs

NOTES

- 1 These figures are estimates based on data from a variety of sources, including waste databases and trade bodies.
- 2 The Controlled Waste Regulations (1992) excluded mining, quarrying and agricultural waste.

Figure 2
Landfill Tax revenues since 1998-99

Landfill Tax receipts (£m)



Source: National Audit Office analysis of HM Revenue & Customs Landfill Tax information

NOTE

- ¹ Our estimate of additional revenues is based on a scenario in which the rate of increase in the standard rate of Landfill Tax prior to 2004-05 (£1 per tonne per annum) was maintained. The estimated receipts are not a like-for-like comparison with actual receipts, because the payment date of the tax does not always exactly match taxable tonnages, and payments for a given tonnage may fall into the subsequent tax year. Hypothetical receipts are likely to be overestimated by a small margin because of this effect.

1.4 The Programme has been a key part of the Department's initiatives to reduce business waste. Between the launch of the Programme in March 2005 and its closure in April 2008, the Department provided £284 million funding for resource efficiency and waste activities, of which £240 million came directly from the Programme. In 2008-09 the Department allocated a further £156 million to those organisations previously involved in the Programme, and in 2009-10 a further £58 million, bringing the total expenditure to £498 million since 2005-06. The Department's other initiatives to reduce business waste tended to focus on specific issues, such as packaging waste, incentives that allow energy producers to count some methods of generating energy from waste towards their obligations to produce energy from renewable sources, voluntary agreements with industry, and the implementation of European Union (EU) Directives on waste electrical and electronic equipment, end-of-life vehicles, and batteries.

1.5 This report examines the impact of those parts of the Programme that addressed business waste. The Department usually defines business waste as the waste arising from commerce and industry. As some of the initiatives funded under the Programme also covered waste from construction, demolition and excavation, we have also included this sector in our definition of business waste. We focused on the contribution of the Programme towards the Government's aims to reduce the tonnage of business waste generated and the tonnage sent to landfill. We also examined the extent to which the Programme generated financial benefits to business and the Department's management of the Programme. The report does not examine the Department's other initiatives that impact on business waste, such as the implementation of EU Directives to reduce packaging and to encourage greater recycling of waste electrical and electronic equipment, batteries and end of life vehicles, nor those aspects of the Programme that did not address business waste (such as the activities of the Carbon Trust). Our audit methodology is summarised in Appendix 1.

Part Two

The impact of the Business Resource Efficiency and Waste Programme

The development of the Programme

2.1 The Department's initiatives to deal with municipal waste have been in place much longer than those for business waste reduction. The 1999 EU Landfill Directive set specific legally binding targets to reduce the tonnage of municipal waste sent to landfill for each Member State, and the Department has funded initiatives to encourage recycling, introduced a system of tradable landfill allowances and sanctions and prescribed statutory targets for the tonnage of waste that can be sent to landfill by each local authority. Our previous reports on *Reducing the reliance on landfill in England* and *Managing the waste PFI programme* reviewed progress against the targets in the Directive and the Department's oversight of the financing of new infrastructure to process municipal waste.² In comparison, the consultation undertaken by the Department ahead of the launch of the Programme did not begin until 2004, although various initiatives on business waste were in place before that point, including producer responsibility and support from some delivery bodies.

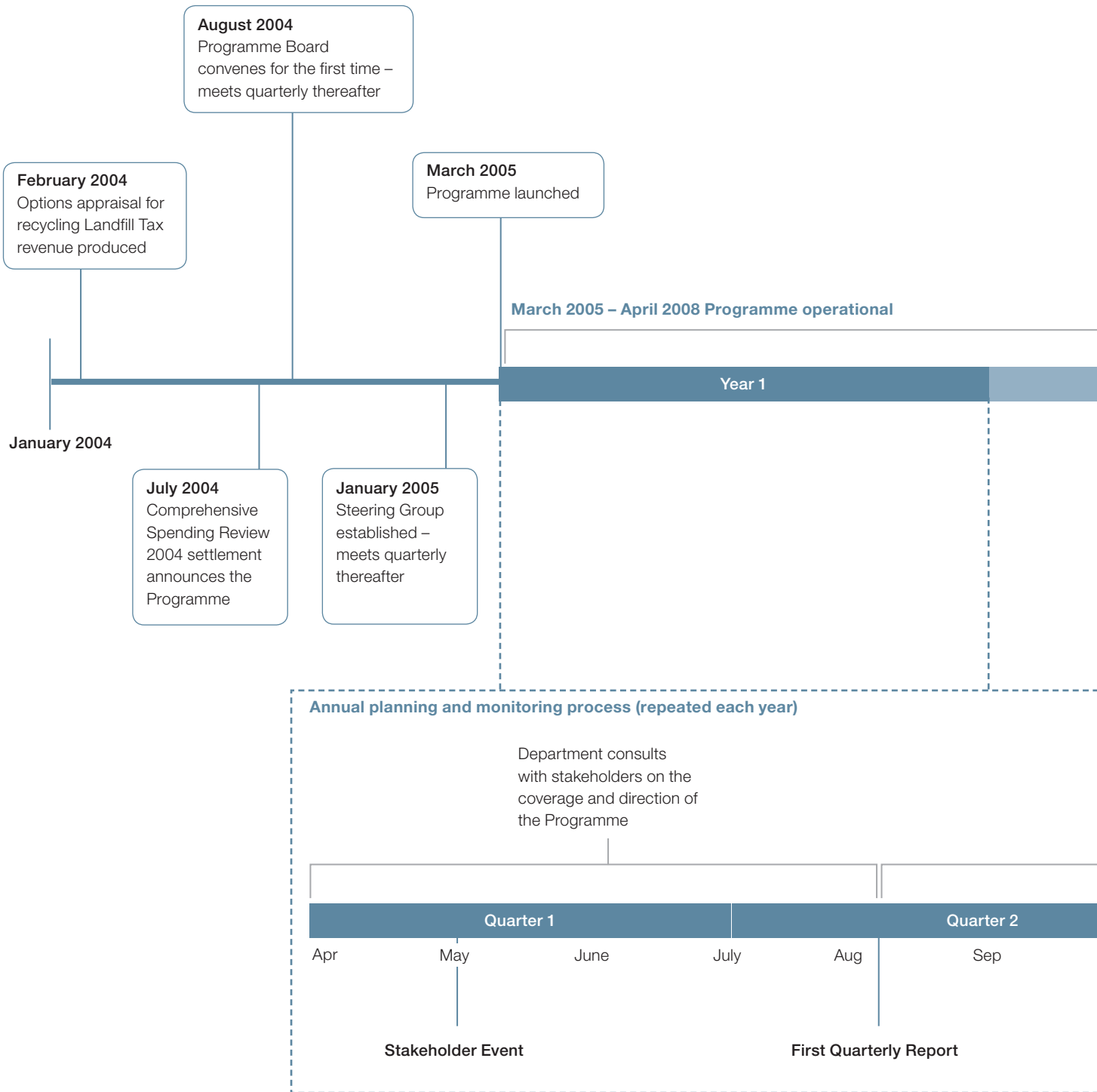
2.2 The Government's Spending Review 2004 stated that the Programme would support business in improving resource efficiency. This would include support to specifically target waste minimisation and diversion of waste from landfill, as well as support to improve resource efficiency more generally.³ This approach was confirmed in consultation documents developed prior to the launch of the Programme, and a vision statement, agreed by the Department in June 2005, which stated that the Programme would aim to result in *'more profitable businesses through minimised waste and more efficient use of materials, water and energy'*. This vision was not translated, however, into any overall expected outcomes or impact from the Programme at that time. The Department later set out the objectives of the Programme explicitly in the 2007 Programme strategy and included in its 2007 Waste Strategy an expectation for the tonnage of commercial and industrial waste sent to landfill in 2010 to be 20 per cent less than the amount in 2004.

2.3 The Programme was launched within eight months of its announcement in the Spending Review 2004 (see **Figure 3** overleaf). In order to get the Programme up and running quickly, the Department did not develop a documented strategy from the outset that quantified how the Programme would contribute to departmental and Government policy objectives on waste management. A draft Programme strategy was subsequently developed in August 2007 to cover the period 2008-09 to 2010-11, but this strategy was not implemented fully before the Programme ended in April 2008.

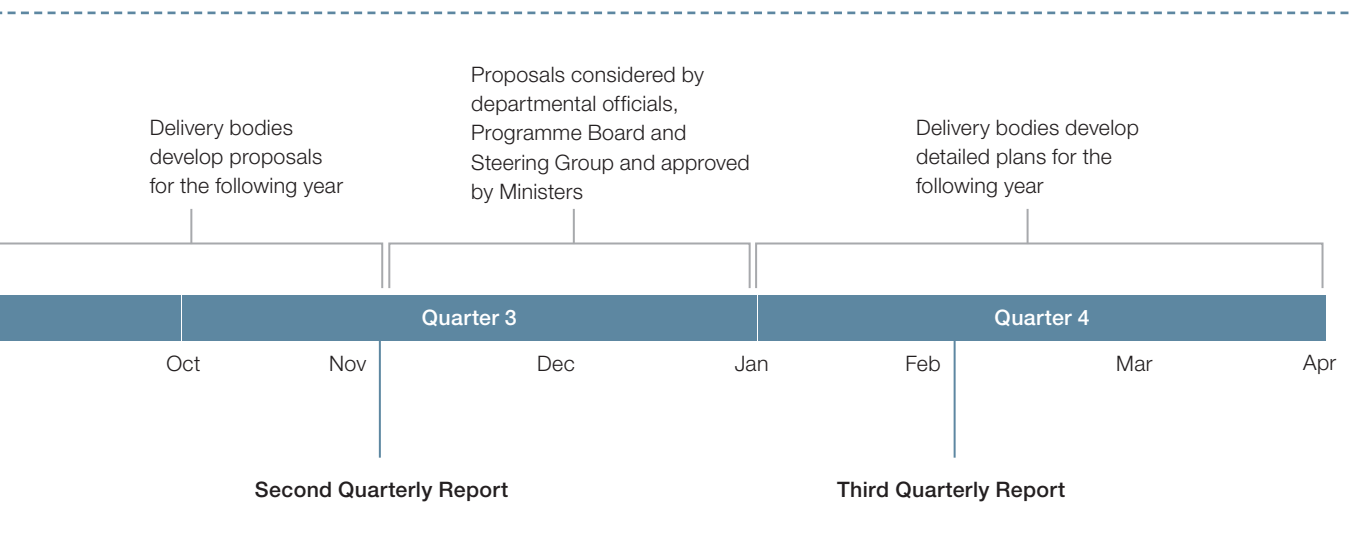
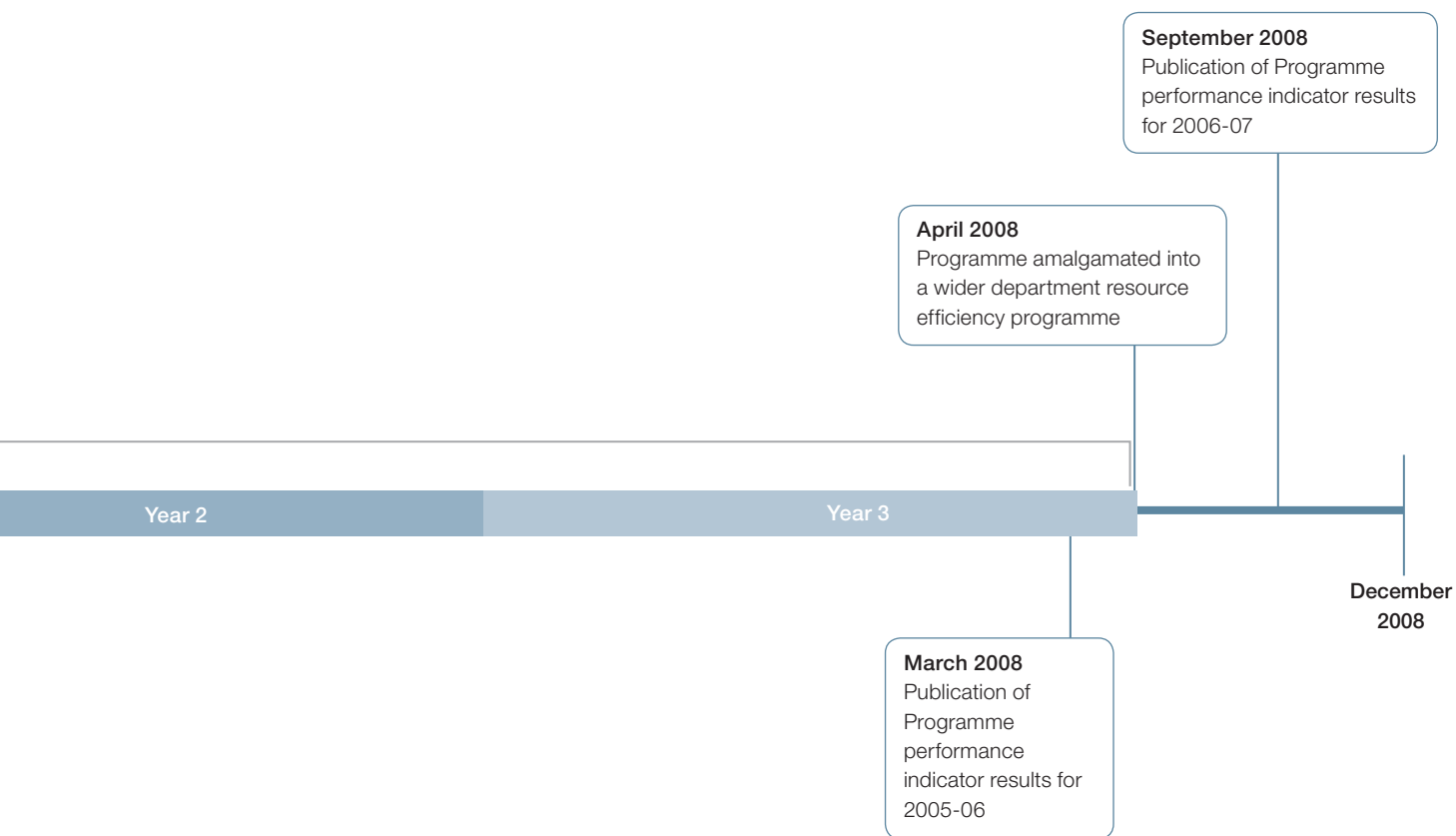
² National Audit Office reports: *Managing the waste PFI programme* (HC 66, January 2009); and *Reducing the reliance on landfill in England* (HC 1177, July 2006).

³ HM Treasury: *2004 Spending Review – New Public Spending Plans 2005-2008: Stability, security and opportunity for all – Investing for Britain's long-term future*, July 2004.

Figure 3
Programme timeline



Source: National Audit Office



2.4 From the announcement of the Programme in July 2004 to its launch in March 2005, the Department's emphasis was on gearing up a range of organisations to work with business (**Figure 4**). A key provision of the settlement agreed with the Treasury in 2004 was that the Department should avoid forming new organisations where possible so that funds could be used in the first year. The Department largely relied on those organisations with which it had already worked, including the Carbon Trust, Waste and Resources Action Programme (WRAP), Envirowise and the Environment Agency, to develop and implement schemes under the Programme. These four organisations received 60 per cent of the funding in the first year of the Programme. The National Industrial Symbiosis Programme, which encouraged synergy in business by enabling the waste products from one manufacturing process to be used as raw materials for another, was the only major new organisation that had not previously been funded by the Department. Individual targets agreed with each delivery body were derived from the Department's existing performance management arrangements with each organisation.

2.5 Around two-thirds of the Programme was targeted directly at business waste reduction; the remainder was targeted at reducing water and energy consumption. The initiatives included:

- **Market development.** This involved the promotion of viable, sustainable markets for recycling and reusing waste materials. One delivery body, the National Industrial Symbiosis Programme, focused on matching those businesses with compatible requirements in each region (see **Box 1**). Other initiatives, such as those promoted by the Environment Agency and WRAP, involved longer term improvements in procedures and protocols for waste management, such as how waste could be used as aggregates for construction.

Box 1

The support provided by the National Industrial Symbiosis Programme

A company had been stockpiling pea shingle from its watercress beds over a number of years. The National Industrial Symbiosis Programme searched the programme's network of member companies in search of a match with a member that could reprocess and reuse the shingle. After looking at a number of possible links, the team found that another National Industrial Symbiosis Programme member was able to offer a cost effective solution by taking over 10,000 tonnes of the aggregate and reprocessing it for the utilities market in pipe bedding material.

The National Industrial Symbiosis Programme currently has around 12,500 members.

Source: National Audit Office and the National Industrial Symbiosis Programme

Figure 4
Programme delivery bodies

Delivery body	Types of activities funded under the Programme	Focus on waste	Programme funding 2005-06 – 2007-08 (£m)
Envirowise	Waste minimisation and resource efficiency awareness raising, advice and support to businesses. Facilitating resource efficiency clubs.	✓	50.3
Carbon Trust	Awareness raising and support to businesses to reduce CO ₂ emissions through advice and financial support. Developing commercially viable low-carbon technologies and businesses.	✗	50.1
Technology Strategy Board	Funding and promoting research and development on commercial and industrial waste issues.	Partly	34.7
Regional Development Agencies	Coordinating resource efficiency work at the regional level and funding regionally specific resource efficiency projects such as recycling schemes.	✓	27.6
WRAP (Waste & Resources Action Programme)	Market development for recycled materials, identifying markets for three new business wastes (tyres, plasterboard and batteries). Waste collection programmes for small and medium enterprises. Business support scheme – providing advice direct to businesses.	✓	20.9
NISP (National Industrial Symbiosis Programme)	Industrial Symbiosis helps businesses form networks and work together to make better use of their collective expertise and resources, such as logistics, materials, energy and water. This also includes identifying opportunities to re-use materials that might otherwise end up as waste.	✓	18.2
Environment Agency	Enhancing NetRegs – a website providing information on regulation for businesses. Tackling waste crime. Developing protocols for recovery of waste materials (jointly with WRAP).	✓	10.9
Market Transformation Programme	Market transformation, including product design – improving the resource efficiency of products used by business.	Partly	9.5
Royal Society of Wildlife Trusts – Business Reuse Fund	Administering the Business Community and Resource Fund for community groups to bid for resources to deliver local business waste projects.	✓	3.4
Action Sustainability	Events and seminars to promote more sustainable procurement. Advice services to public and private sector organisations interested in improving the impact of their supply chain on society.	✓	0.6
Departmental Waste Data Strategy	Specific funding for implementing the Department's Waste Data Strategy.	Partly	4.5
Other activities	Included pilot projects and Programme coordination.	Partly	8.8
Total			240

Source: National Audit Office summary of delivery body activities

- **Advice and support.** Advisors from Envirowise and WRAP visited businesses to help them minimise waste, utilise recycled or reusable waste materials in their supply chain, or improve the way they managed waste materials. The advice given would also encompass methods of saving energy and water to improve an organisation's resource efficiency (see **Boxes 2 and 3**).

Box 2

The support provided by Envirowise

Envirowise supported a manufacturing company in the North East which designs and manufactures systems used in the offshore oil and gas industries. The company went on to make a number of changes including:

- increasing storage capacity for materials, reducing the frequency of deliveries, which saves the company money and reduces the number of 'road miles' in its production processes;
- sending scrap metals to a nearby specialist recycling facility. At this facility, the scrap is stripped down to its individual materials, which are then recycled;
- redesigning materials - electric cables and steel tubes for umbilical manufacture are supplied in steel drums. These drums could not be returned to the supplier, so were sent to scrap metal dealers. The company has worked with its supplier to redesign the drums so that they could be returned for re-use; and
- installing a new water bath that has equipment for monitoring water temperature and cleanliness. Water that is within specification can now be re-used.

Source: National Audit Office and Envirowise

Box 3

Accessing support from WRAP

A small business of between 11 and 20 employees operating within the textiles, paper and publishing sector, producing predominantly paper and wood waste, obtained support from WRAP in developing a waste management plan. The respondent reported that his organisation found information on WRAP very easy to access and, in general, found the support provided to them by the Programme to be very effective: "it gave us a better understanding". The benefit to the business was a reduction in the amount of waste sent to landfill. This business believed that there was already sufficient support for businesses in relation to business waste minimisation: "if the will is there, then there should be no real excuse".

Source: National Audit Office survey of businesses

- **Local and regional initiatives.** Regional Development Agencies used their funding to coordinate resource efficiency work at the regional level, and to fund local and regional activities. In some regions, funding was also used to support business resource efficiency activities, which provided local businesses with advice, support and training in waste and resource efficiency.
- **Longer term development initiatives.** The Technology Strategy Board and the Carbon Trust, for example, supported projects to encourage innovation in the development of resource-efficient and low carbon technologies.

2.6 This part of the report assesses the impact of the Programme on the tonnage of waste generated and the tonnage sent to landfill, and its wider impact on energy and other resource savings to business.

The impact of the Programme on the amount of waste generated

2.7 Minimising the tonnage of waste generated by businesses would help to improve their efficiency and reduce the need to re-use, recycle or otherwise dispose of unwanted materials. During the period of the Programme the Department was able to make some use of survey data collected by the Department for Communities and Local Government to monitor the tonnages of construction, demolition and excavation waste generated. Estimates from these surveys indicate that the tonnage of construction, demolition and excavation waste generated remained relatively static between 2001 and 2005⁴. The Department for Environment, Food and Rural Affairs did not have comparable data on the total tonnage of commercial and industrial waste generated. The most recent detailed assessment of the commercial and industrial waste generated in England was carried out by the Environment Agency in 2002-03. The Department announced in June 2009 its intention to complete a similar survey by autumn 2010.

The impact of the Programme on business waste sent to landfill

2.8 Many of the activities funded through the Programme were designed to reduce landfill by reducing wastage of materials that could otherwise be reused or recycled. Data on the tonnage of waste sent to landfill by business are more readily available than those on total waste generated, but are still not comprehensive. HM Revenue and Customs collects tax on each tonne of waste handled by landfill operators, but the operators do not necessarily keep a record of its source. Similarly, the Environment Agency collates data on waste disposed at landfill sites, but some sites that recover inert waste are exempt from the requirement to hold a permit and data are not collected in these cases.

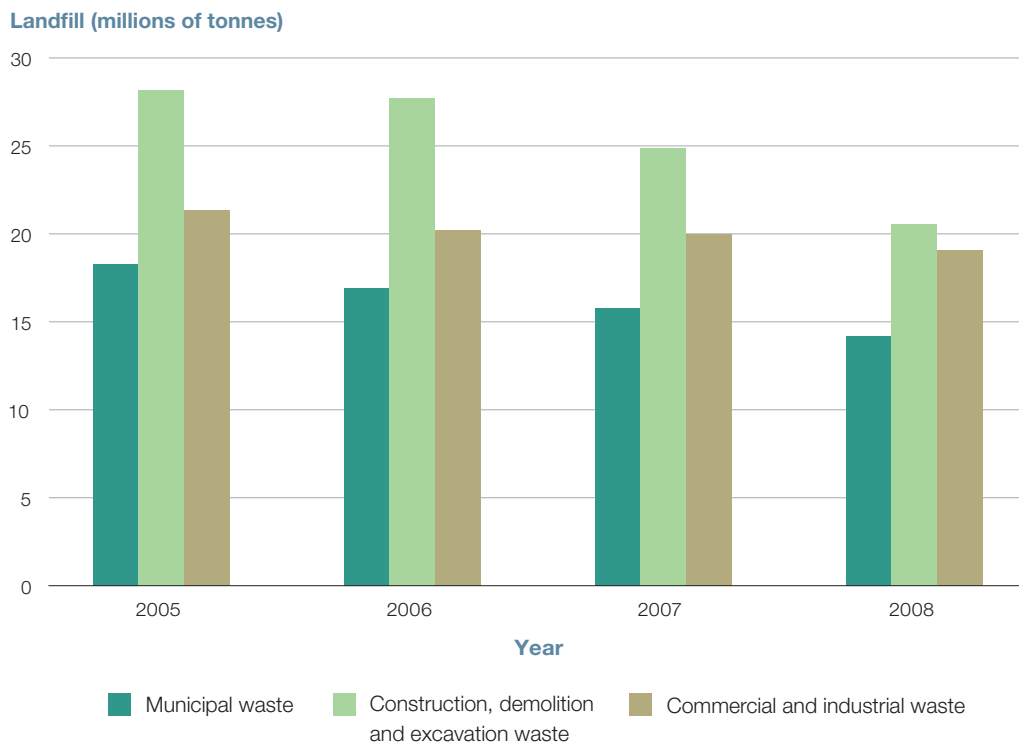
⁴ Communities and Local Government: *Survey of Arisings and Use of Construction, Demolition and Excavation Waste As Aggregate in England* (1999, 2001, 2003 and 2005).

2.9 The Department and the Environment Agency developed a methodology in 2009 to allow analysis of landfill deposits from commercial and industrial, construction, demolition and excavation, and municipal sources. Over the three-year period of the Programme (2005 to 2007) the tonnage of business waste sent to landfill fell by 4.6 million tonnes (10 per cent). By 2008 this reduction had reached 9.9 million tonnes (22 per cent), as shown in **Figure 5**. Most of the reduction in the tonnage of business waste sent to landfill was from construction, demolition and excavation waste, more of which tends to be inert and less likely to generate greenhouse gases than other types of waste, but which has high levels of embedded carbon.⁵ This type of landfill reduced by 7.6 million tonnes (28 per cent) between 2005 and 2008. The tonnage of commercial and industrial waste sent to landfill, which includes more biodegradable materials that can generate greenhouse gases, reduced by 2.3 million tonnes (11 per cent). In the 2007 Waste Strategy, the Department set an expectation of a 20 per cent reduction in commercial and industrial waste by 2010 compared to 2004 levels. Achieving this expectation will require a greater rate of progress than has been achieved so far, subject to external factors such as the rate of economic growth. The reductions in commercial and industrial waste are relatively small in comparison to the 4.1 million tonne (22 per cent) reduction in municipal waste going to landfill over the period 2005 to 2008. Municipal (mainly household) waste makes up around a tenth of waste and around a quarter of annual landfill deposits in England.

2.10 It is not clear the extent to which the Programme, as opposed to other factors, was responsible for changes in the tonnage of business waste landfilled. In our survey of businesses, 208 out of 328 respondents (63 per cent) said that they had taken some action to reduce waste sent to landfill. Only 24 businesses (7 per cent), however, were aware of the waste minimisation activities of any of the Programme delivery bodies and only 16 businesses (5 per cent) stated that they had accessed support for waste minimisation services from Programme bodies. Regulatory compliance, on the other hand, was identified as being a very important, or quite important, reason to reduce landfill by 117 businesses, and 94 businesses cited the Landfill Tax as a very important, or quite important, factor. Other factors that encouraged businesses to reduce the waste they sent to landfill included corporate social responsibility plans (109 respondents) and business opportunities or savings (108 respondents). It should be noted that our survey asked specifically about awareness of services to assist with waste minimisation, and does not represent all business sectors; nor the construction sector, where the largest landfill reductions occurred. Surveys conducted on behalf of the Department have found higher levels of general awareness of delivery bodies amongst businesses. One survey conducted for one of the delivery bodies, Envirowise, indicated that 18 per cent of respondents had accessed the help available. The Department noted that take-up was broadly comparable to another similar scheme.

⁵ The term 'embedded carbon' refers to the carbon dioxide emitted during a good's lifecycle, from the raw materials used in its production, through distribution, to the final product.

Figure 5
Business waste sent to landfill over the Programme period



Source: Department for Environment, Food and Rural Affairs and the Environment Agency

NOTE

Construction, demolition and excavation waste has been identified using European Waste Catalogue (EWC) codes for this sector. A set of codes was identified and agreed by the Department and the Environment Agency. Local authorities submit quarterly returns relating to municipal waste to the Department. It is assumed that the remainder, after extracting construction, demolition and excavation and municipal waste to landfill, equates to commercial and industrial waste.

2.11 The bodies funded through the Programme reported that they had achieved a reduction in waste sent to landfill of 1.6 million tonnes in 2006-07, equivalent to around four per cent of business waste sent to landfill in 2006. Evidence from the third year of the Programme (2007-08) suggests further diversion of waste from landfill by businesses in that year as a result of Programme interventions (see **Figure 6**). There is some uncertainty in these figures as a result of differences in the underlying assumptions and method of calculation by each delivery body. Our consultation with the Programme

Figure 6
Programme performance indicators and outcomes

		2005-06	2006-07	2007-08 ¹	Total
Programme expenditure (total)		£33.1m	£78.9m	£108.1m	£220.1m
Of which allocated to short term interventions ²		£15m	£47.3m	£67.9m	£130.2m
Indicator	Rationale for indicator	Short term outcomes reported by delivery bodies ³			Possible financial value
Increased sales	Businesses can increase sales by selling on materials that might otherwise become waste.	£14.7m	£79.5m	£40.8m	£134.9m in real terms
Cost savings to business ⁴	Businesses can save money by using fewer resources and relying on more efficient means of managing waste such as reuse and recycling.	£87.9m	£188.1m	£219.0m	£495.0m in real terms
Waste diverted from landfill	Landfill reduction will lead to reductions in harmful greenhouse gas emissions and other harmful substances entering soil and water.	0.68 million tonnes of waste	1.58 million tonnes of waste	3.44 million tonnes of waste	Up to £121.8m of the cost savings already identified above, arising from savings in Landfill Tax. ⁵
Virgin raw material savings	Reducing consumption of raw materials saves both waste and energy. The exact amount saved by businesses will vary depending on the availability, quality and price of materials, commodities and recycled substitutes.	0.68 million tonnes of raw materials	3.58 million tonnes of raw materials	2.66 million tonnes of raw materials	Unknown – it was not possible to quantify as the value depends on the type of material and their market value, which can change over time.
Water savings	Reduced water usage saves businesses money on utility costs. There are also environmental benefits arising from water remaining in rivers and aquifers, though these are very difficult to quantify and depend on the source of supply.	5.6 million cubic metres of water	14.6 million cubic metres of water	5.6 million cubic metres of water	Up to £12.5m of the cost savings reported by businesses.

bodies and review of the Department's data established that much of the reported reduction was attributable to the National Industrial Symbiosis Programme, which was able to achieve relatively quick reductions by helping businesses to trade materials that might otherwise be sent to landfill. Other organisations, such as Envirowise, WRAP, Regional Development Agencies and the Environment Agency also reported landfill savings as a result of the advice and support they provided to businesses, support to local and regional activities and action on environmental crime such as fly-tipping.

Figure 6

Programme performance indicators and outcomes – continued

Indicator	Rationale for indicator	Short term outcomes reported by delivery bodies ³			Possible financial value
		2005-06	2006-07	2007-08 ¹	Total
Hazardous waste savings	Hazardous waste can be difficult to treat and may lead to dangerous leachates entering the soil or water if not treated or stored appropriately.	0.12 million tonnes of hazardous waste	0.15 million tonnes of hazardous waste	0.024 million tonnes of hazardous waste	Unknown – data on the social and environmental value of savings are not available, and are likely to be highly dependent on the type of waste.
Greenhouse gas savings	Reducing greenhouse gas emissions is a key part of the Government's climate change policy.	0.32 million tonnes of CO ₂ equivalent emissions	2.52 million tonnes of CO ₂ equivalent emissions	4.21 million tonnes of CO ₂ equivalent emissions	Up to £164.5m in wider environmental and social costs avoided from reduced emissions. ⁶

Source: National Audit Office analysis of Programme performance data

NOTES

- 1 Programme performance data for 2007-08 are currently under final discussion with delivery bodies prior to publication. The figures presented here are therefore provisional and may contain some differences to the final published data.
- 2 Increased sales, business cost savings and Programme funding values are expressed in constant prices, deflated to the first year of the Programme (2005-06) using the GDP deflator. All costs and benefits for the second and third years of the Programme (2006-07 and 2007-08) have been discounted at a rate of 3.5 per cent.
- 3 Spend on short term interventions is based on Departmental data and is likely to be indicative only, since some activities were intended to have both long and short term benefits.
- 4 Business cost savings may not fully reflect the environmental benefit of the reductions in resource use and waste reduction.
- 5 Businesses have to pay waste operators a fee, which includes an element to cover the cost of Landfill Tax. The savings to business of not using landfill might vary from: the total cost, if the waste is avoided completely; less if the waste is recycled; and relatively small savings if, for example, the waste is sent to alternative treatment facilities. The figure presented may therefore overstate the total savings to business stemming from landfill reductions. Complete data on alternative destinations of waste avoided or recycled through Programme activities are not available.
- 6 The financial value of the CO₂ equivalent savings have been estimated based on the Shadow Price of Carbon, which was, at the time of the Programme, the Government's accepted measure for valuing CO₂ emissions in climate change policies. From July 2009 emissions will be valued based on new guidance published by the Department for Energy and Climate Change. The new approach is based on the cost of the cost of mitigating emissions, which will take into account whether the emissions are covered by the EU Emissions Trading System. There are insufficient data available to apply this new methodology to the Programme data.

2.12 The activities funded through the Programme include measures which may have an impact on business waste over the long term. The available evidence indicates that some of these measures are beginning to deliver benefits. For example, the Environment Agency and WRAP worked jointly on a set of Waste Quality Protocols. The Protocols identify the point at which waste, once recovered, can be reused or supplied into other markets. Early evidence indicates that in 2007-08 the compost Waste Quality Protocol may have allowed 700,000 tonnes (26 per cent) of such materials to be classified as a product rather than waste so that it can be used in gardens and in agriculture. There are examples of benefits arising from businesses changing their practices after intervention by WRAP, the National Industrial Symbiosis Programme and other Programme bodies, such as by reducing packaging waste in the retail sector. The Programme has also provided increases in treatment capacity at anaerobic digestion facilities. Nevertheless, in general, the impact of longer term measures will be more difficult to assess and quantify than short term measures, as it will be more difficult to separate out the effect of other factors that impact on businesses.

Development of infrastructure to deal with business waste

2.13 As with municipal waste, there is a demand for additional recycling and treatment facilities to help businesses find alternatives to landfill. Research and consultation carried out in 2003 prior to the Programme's launch identified that developing additional capacity for diverting business waste from landfill would require significant levels of subsidy. At the time therefore the Department considered that advice, capacity building and targeted grants were more practicable and cost-effective uses of Programme funds. The Programme did, however, provide some investment in small and pilot projects, such as recycling projects for small and medium-sized enterprises and anaerobic digestors. By contrast the Department has allocated nearly £3 billion, primarily via the Private Finance Initiative, to support local authorities investing in infrastructure to meet their statutory landfill targets and deliver England's obligation, under the 1999 EU Landfill Directive, to reduce the amount of biodegradable municipal waste sent to landfill.

2.14 The Department estimated in its 2007 Waste Strategy that the amount of new treatment capacity needed to divert sufficient tonnages of business waste away from landfill was equivalent to around 80 new facilities by 2009-10, and up to 180 new facilities by 2020. These facilities may include recycling centres or more complex facilities such as composters, anaerobic digestors and incinerators. In May 2006 the Department changed its criteria for local authority PFI waste projects to encourage local authorities to consider the potential for processing commercial and industrial waste within their projects. There might therefore be some capacity for commercial and industrial waste to be treated in facilities built primarily to process municipal waste, but it is difficult to forecast how much capacity, if any, will be available. Many local authorities' long term waste management plans are now well advanced and there may be limited opportunities to develop a more integrated approach to waste infrastructure development, given the long lead times needed to bring new waste facilities into operation. However, there may be scope for the Department to explore opportunities for local authorities or their contractors to collect and dispose of commercial and industrial waste and there may be more scope for local authorities to explore integration of business waste collection

services with their existing arrangements. The Department has otherwise relied on the Landfill Tax and Renewables Obligation Certificates (ROCs), which provide incentives to energy producers to invest in lower-carbon technologies, to encourage private sector investment in infrastructure.

The wider impact of the Programme

2.15 The Department developed seven performance indicators to measure the Programme against a range of outcomes (Figure 6, on page 20). In addition to reductions in the tonnage of waste sent to landfill, the performance indicators include cost savings to business, water savings, and greenhouse gas savings. The Department considered the greenhouse gas savings to be especially important, recognising that resource efficiency savings often contribute to reducing carbon dioxide (CO₂) emissions.

2.16 Provisional data for the third year of the Programme (2007-08) indicate that delivery bodies reported further progress in helping businesses. Figure 6 shows that over three years the Programme appears to have helped businesses to increase sales by about £135 million and generate cost savings of some £495 million in real terms.⁶ Some of the other reported impacts can also be translated into estimated monetary values, but the figures cannot be simply added together to determine an overall calculation of the benefits from the Programme because of the risk of double-counting the impact of some activities. For example, using recycled aluminium would reduce the tonnage of virgin raw materials required, divert waste from landfill and generate greenhouse gas savings. Figure 6 shows that the reported impact of the Programme on landfill increased considerably each year between 2005-06 and 2007-08.

2.17 The reported business cost savings are difficult to validate because of the uncertainties about the sustainability of any changes businesses make, and the potential impact of other external factors. For example, the relative savings available from using recycled goods might be affected by variations in the market prices of both new and recycled commodities. There are also inconsistencies in the way that the delivery bodies calculated how much of an impact they had made on businesses. Some, such as the National Industrial Symbiosis Programme, followed up individual businesses using a case-study approach. Others, such as Envirowise, used a combination of surveys and individual user follow-up. The Department made these limitations clear when it published the Programme results.

2.18 The Programme also provided the Department with an opportunity to trial different approaches. Three pilot projects have continued in a scaled-up form. These are the Centre for Remanufacturing and Reuse (which provides advice to businesses and business sectors to promote the reuse of products), the Business Resource Efficiency and Waste Centre for Local Authorities (which has helped develop a network of local authority officers working on local business resource efficiency issues, such as trade waste collection), and the Construction Waste and Resources Platform (which provides information to and liaison with the construction sector).

⁶ Estimates are based on final performance data from the first two years of the programme and provisional data from the third year.

Part Three

The Department's management of the Business Resource Efficiency and Waste Programme

3.1 To get value for money from the Programme, the Department needed to set clear aims and objectives, be satisfied that its funds were being spent on relevant activities, and allocate resources based on evidence of performance and progress towards its objectives. Unlike acquisition programmes and procurement projects in central government, grant programmes are not subject to scrutiny through the Office of Government Commerce (OGC) Gateway™ process. To assess the Department's management of the Programme, we drew upon OGC guidance and the National Audit Office's framework for evaluating service contracts to develop assessment criteria:^{7, 8}

a Programme design, comprising:

- A clear statement of aims and objectives, aligned to and supporting wider Departmental policy aims.
- A programme of delivery, to achieve the aims and objectives specified.

b Programme management, comprising:

- Strategic and operational coordination and programme management to provide strategic direction, and consistent standards across the programme.
- Accountability for the use of resources and achievement of outcomes.
- Engagement with other organisations to obtain assurance that the programme is relevant and that businesses were aware of the services on offer.

c Monitoring and evaluation of performance, comprising:

- Effective use of performance data to determine that the programme is worth pursuing, and that lessons are learned from both challenges and successes.

⁷ National Audit Office report: *Central government's management of service contracts* (HC 65, December 2008).

⁸ Office of Government Commerce: *Portfolio Management Guide* (Final Public Consultation Draft).

a Programme design

3.2 The Department developed aims and objectives for the Programme at its outset. By June 2005 the Department had further developed these, and had agreed a vision statement that the Programme would aim to result in *'more profitable businesses through minimised waste and more efficient use of materials, water and energy'*. However, to get it up and running quickly the Department did not specify any expected outcomes or impact for the Programme or how the Programme would contribute to departmental and Government policy objectives on waste management. Instead, the Department relied on individual targets set with the Department's delivery bodies. Overall Programme targets and desired outcomes were developed in a draft Programme strategy in August 2007, to cover the period 2008-09 to 2010-11, but this was not implemented fully before the Programme ended in April 2008. The Department acknowledged that policy on commercial and industrial waste has been less developed than that for municipal waste, due to a lack of statistical data and hard targets, the absence of EU obligations such as the EU Landfill Directive, and because business waste is handled by a regulated private sector market rather than a public body.

3.3 Without clearly stated central targets, the Department could not proactively source and commission services based on specified outputs and outcomes. Instead, the Department used stakeholder consultation to identify what activities it should fund. Delivery bodies were then invited to develop initiatives and projects to utilise the funding available and the proposals were considered by officials from the Department, in consultation with the Treasury and the then Department for Business, Enterprise and Regulatory Reform. Our review of this process confirmed that most bids were accepted, although some were not, including a proposal from within the Department to provide increased funding to local authorities to tackle fly-tipping and, ahead of funding year 2007-08, two bids from WRAP and one from the Environment Agency. The Department reported that most bids were accepted because its officials worked with delivery bodies in preparing their bids, to ensure that these closely met the needs identified through stakeholder consultation. Changes to the bids were essentially due to over-subscription of funds. For example, the Regional Development Agencies were allocated £5 million instead of the £10 million they requested, with provision for increased funding in subsequent years.

b Programme management

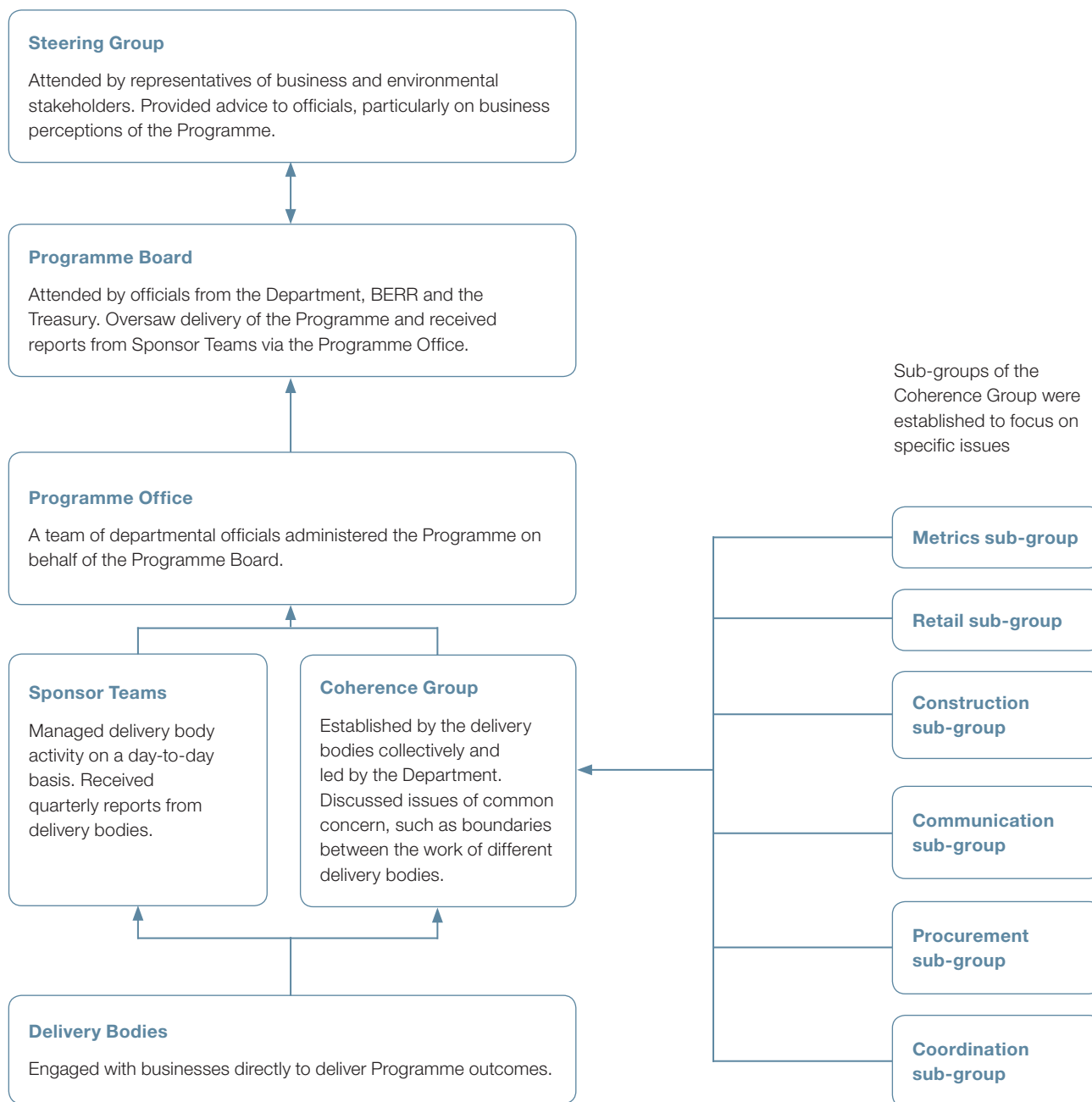
3.4 The Department established a suitable management and governance structure in 2004 and early 2005, before the Programme commenced in March 2005. A central Programme Office coordinated activity and supported the Programme Board and Sponsor Teams. Routine management of delivery bodies was delegated to individual Sponsor Teams (see **Figure 7**). These programme management arrangements allowed the Department to oversee and coordinate activity and to ensure that activities were tailored to the business environment. The Department estimates that the average direct annual cost of administering the Programme was between £400,000 and £550,000, of which the Programme Office accounted for around a quarter and the Sponsor Teams accounted for the remainder. The Programme Board, comprising officials from the Department, the Treasury and the Department for Business Innovation and Skills, convened for the first time in August 2004 and met each quarter until the Programme ended in April 2008.

3.5 The Department established a Steering Group to advise officials and the Programme Board on the direction and development of the Programme, which included representatives from Confederation of British Industry (the CBI), the Federation of Small Businesses and the waste industry. In addition, the Department held a ‘stakeholder event’ each year to invite businesses to contribute to the development of the Programme. Throughout the process, though, the Department found it hard to engage effectively with individual businesses.

3.6 Delivery bodies reported progress to their Sponsor Teams on a quarterly basis. We found that these reports rarely contained information on performance indicators, because it took delivery bodies a long time to produce information. It was sometimes up to nine months following the end of the financial year in question before a final analysis could be produced. The Department therefore collected performance information on an annual basis but accepted more frequent submissions where these were available. The sample of quarterly reports we reviewed contained the financial information requested by the Department, including monthly reconciliations between planned and actual expenditure and explanation of variances.

3.7 When the ring-fencing of Landfill Tax revenues came to an end in April 2008 and the Programme closed, the Department concluded that separate management and governance structures were no longer required. The existing governance structure was closed and the ongoing expenditure on activities was brought into the Department’s overall budget so that it would be subject to normal budgetary procedures. The Department did not have a systematic approach in place to coordinating activities or funding priorities across the delivery bodies throughout 2008-09. The Department’s review of the delivery body landscape in March 2009, however, highlighted the importance of a strong sponsorship function in the Department to break down barriers between organisations and to encourage collaboration. The Department reports that it has now acted on this finding and established a new process for coordinating activities and funding, pending the unification of the main resource efficiency bodies, described in paragraph 3.11.

Figure 7
Programme management structure



Source: National Audit Office

c Monitoring and evaluating performance

3.8 The Department did not develop performance indicators for the Programme before it had started. The Programme Board ratified seven indicators in November 2005, after funding had already been determined. Figure 6 shows the seven indicators used.

3.9 The Department has not yet undertaken or commissioned a formal evaluation of the Programme. In the interim, data collected against the seven indicators were used as an evaluative measure, as shown in Figure 6. There were, however, long delays in turning data collected into robust performance information. The first Programme-wide report on progress against the performance indicators, which covered the first year (2005-06), was not published until March 2008, although initial unaudited results were collected and disseminated to the Programme Steering Group in June 2006. In the absence of timely performance data and detailed contextual data on business wastes the Department's ability to monitor the impact of the Programme, while it was actually running, was reduced.

3.10 The Department's review of its resource efficiency delivery landscape, published in March 2009, noted that the delivery bodies had not applied a common methodology to measuring outcomes. There were differences in measuring the extent to which outcomes were due to the activities of each delivery body. The organisations generally relied on customer views to measure impact, which they gathered directly and via surveys. Similarly, there were different approaches to assessing the longer term impact of interventions. Some organisations assumed that the impact declined by 20 per cent a year whereas others profiled on the basis of past experience.

Plans to simplify the support available to businesses

3.11 The Department's 'delivery landscape' review, published in March 2009, explored a number of options on simplifying and rationalising how the activities funded by the Programme could be coordinated more effectively in the future.⁹ The review excluded activities of those organisations previously funded through the Programme and sponsored by other Departments (the Carbon Trust and Regional Development Agencies), the Environment Agency and the Royal Society of Wildlife Trusts. The Secretary of State for the Environment announced on 25 March 2009 that six of the organisations previously funded through the Programme would come under the leadership of WRAP to provide a simplified single source of advice to replace the existing services and bodies.¹⁰ The new body will work closely with the Environment Agency. The Department reported that a team of its officials is working with WRAP to put in place delivery and performance management arrangements for the new body by April 2010.

⁹ The review is separate from but linked to the cross-government Business Support Simplification Programme, which aims to simplify support and guidance available to businesses.

¹⁰ The National Industrial Symbiosis Programme, Envirowise, the Centre for Remanufacturing and Reuse, Construction Resources and Waste Platforms, Action Sustainability and the Business Resource Efficiency and Waste Centre for Local Authorities.

Appendix One

Methodology

Selected Method

Purpose

File review

Our consultants, PricewaterhouseCoopers LLP, reviewed a wide array of Programme documentation, including strategies, control plans, proposals, contracts, minutes of committee meetings and correspondence.

To establish details of Programme design, governance and management and compare the Department's approaches to business and municipal waste and provide an overview of the Programme's development, including areas of strength and weakness, particularly with regard to the set-up and management of the Programme.

Review of quantitative data

We analysed a variety of data on the tonnages of waste produced and the amount sent to landfill. We also estimated the possible monetary value of the Programme outcomes reported by bodies the Department funded.

To ascertain the impact of the Programme based on data on waste and landfill.

Survey of businesses

Our consultants, PricewaterhouseCoopers LLP, undertook a telephone survey of 328 businesses across England to supplement the findings of the main body of the evaluation, and to ensure that the business perspective was reflected in the final analysis.

To obtain business views on waste minimisation and the Programme delivery bodies.

We selected five business sectors for sampling: retail and wholesale; food, drink and tobacco; textiles, wood, paper and publishing; other manufacturing; and financial/professional services, as these were the main producers of commercial and industrial waste identified in Defra's 2007 Waste Strategy for England. We also included an "other" category in the questionnaire to ensure that any other categories of business (including construction and demolition) were captured.

The characteristics of the achieved sample in terms of turnover and number of full time equivalent employees were broadly representative of the population of UK business as a whole. However, the survey is not representative of the economy as a whole, or the full cohort of businesses targeted by the Programme.

Interviews with stakeholders and delivery bodies

Our consultants, PricewaterhouseCoopers LLP, undertook semi-structured interviews with the Department and Programme delivery bodies to inform our analysis of programme documentation and reviews of performance information. Interviewees included staff from the Programme office, Sponsor Teams and senior managers within the Department, as well as the delivery bodies. Interviews were semi-structured and lasted around an hour. The majority of interviews were undertaken face-to-face.

To identify a range of views on:

- the coverage, management and effectiveness of the Programme; and
- the Department's approach to business waste.



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