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Environmental bodies and landfill tax funds An assessment of landfill operators in two English counties

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Abstract

An analysis of the adoption of environmental bodies in two English counties is based theoretically upon an industrial interpretation of suitable environmental protection measures for the municipal waste management sector, and empirically upon a survey of waste disposal contractors in the case study regions. The Government is actively attempting to shift the emphasis of municipal waste management further up its hierarchy of waste options, so that the industry's dependence upon an ever diminishing landfill resource is reduced. In the wake of recycling targets, recycling credits, minimisation trials and general waste related policy and legislation, the Government has enforced the landfill tax, to artificially raise the cost of landfill. However, of perhaps greater significance than the tax, are the associated environmental bodies which can be set up to reclaim up to 20% of the disposal company's landfill tax payments, to be used for the initiation of local environmental improvement schemes. There is great scope for the use of landfill tax credits, for the reclamation and restoration of land, pollution reduction schemes, the restoration of historical and religious buildings, and most importantly for research and education programmes. The awareness of the potential of these bodies in providing positive local environmental improvement is assessed by focusing upon their adoption by, and the involvement of, private sector landfill operators in the counties of Northampton and Surrey. Environmental bodies are currently being viewed warily by the industry, with little firm

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commitment to initiate bodies or provide funding for existing bodies. However, the results do suggest that the bodies, which are currently being set up in isolation from the landfill operators, will eventually be successful in attracting funding from landfill operators, providing an important source of funding for local environmental initiatives.

Keywords: Environmental bodies; Funding; Landfill operators; Landfill tax; Northampton and Surrey; Telephone survey

1. Introduction

This research is a direct development of earlier work, carried out by the authors, which investigated the future role of landfill as a waste management option in the UK [1]. The research concluded that landfill dominates the municipal waste industry, accounting for in excess of 80% of all treatment and disposal in England, as noted in Table 1. This contrasts with the situation in several other European countries where alternative practices including recycling, composting and incineration play much more significant roles (Table 2). However, the majority of active landfill sites in England will be infilled and returned to agricultural or recreational use within the next 15 years, whilst landfill use has decreased during the last 5 years, in response to a range of Government initiatives [2]. The industry, both private and public sectors, is aware of the Government's attempts at discouraging the use of landfill, and cited the landfill tax and general recycling policy as being the main thrusts for this change of emphasis. This current research was initiated to investigate the role of the landfill tax in shaping the practices of UK municipal waste management in the UK.

In the its White Paper on the Environment, 'This Common Inheritance' [4], the Government stated that the waste industry should seek to reduce waste at source in order to prevent pollution and decrease the need for landfill. The central theme of all recent Government policy and legislation has been the need for waste management activities to be forcefully encouraged to move further up the hierarchy of available waste management options [5], as laid out in their National Strategy for Waste Management [6]. However, the success of these measures in reducing the UK's dependence on landfill remains relatively unimpressive when compared to waste management figures from other European nations, as quoted in Table 2.

'Making Waste Work' [4] is the Government's strategy for achieving more sustainable waste management, whereby the nation must take greater responsibility for the waste it produces, the way it is managed and its impact on the environment. Businesses must shift their activities to options at higher levels of the waste management hierarchy (Fig. 1), which embodies sound waste management practice and mirrors the requirements of sustainable development [10]. The aims and targets associated with the National Waste Strategy are listed in Table 3.

At present waste management practices in the UK are heavily weighted towards the bottom of the waste hierarchy. Recent research [11] has identified two main failures in the operation of the solid waste market:

Table 1
Waste treatment and disposal practices (by %) in the UK [3]

	Landfill	Incineration	Recycling
Household	90	5	5
Commercial	85	7.5	7.5
Construction	65	0	35
Other industrial	75	2	23

1. There is no direct incentive through the pricing system to reduce or recycle waste.
2. Current prices do not reflect their environmental impacts of the waste management options.

One of the potential ways of addressing these problems has been the introduction of recycling credits [12], but a general lack of success in achieving desired recycling levels by local authorities has resulted in the Government taking more positive action through the introduction of the landfill tax and the associated environmental bodies. If waste management options were to reflect more of their environmental externalities and impacts then we would expect to see an increase in emphasis on the waste management options nearer the top of the hierarchy, which is primarily the aim of the landfill tax [13]. The associated environmental bodies are a 'softener' for industry, allowing companies to choose whether the new tax burden is used by HM Customs and Excise or whether some is made available for environmental schemes. They will potentially play a role in encouraging movement up the hierarchy by funding research into new technologies and through the education of the public to highlight the benefits of reduction, re-use and recovery.

2. Theoretical considerations

In the Government White Paper 'This Common Inheritance' [3] it was stated that the Government was setting the challenging target of recycling half our recyclable household waste by the end of the century, and introduced the Recycling Credit

Table 2
A comparison of municipal waste management practices in Europe (by %) [7–9]

Nation	Landfill	Incinerator	Recycling
Sweden	13	49	38
France	30	35	35
Denmark	45	45	10
Austria	55	20	25
Netherlands	65	20	15
UK	85	8	7

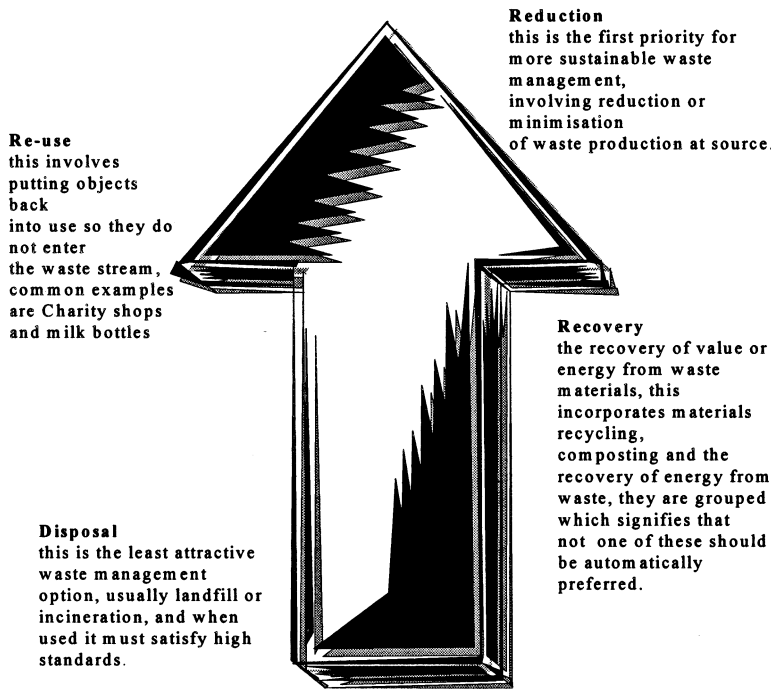

Fig. 1. The Government's current waste policy is based on a hierarchy of waste management options [4].

System as a means of encouraging the adoption of recycling programmes by local authorities [14]. Coggins and Evans [12] proposed a number of alternative measures to the recycling credit scheme which could be adopted to further encourage waste management activity to move up the waste hierarchy (Table 4).

Table 3
Aims and targets associated with the National Strategy for Waste [4]

Aims of making waste work:
• to reduce the amount of waste that society produces
• to make the best use of the waste that society produces
• to minimise the risks of immediate and future environmental pollution and harm to human health
• to increase the proportion of waste managed by the options towards the top of the waste hierarchy
Targets of making waste work:
• to reduce the proportion of controlled waste going to landfill from 70% to 60% by 2005
• to recover 40% of municipal waste by 2005
• to recycle or compost 25% of household waste by the year 2000
• 40% of domestic properties with a garden to carry out composting by the year 2000
• all waste disposal authorities to cost and consider the potential for establishing central composting schemes by the end of 1997
• easily accessible recycling facilities for 80% of households by the year 2000

Table 4
Potential mechanisms for reducing dependence on landfill and for implementing government priorities regarding the waste hierarchy [12]

Management level	Incentives (financial)	Polluter pays penalties
Production	Tradable permits	Minimum percentage of recycled content
	Tax incentives	Product levies/bans
	Investment allowances	Input material levies/taxes
		Excess packaging levies/bans
Consumption	Differential VAT	Deposits
	Deposits	Green dot levy
	Eco-labelling	Dual stocking
		Trade description act
Collection	Diversion credit	Mandatory recycling
	Rateable value	Direct charges/local taxes
	Adjustments for drop-off sites	Mandatory retail drop-off sites
		True costs of collection
Recycling	Recycling credit	Redefinition of waste
	Investment allowance	Higher prices for recyclables
	Redemption allowances	Ban on landfilling recyclables
	Mandatory purchasing	Recycling targets and penalties
	Hole in the wall processing	
	Rateable value adjustments	
Disposal	Diversion credit	Direct charges
	Tradable permits	Surcharge on recyclables
		Landfill tax
		NIMBY
		True costs of landfill

Regulation and economic instruments are like the proverbial 'stick and carrot'; the general idea behind economic instruments is to give producers and consumers an (economic) incentive to act in accordance with society's ends. In a research programme [15] 13 economic instruments were identified which had the potential to stimulate the recycling of materials from waste, and included some of the measures listed in Table 5.

However, tax concessions, VAT differentiation, price support mechanisms, preferential purchase, and removal of waste disposal costs from tax relief were considered as having less potential, following qualitative analysis based on effectiveness and coverage of the policy, administrative efficiency, ease of implementation, equity, acceptability, and economic efficiency [16]. This experience is helpful in initial scoping and providing an indication as to which instruments appear suitable to meet different objectives; however, little post-evaluation has been undertaken to date. What current research has suggested is the potential that taxes could have on disposal operations to encourage the development of alternative forms of waste management other than landfill, and this has been implemented in the UK through the introduction of the landfill tax.

Table 5
Potential mechanisms for stimulating recycling [15]

1. Product charges (charges levied on products made from non-recycled materials)
2. Raw materials charges (a charge levied on raw materials where there are recycled substitutes available to encourage the use of recycled material)
3. Deposit refund schemes (refundable charges on potentially recyclable products)
4. Waste collection charges (a charge levied on households for the collection and disposal of waste)
5. Waste disposal charges (a charge levied on all household waste at the point of disposal)
6. Transferable recycling target (for industry and waste collection authorities)
7. Property rights (imposing responsibilities for packaging waste collection and recycling)
8. Direct subsidies (direct payments to waste collection authorities to invest in recycling facilities)
9. Tax concessions (increasing tax allowances for recycled materials)
10. VAT differentiation (VAT exemptions or reductions for goods containing recycled inputs)
11. Market support schemes (price stabilisation and price support mechanisms)
12. Preferential purchase (public sector purchasing systems which discriminate in favour of goods with recycled inputs or which are recyclable
13. Removal of tax allowances (changing allowances, removal of waste disposal costs from tax relief)

3. The landfill tax

The landfill tax had its genesis in a recommendation to the Government made by the Advisory Committee on Business and the Environment in its first report to Ministers in October 1991 [17], stating that the price of landfill should be increased significantly to levels attained elsewhere in the EU (Table 6). The following year in 'This Common Inheritance—The Second Year Report' [18], the Government gave a general commitment in favour of economic instruments as a means of achieving environmental goals. Following a period of internal Whitehall debate, the Chancellor in his Budget Statement on 29 November 1994 announced the Government's intention to introduce a levy in 1996. A consultation paper emerged in March 1995,

Table 6
Landfill prices per tonne in Europe, excluding tax [20]

Country	Landfill cost per tonne (£)
Norway	40
Germany	32
Sweden	28
Denmark	28
Netherlands	24
Italy	20
UK	13
France	11
Spain	7
Finland	6

which proposed a single rate ad valorem tax on the charges levied by landfill site operators, with a tax rebate for environmental trusts for the restoration of orphan landfill sites and for research into and development of more sustainable waste management practices. The consultation paper received over 700 responses, with most criticisms surrounding the ad valorem charge; the Government responded to this by announcing on 2 August 1995 that the landfill tax would be weight-based. The rates of the tax were announced by the Chancellor on 28 November 1995, and the Finance Bill was published in January 1996 [19].

The landfill tax is placed on every tonne of waste which goes to landfill for disposal, and is set at £7 per tonne for non-inert wastes (most household and municipal wastes), and at £2 per tonne for inert wastes, since its inception in October 1996. This will raise the cost of landfilling considerably and should encourage the adoption of alternative strategies as they become more economically competitive against an ever more expensive landfill route [21]. The current emphasis of UK waste management policy is to enable, encourage and push the industry and its practices further up the waste hierarchy towards its aims of sustainable development. However, the Government must ensure that the tax actively moves operations up the hierarchy, and the environmental bodies may prove to be an important tool in achieving these aims. This can be achieved through the revenue raised from the tax which need not all be paid to the Inland Revenue, but up to 20% can be reclaimed to form an environmental body to carry out positive local environmental activities. This could allow more positive and beneficial use to be made of the funds made available from the landfill tax, whether it be through land restoration and remediation, pollution abatement, education, research and building maintenance. In his budget on Tuesday 28 November 1995, the Chancellor of the Exchequer said:

> Last year I proposed a new landfill tax, a charge on the disposal of waste, in for example, tips and old quarries. This will come into effect on October 1, 1996. It will be charged at a standard rate of £7 per tonne and a lower rate of £2 per tonne for inactive waste. This is a tax on waste in order to reduce the tax on jobs. The money raised by the landfill tax will allow for a matching cut in the main rate of employers' National Insurance contributions by a further 0.2–10% from April 1997. This will cut the costs of employment by £500 million and make it cheaper for businesses to create new jobs.

However, this tax will be of maximum benefit to both the environment and industry if it encourages more businesses to move toward recycling, re-use and waste minimisation, whilst encouraging greater pollution prevention through the discouragement of landfilling [22]. Current estimates show that approximately 1400 businesses, operating 2700 sites will need to register with HM Customs and Excise for the tax. The Chancellor predicts that the new tax will raise around £450 million in a full year, plus. For both private organisations and local authorities, the landfill tax could be the catalyst that creates significant funds to invest in the local environment, minimisation trials and research projects on recycling. As an example, in 1994, the UK consumed approximately 11.6 million tonnes of paper and board,

Table 7
Current landfill taxes in Europe (Jones, personal communication, 1996)

Country	Waste type	Cost per tonne (£)
UK	Inert	2
	Remaining waste	7
Denmark	All	31
France	MSW	2.50
	Industrial/hazardous	5–8
Germany	Industrial/hazardous	10–41
Belgium	MSW	50
	Industrial/hazardous	0.6–7
Netherlands	All	10.5

of which almost 31% was recycled. The remaining 8 million tonnes were disposed of in landfill, accounting for about 8% of all waste that is landfilled. Recovery and recycling more of this waste stream would potentially save up to £150 million on disposal and tax costs alone [23].

Many of the complaints that have been made about the tax have suggested that council tax bills will rise, or that local government services will be cut because the tax will be passed onto the councils (collection and disposal authorities) as they are amongst the biggest depositors in the UK. It has been predicted that in Ireland, waste will start to flow from Ulster to the Republic where the tax does not apply [24]. However, the optimists see the tax as a significant step towards an ecologically sustainable society. It could generate hundreds of new, labour-intensive, recycling schemes to blossom and allow numerous research projects of practical use to be initiated [25]. Few can doubt that Government fiscal policy and instruments are increasingly being applied to influence behaviour in resource management. The landfill tax is an immediate and obvious manifestation of an end-of-pipe resource tax designed to shift behaviour (Jones, personal communication, March 1996). The aggregates industry faces the threat of tonnage levies at the point of production on the front of the pipe, whilst the producer responsibility initiative is an attempt to deliver sector-based solutions encouraging the further use of resources in the production cycle in ways that will improve sustainability.

Jones (personal communication, March 1996) has warned that, if continental practice is followed, the level of the tax will rise four-fold in the next few years. In Denmark it came in at 40 kroner in 1987, whilst next year it will be at 285 kroner (£31), which is a 600% increase; the Belgian equivalent has risen by more than 700% in the 4 years since its inception and now stands at £50 per tonne (Table 7). This evidence suggests that within a 4-year period of the introduction of a landfill tax in the aforementioned nations the tax was artificially raised by on average 600–700%, which would result in the landfill tax being set at perhaps £25–30 by the year 2000 and reaching £50–60 by the year 2002.

On the surface, a rise in tax must seem like yet another burden for industry to bear, but in this case the Government intends to mitigate the burden by reducing

employer National Insurance contributions [26]. Planning regulations in the UK have made consents for more landfill sites unlikely and it is the Government's intention to make resource abuse (putting waste into landfill) more expensive [27].

An opportunity now exists for producers of waste to re-examine their modus operandi in order to meet the Government objectives without undue financial burden. The most obvious solution is to minimise the amount of waste that is being created and thus minimise the cost of disposal, but this requires long-term strategic planning and large scale reorganisation with associated financial costs. Another obvious alternative is the re-use of materials before they enter the waste stream; however, it is not always possible to find readily available ways of re-using existing materials. Even if companies have implemented waste minimisation and re-use schemes, there will always be waste materials which must be dealt with, and this is where recycling and other forms of recovery come into operation as viable waste management strategies. The landfill tax is a powerful incentive to change our, and the industry's, perception of waste handling, with the main issue for society being where will the waste go if it does not go for landfill disposal. From the waste management industry's viewpoint the obvious place for the material to go, and the initial raison d'être of the tax, was to divert more to recycling and other waste management methods further up the hierarchy, particularly the fundamental option of waste reduction and minimisation [22]. However, these options will only succeed in diverting waste if the necessary infrastructures can be implemented at minimal costs and if markets are available for the materials. What the landfill tax will do is to create a core price for legal disposal which, if properly enforced and policed, will force producers and carriers to examine where their cheapest disposal outlet actually is. Much will then depend upon how the industry reacts and how it decides to set and pass on these costs. The problem at the moment is that the alternatives to landfill are simply not available and that start-up and lead-in times are generally very long, and markets are showing no signs of even beginning to develop [27].

3.1. Tax liability

For landfill tax, material is disposed of as waste if, when disposing of it, or having it disposed on his behalf, the producer intends to discard or throw it away. It is the original producer's intention that determines if the material is waste. If waste is processed before its disposal to landfill and the process fundamentally changes its properties, the original producer's intention is no longer relevant, including composting, anaerobic digestion and recycling processes. However, crushing, baling, sorting or screening waste does not fundamentally change its properties and so the material remains waste. Thus, waste that goes for recycling and incineration is not liable to tax; however, the waste passed to a landfill site operator and the waste landfilled is liable to tax. If waste is bought by a site to be used for engineering purposes within the landfill it will be liable to tax, whereas soil and clay are not defined as waste materials and are thus not liable to the tax, although they will be used for the same purpose [28]. To qualify for the lower tax rate (£2 per tonne), the waste transfer note must accurately describe the waste so that it can be

related to the terms used in the Landfill Tax (Qualifying material) Order 1996. Where disposal involves a mixed load containing both active and inactive waste, tax will be due on the whole load at the standard rate (£7 per tonne). However, as long as the amount of active waste is incidental, and it does not lead to any pollution potential, the entire load may be treated as taxable at the lower rate. Those wastes to be taxed at the lower rate include: rocks and soils (if naturally occurring), glass, ceramics and concrete (if unused), furnace slag, ash, low activity inorganic compounds, calcium sulphate, calcium hydroxide, brine and water containing qualifying materials in suspension.

3.2. Penalties and interest

As with any new tax there will be an initial period of transition, where difficulties arise and misunderstandings occur in relation to the landfill tax. HM Customs and Excise have stated that they will take a sympathetic view of 'genuine errors' or mistakes made during the first year of tax when considering whether to impose penalties and interest, providing companies with a period within which to review their accounting systems. Failure to register, following a change in behaviour so that the company is now liable to tax, will render the company liable to a penalty equal to £250, or 5% of the relevant tax, whichever is the greater, and pay the tax which is due. There will be a penalty of £250 for failure to keep the required records, whilst a penalty of £250 will be liable if records are not provided when requested, and if failure to comply with the request continues then there will be an additional £20 fine for every day after the date of the initial penalty. Any other breach of regulations will result in a £250 fine. HM Customs and Excise will come down heavily on all companies that break the rules, whether they be premeditated or accidental, after the first year of operation, and typical of the Government's approach to tax regulations they will be particularly strict in monitoring and enforcement.

4. Environmental bodies

ENTRUST, the regulatory body for environmental bodies, was created in October 1996, and Dr Sills, acting chief executive, stated at the ESA annual conference in October 1996 [29] that:

> the waste management industry is being given the opportunity to spend money on environmental improvements that would not otherwise be affordable. Both the waste industry and the environment will benefit from this innovative initiative.

Landfill operators, who must not benefit from the supported activities, can claim a landfill tax rebate of 90% from Customs and Excise on funds contributed to environmental bodies, up to 20% of their tax payments. The landfill tax is expected

to raise around £450 million each year, of which as much as £90 million could be diverted to the environmental bodies. Qualifying bodies must be non-profit-making, from the private sector, independently audited, accountable to a regulatory body, created at a national, regional or local basis, managed by a board of trustees and may be newly established or existing organisations [30]. A unique feature of the tax is the provision that landfill site operators may claim tax credits in respect of financial contributions made voluntarily to approved environmental bodies. However, operators (contributors) must not themselves benefit from the supported services. John Gummer, Secretary of State for the Environment, speaking in November 1995, said:

> Environmental trusts represent a significant opportunity for the private sector to build upon their involvement in improving the environment. The establishment of environmental trusts will complement and reinforce our policies for sustainable waste management, by promoting recycling, and will strengthen the environmental credentials of the landfill tax.

The landfill tax presents new challenges to the waste management industry. The Government's aims in introducing the tax were to reflect the environmental impact of landfill and to promote more sustainable waste management practices by providing a financial incentive to deal with waste at higher levels of the waste hierarchy. In the short term many companies will take a cautious approach to investing in environmental trusts, although more likely will be the growth of partnerships with existing environmental organisations and partnerships, particularly Groundwork who have been highly successful in land reclamation projects. Setting up an environmental trust should not be undertaken lightly and without fully thinking through all of the implications [21]. On the face of it the environmental trust concept is a golden opportunity for the industry; in some ways it is a balancing contribution from government to offset the fiscal risks associated with the imposition of the tax [27]. Perhaps only the leading 20 companies in the UK will get involved in the trust scheme, focusing on localised schemes (school initiatives and community provisions), national environmental projects (contributions to existing corporate bodies and the growth of new umbrella bodies) and industry focused research projects focusing on new technologies and innovative applications. Landfill operators face the classic prospect, beloved of management gurus, of turning a problem into an opportunity. Companies can now plough back landfill tax credits into good works to improve the environment rather than see all the £450 million which HM Customs and Excise expects to collect in this financial year disappearing into the depths of the Treasury [31]. The field is wide open for imaginative companies who wish to help to improve the environment, and incidentally do themselves and the waste industry no harm by enhancing the image of often maligned landfill operations in the eyes of local communities. The opportunities are many and the available funding, to a large extent, will be as great or as little as the

landfill operators wish, but hopefully sufficient to allow a wide range of projects to be initiated.

The landfill tax is to be welcomed as a genuine initiative to move fiscal policies away from end-of-pipe solution to front-of-pipe resource use. The impact on gate fees paid for landfill for some local authorities will be as much as a 200% increase, whilst businesses throughout the UK will on average expect to pay around double for their disposal. In May 1995 Biffa Waste Systems commissioned a MORI poll to find out awareness of the landfill tax amongst environmental managers (private companies) and chief environmental officers (local authorities). The results showed that Britain's larger companies had a weak knowledge of the tax and its implications for them, which is in marked contrast to local authorities which showed much greater awareness of the possibilities. The potential benefit of environmental bodies remains obscure to many key individuals working in the public and private sectors [27]. The majority of companies (86%) knew nothing, whilst 41% of local authorities acknowledged the role that bodies could play in clearing up old landfill sites, although after explanation 70% of private companies thought that the trusts would be fairly or very beneficial. Some feedback from companies in Surrey and Northampton has highlighted a common theme whereby local authorities mistakenly view the trusts as a means of generating income for them to plough back into education, social services and other local government services, which is frightening the landfill companies. These results are rather worrying considering the recent launch of the tax and the accompanying environmental body regulations, and their potential positive benefits for UK waste management practice.

4.1. Regulation

ENTRUST has been formally approved by HM Customs and Excise as the regulator of the environmental bodies which are being set up to spend landfill operators' contributions, under the landfill tax credits system. ENTRUST is a private sector regulator and is independent of the Government, of the waste industry landfill operators and of the environmental bodies [32]. Although independent of the Government, ENTRUST will be responsible for enrolling environmental bodies intending to attract funding from landfill operators under the scheme and for monitoring the operation of environmental bodies and ensuring that all expenditure complies with the landfill tax regulations. It has set itself a target of enrolling 450 bodies within its first year. ENTRUST may withdraw the enrollment of any body that fails to meet the conditions of the scheme and will report such cases to HM Customs and Excise, which has the power to seek repayment of tax credits from contributing landfill operators. An important task of the board will be to ensure that landfill operators' contributions, qualifying for landfill tax credits, are spent on projects that comply with the objectives stated in Section 33 of the regulations, as listed in Table 8.

5. Research method

The initial research method employed was a telephone survey of all landfill site operators with active landfill sites in the two counties under investigation, Northampton and Surrey. This involved the identification of sites and their licensees and their contact telephone numbers through regional environment agencies. The companies were then telephoned and a short questionnaire was administered over the phone, preferably with the landfill manager or the company's development manager. If the company or officer required confirmation of the questions then the questions could be faxed to the company on request, on the proviso that the response was returned within the day. The questionnaire used in this survey is shown in Fig. 2.

6. The case studies

The two counties were selected because of the location of the two research centres most involved with the research, namely Northampton and Kingston. It was also presumed that their proximity to London would allow both counties to suffer from similar problems relating to wastes generated in the capital, whilst providing an opportunity for a comparative analysis to be made of the two counties. The two case studies have many similarities based on their location and physical characteristics, but are far from identical, allowing the opportunity for an assessment of differences. The location of the two case study counties is depicted on a map in Fig. 3.

Table 8
Acceptable uses of environmental body funds [28]

• Reclamation, remediation, restoration or any other operation that facilitates the economic, social or environmental use of land where its use has been prevented or restricted because of previous use. This may include the creation of new wildlife habitats or public parks or form redevelopment
• Any operation intended to prevent or reduce any potential for pollution or to remedy or mitigate the effects of any pollution on land polluted by a previous activity. This will include the treatment of contaminated land
• Research and development, education or collection and dissemination of information about waste management practices, the purpose of which is to encourage the use of more sustainable waste management practices. This will include research, pilot schemes, demonstration projects or training schemes aimed at waste minimisation, reuse, recycling, composting and energy recovery
• For the protection of the environment, the provision, maintenance or improvement of a public park or other public amenity in the vicinity of a landfill site. This will include the creation of wildlife habitats, conservation areas, urban forestry and positive land management
• For the protection of the environment, maintenance, repair or restoration of a building or other structure of religious significance or historical and architectural importance
• The provision of financial, administration and other related services, necessary to the functioning of the environmental body

Q1 Annual Tonnage for the site?

Exact Figure	
Under 10,000 tonnes	
10,000 to 50,000 tonnes	
50,000 to 100,000 tonnes	
over 100,000 tonnes	

Q2 Estimated money raised because of the landfill tax? (annually)

Exact Figure	
Under £200,000	
£200,000 to £400,000	
£400,000 to £600,000	
£600,000 to £1 million	
Over £1 million	

Q3 Are there any plans to set up an Environmental body?

Yes		Undecided	
No		UnderReview	

Q4 What is the timescale for this?

Within 2 months	
2 to 6 months	
6 months to 1 year	
Over 1 year	

Fig. 2. Questionnaire used in the telephone survey.

6.1. Northampton

Northamptonshire lies at the very centre of England, with a population of 578 807 according to the 1991 census. In the past the relationship between mineral extraction and waste disposal has been an obvious one, with the majority of waste disposal in the county occurring in voids created by past mineral extraction. Infilling of mineral voids with wastes has been viewed in a positive light as a means of achieving suitable standards of restoration [33]. From the Waste Management License returns, some 1.8 million tonnes of waste was disposed of in Northamptonshire in the year 1993/94, of which 658 000 tonnes was inert, 772 000 trade and 375 000 putrescible. In 1993/94 Northamptonshire produced approximately 250 500 tonnes of household waste, and about 40% of this was exported for disposal in Bedfordshire, Buckinghamshire and Oxfordshire; however, approximately 19 000 tonnes of waste was imported to Northamptonshire for disposal from Leicestershire. Thus on average 182 000 tonnes of household waste are disposed of in Northamptonshire annually. There are nine major landfill sites in Northamptonshire, taking wastes from a variety of sources. These sites currently provide 14 000 000 m^3 of void, and, with current rates of annual infilling at 12 000 000 m^3 per annum, thus providing capacity until the year 2006. As landfill space decreases in neighbouring counties, Northamptonshire's available void may become attractive to waste disposal contractors, particularly for wastes originating in London, thereby increasing the quantity of waste imported and decreasing their available landfill lifetime.

Q5 What activities are earmarked for spending the funds?

Recycling facilities	
Education programmes	
Research	
Land Reclamation	
Other- please specify	

Q6 Has there been sufficient advise available to you on setting up and getting involved with an Environmental body?

Yes	
No	
Not an Issue	

Fig. 2.

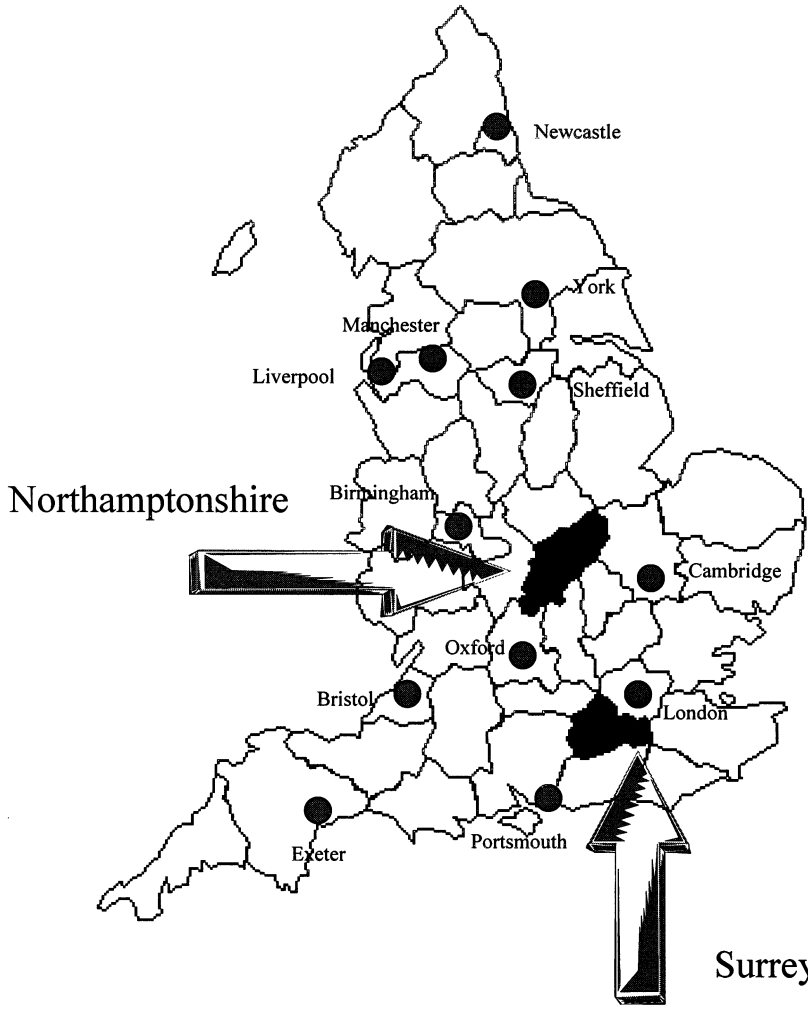

Fig. 3. A locational map of the two case study counties.

6.2. Surrey

Surrey is a densely populated suburban county with over 1 million inhabitants, and 444 000 households. The county has significant reserves of minerals, notably sand and gravel, and clay, and land reclamation and restoration of these workings by landfilling plays an important role in maintaining the character of these areas [34]. In December 1994 there were 136 sites permitted for the treatment, keeping or disposal of waste in Surrey, with a total throughput of 2.7 million tonnes in 1994/94, which is substantially greater than the total quantity produced in the county, due to the high proportion of wastes delivered from London. Currently,

Surrey County Council must dispose of 500 000 tonnes of household waste each year, and commercial and industrial waste production is estimated at an additional 300 000 tonnes every year. Allowing for the growth of the county's population and the impact of recycling initiatives, it is expected that the disposal of 600 000 tonnes of household and commercial waste will be required by the year 2000. Surrey's current disposal facilities are coming under increasing pressure and there is an emerging policy that does not favour further landfilling of untreated waste due to mounting environmental concerns.

7. Results

It seems that the majority of landfill companies are not currently pursuing the financing of environmental bodies. However, existing regional and local trusts are setting up their own environmental bodies in the hope of attracting the necessary finances from disposal companies. County councils, higher education institutions and local consultancy companies are also looking to initiate trusts and get involved in their operation, but at present they are simply being turned down by landfill operators who are on the whole spending time formulating their policies for dealing with the landfill tax and the environmental bodies. Few companies are willing to talk specifically about developments or sites at the moment, as they are waiting to see what happens in the few trusts that are operational, indicating a very cautious approach to this new Government initiative.

In Northampton, it appears as though the County Council is in favour of a county-wide environmental body into which all landfill operators would pay, from which all local councils would receive funds for local environmental improvement schemes that they propose, but this seems to have received relatively negative feedback, and would be particularly problematic to initiate given current regulations, and thus does not look as though it will be set up or registered in the near future. In Surrey, there are a number of conversations and discussions going on between the County Council and some of the landfill operators, about the potential development of environment bodies and proposed improvement schemes, but at present nobody is willing to comment, or commit themselves at this early stage of development. The confusion surrounding environmental bodies is generally too great at the moment for any significant developments to be reported, with over 30% of all landfill disposal companies in the survey wishing to wait and see what happens in a case study of success, and another 35% not willing to comment specifically on their plans and developments. The question remains, who will go first? If no company is willing to make the effort, then the system and environmental bodies in general will stall and fail to take off as was predicted and expected. However, this remains a potentially huge market to be developed and exploited for the improvement of a variety of local environmental proposals, using money raised from a tax on waste disposal. The results obtained from the telephone survey are listed in Fig. 4.

7.1. Surrey

In summary, 50% of companies deposit over 100 000 tonnes of waste in their landfill sites each year, and are thus large companies with potentially large landfill tax costs (Fig. 5), whilst 36% of companies predict additional costs in excess of £600 000 per annum. Only 12% of companies responded positively that they were

	Surrey	*Northampton*
Q1 Annual Tonnage for the site?		
Exact Figure		
Under 10,000 tonnes	3 (22%)	1 (7%)
10,000 to 50,000 tonnes	2 (14%)	4 (29%)
50,000 to 100,000 tonnes	2 (14%)	7 (50%)
over 100,000 tonnes	7 (50%)	2 (14%)
Q2 Estimated money raised because of the landfill tax? (annually)		
Exact Figure		
Under £200,000	5 (36%)	3 (21%)
£200,000 to £400,000	4 (29%)	4 (29%)
£400,000 to £600,000		2 (14%)
£600,000 to £1 million	4 (29%)	4 (29%)
Over £1 million	1 (6%)	1 (5%)
Q3 Are there any plans to set up an Environmental body?		
Yes	2 (12%)	3 (18%)
No	4 (24%)	5 (28%)
Undecided	3 (16%)	3 (18%)
Under Review	8 (48%)	6 (36%)

Fig. 4. Telephone survey results of landfill companies operating in Surrey and Northampton.

Q4 What is the timescale for this?

Within 2 months		
2 to 6 months		
6 months to 1 year	2 (100%)	4 (57%)
Over 1 year		3 (43%)

Q5 What activities are earmarked for spending the funds?

Recycling facilities		
Education programmes	1 (13%)	1 (14%)
Research	2 (29%)	1 (14%)
Land Reclamation	2 (29%)	2 (28%)
Other- Building Restoration	2 (29%)	3 (44%)

Q6 Has there been sufficient advise available to you on setting up and getting involved with an Environmental body?

Yes	2 (14%)	2 (13%)
No	9 (64%)	12 (80%)
Not an Issue	3 (22%)	1 (7%)

Fig. 4.

currently investigating trusts or were considering proposals for funding, yet 24% of companies were definitely not interested in funding environmental bodies. Sixteen percent remain undecided over the issue, wishing to investigate it further and to assess trusts that have already been set up and are receiving funding, whilst the majority of companies (48%) currently have the issue under review either at head office level or at a regional scale. Three of the sites were not yet operational but were looking at the whole issue of environmental bodies. The larger companies appear to have centralised policies which are then implemented at their local sites. In general there is too much confusion, and companies need more time to get to grips with the tax before they look at ways and means of reducing tax payments. Of those companies that expressed a definite interest in funding environmental bodies all of them expected to be actively involved with a trust within 6 months to

a year. Most of the larger companies have received approaches from numerous environmental bodies and trusts, but are wary of these advances as they are inappropriate to local sites and will not benefit the company, so why should they get involved. The proposed activities that the companies had earmarked for their financial contributions included education programmes (13%) and research, land reclamation and building restoration, all receiving 29% of the response; 64% of companies thought that the advice and material available on environmental bodies had been insufficient, and a further 22% claimed that it was not an issue for their company, leaving only 14% of companies in Surrey satisfied with the materials provided.

7.2. Northampton

In Northampton 64% of companies deposit in excess of 50 000 tonnes of waste each year (Fig. 5), with predicted additional landfill costs of in excess of £600 000

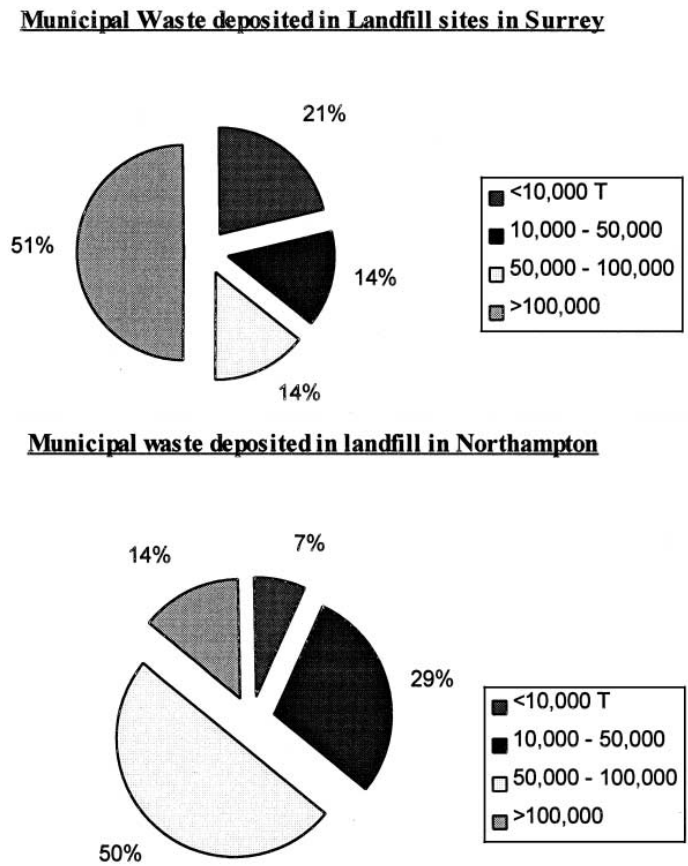

Fig. 5. Municipal waste deposited in the case study locations.

for 34% of the companies, whilst 50% would experience an additional landfill costs of under £400 000; 18% of companies expressed a definite interest in providing funding for environmental bodies, yet 28% of companies were dead set against the idea and would not be considering it. Eighteen percent of companies were undecided on whether to investigate environmental bodies, and the majority of companies (36%) were reviewing the issue in light of environmental body proposals and head office policy. Both Biffa and two other of the landfill operating companies stated that decisions relating to the landfill tax rebate system and the funding of environmental bodies were currently being discussed at central offices where a universal policy and statement will be made.

One company stated serious reservations about the system remarking that the risks and costs involved would be too great for his company, because if a trust was to fold or if the planned project was rejected then the company would need to reimburse Her Majesty's Customs and Excise, whilst to ensure that the environmental body was being responsible with the company's money they would need to appoint an officer to work closely with the body, thus incurring time and management costs. Of those companies that expressed some interest in the scheme 57% hoped to have initiated a trust or have set their funding in progress within a year and the other 43% expected it take longer. Those companies that were interested in the scheme suggested that building restoration would be their most favoured option (44%) with land reclamation receiving 28% of the response and education and research each receiving 14%. Of greater significance are the 80% of companies who cited that the advice and material available on environmental bodies was insufficient, whilst only 13% thought the advice was of the required level for their interest.

8. Comparison

From the results obtained from this research the landfill situation in Northampton and Surrey is rather similar, with 64% of companies in both counties disposing of over 50 000 tonnes per annum, with an additional landfill cost of in excess of £600 000 for 35% of companies in Surrey and 34% of companies in Northampton. However, there is a significant difference in the two counties as 50% of companies operating in Surrey dispose of over 100 000 tonnes at their sites each year, whilst 50% of sites in Northampton deal with between 50 000 and 100 000 tonnes per annum, making sites in Surrey larger on average. The average weight of waste disposed of in Surrey per annum, in the surveyed sites, is 90 000 tonnes, which when compared to Northampton is much greater, where the average is 68 000 tonnes per annum.

Similar responses were received on the issue of getting involved with environmental bodies, with 12% in Surrey expressing a keen interest and 18% of companies in Northampton agreeing, and 24% of companies in Surrey and 28% of companies in Northampton showing no interest in the scheme, whilst 64% of companies in Surrey and 54% of companies in Northampton are currently considering the issue or are undecided (Fig. 6). Thus in both cases under one-fifth of companies were definitely

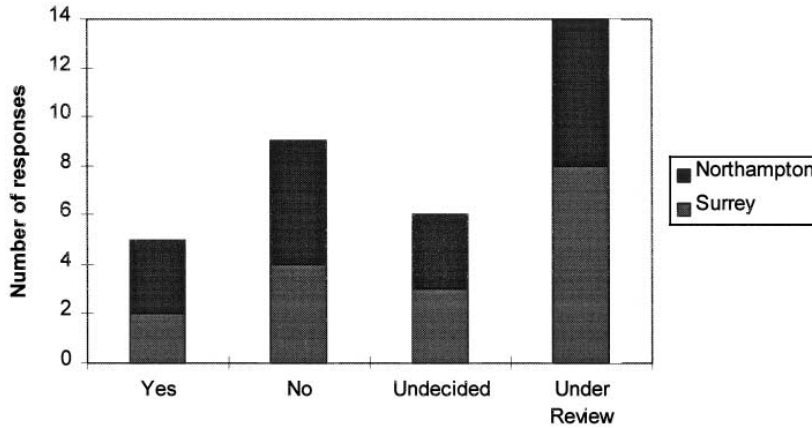

Fig. 6. Comparative response of landfill operators with relation to their proposed involvement with environmental bodies.

interested in providing money for environmental bodies, whilst over one-quarter of companies were not interested. This is a rather worrying scenario as both counties, and the landfill operators, appear lethargic in their approach to environmental bodies, and the success of the scheme depends a great deal upon the undecided groups who dominate the survey samples. As a single sample of landfill operators only 15% were interested in the scheme, whilst 26% were definitely not interested in providing funds from their landfill tax payments to support environmental trusts. It is the remaining 59% of companies that need to be encouraged to get actively involved if this Government initiative is to remain in its present form as a means of recycling landfill tax funds into local environmental schemes.

On the whole, none of the companies expected anything relating to environmental bodies to be initiated within the next 6 months, with all 100% of interested companies in Surrey and 57% of companies in Northampton expecting some headway to be made between the next 6 and 12 months. The remaining 43% of interested companies in Northampton expected nothing to happen within the next year. Thus the scheme with all its potential benefits will have little or no benefit for environmental bodies or landfill companies during the coming year, but it is hoped that in subsequent years initiation and funding will increase; however, if the current trend in funding continues, then up to £100 million per annum will be lost in available environmental body funding.

Those companies that did express an interest in the environmental body scheme, provided a broad range of favourable uses for their funding which they hoped would be carried out by the bodies that they became associated with. In Surrey the favoured options were research, land reclamation and building restoration, all of which received 29% of the response, whilst in Northampton a slightly different pattern was observed with building restoration being the dominant option (44%) and land reclamation coming second with 28% of responses (Fig. 7). One similarity between the two counties was the lack of inclination in providing recycling facilities

and the 14% of companies who expressed an interest in education programmes, making it the second least popular option for landfill tax rebate funds. Overall, 36% of the entire companies surveyed favoured building restoration and a further 29% indicated land remediation as their preferred use for the funds.

Most important were the figures relating to adequate information on the environmental bodies and the landfill tax to allow companies to make informed choices. The results were rather similar for both counties with 14% of companies in Surrey

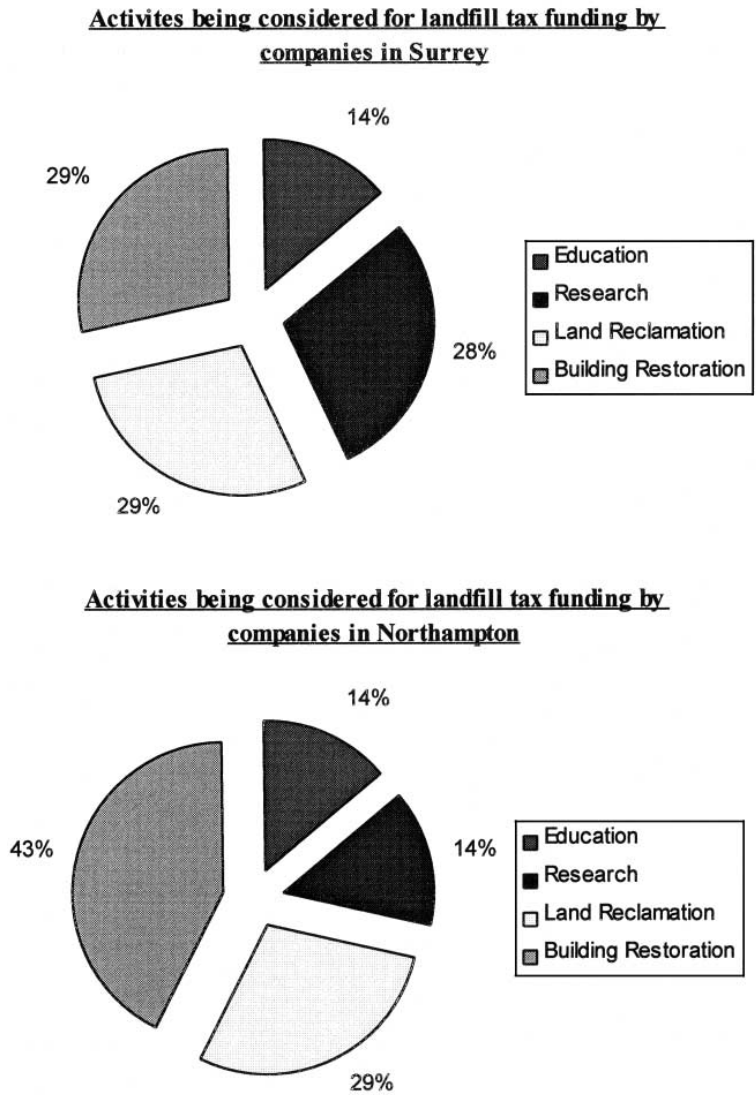

Fig. 7. Potential programmes identified by the landfill operators for their landfill tax funds.

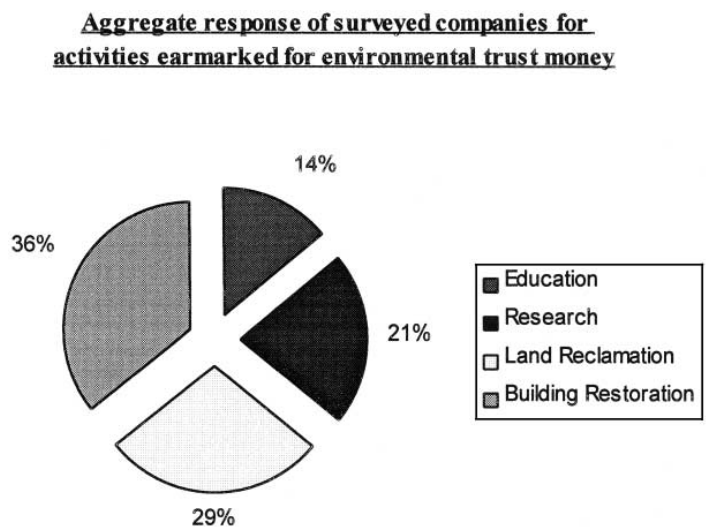

Fig. 7.

and 13% in Northampton stating that sufficient advice and material was available to them, whilst 64% in Surrey and 80% in Northampton thought the advice was wholly inadequate, leading to confusion and dissatisfaction. Of the whole sample, 72% of companies thought the advice and information was unsatisfactory, and this may be a prime reason behind the poor involvement of companies with the currently registered environmental bodies (Fig. 8). This issue will need to be

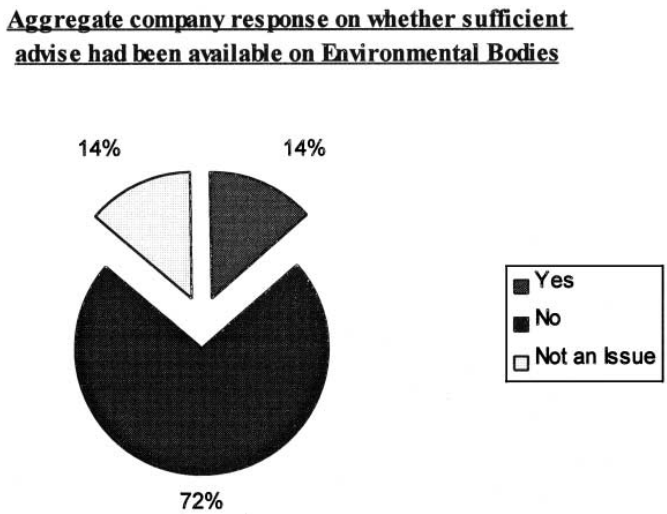

Fig. 8. An assessment of whether sufficient advice had been provided on issues relating to environment bodies.

immediately addressed if the scheme is not to collapse before it has really has a chance to develop and evolve into what is a potentially hugely beneficial scheme for recycling taxes from polluters to improve local environments.

9. The broader picture

Despite the registration of 71 environmental bodies in the first three months following the initiation of the landfill tax, and the tax credit system, virtually no money has been donated by landfill operators thus far, with only a tiny trickle of money appearing in January 1997, as companies have been cautious while the system tries to find its feet. Derby-based Business Environment Association (BEAM) is the first body to secure funding (£1000), from Biffa, which is to go towards an £85 000 18-month pilot assessment of the environmental impacts of an industrial estate in Heanor Gate, Derby. BEAM has proposed six separate projects to ENTRUST, all of which have been approved, requiring a total funding of £500 000. Once a project has been approved by ENTRUST, the environmental body must go into the marketplace and rattle the begging bowl. In addition to the 71 bodies already enrolled, a further 44 bodies were considered, with applications coming from a wide range of interests. Ten of the enrolled bodies are wildlife trusts and a further 14 are groundwork trusts. Other popular organisations are research units, recycling promoters, as well as Waste Watch, The Environment Council and The World Resource Foundation. According to Dr Sills, Acting Chief Executive of ENTRUST, 700 forms have been sent out since October 1996 to potential applicants and interested bodies, with 160 official applications being received by 5 February, and 135 of these having been enrolled. There are generally two sorts of environmental body: (1) those that are an existing trust or charity with organisational structures and programmes in place which are enrolled and approved in one go; (2) those new bodies that are little more than concepts are thus enrolled but must have their projects approved at a later date [35].

An example of a newly formed organisation to take advantage of the landfill tax credit system is Waste Management Research, which is a wholly-owned subsidiary of Robert Long Consultancy. Mr Long, company spokesperson, believes that after the initial rush the system will level out so that two types of environmental bodies are formed: (1) those concerned with specific projects at certain sites, and (2) a smaller number of general-purpose bodies that do anything that the market calls for. There has been criticism over the lack of basic knowledge among landfill contractors about how the scheme operates and what opportunities exist. Roger Hammond, commercial development manager of BEAM, has spoken to the majority of landfill operators in the East Midlands, and the general consensus is that "people don't know what is going on, and that many of the smaller companies do not understand the full implications of the landfill tax" [36].

An example of a recently initiated environmental body is The Landscape Trust, which is a non-profit-making organisation dedicated to identifying and carrying out projects which involve the use and treatment of waste materials in an environmen-

tally sustainable way. It has been set up in direct response to the opportunity created by the landfill tax legislation of 1996. The trust has recently been accepted by ENTRUST, and is an independent body, formed with the benefit of over 25 years' experience dealing with a wide range of waste materials in environmentally sustainable ways. It takes a 'hands-on' role in identifying and carrying out projects on the ground which demand a high level of creative and technical skills, supported by appropriate project management and research expertise. A key objective of the trust is to produce projects which are sustainable, which means sound, and long term management. At present the trust is looking for projects to become involved in, and for landfill site operators to help in funding these projects through their landfill tax payments. For many years members of the trust have been developing positive ways of using waste materials to bring about environmental improvement and return derelict land to productive use. There are two basic requirements for the trust to become involved in a project: (1) a waste disposal operation which generates a potential landfill tax liability, and (2) land in the vicinity (within 10 miles) which is suitable for a qualifying environmental project to be carried out on it.

Once these requirements have been identified, the trust prepares terms of reference for the project and agrees them with the landfill operator and the landowner. Although the main source of funding is normally from the landfill tax credit, other sources of finance can be explored in appropriate circumstances. Once the scope of the work is agreed, more detailed proposals are worked out by the trust, and the Trust will be responsible for the detailed management of the project. The landscape trust is one of the first environmental bodies to be approved by ENTRUST, the Government-appointed regulator administering the new landfill tax credit scheme. The trust, based in Yorkshire and Merseyside, will operate on a non-profit-making basis throughout the UK to restore problematic derelict sites into productive use. This body is currently searching for landfill companies who wish to become actively involved in environmental improvement schemes and who are willing to pay into their body.

More recently UK Waste has announced details of two environmental projects which it is backing to the total of £365 000 under the auspices of the ENTRUST scheme. The waste management company is financing a £200 000 environmental education programme run by the Groundwork organisation, and is also providing the London-based charity Waste Watch with funds to enable it to develop its own educational project nationwide. It is able to finance these schemes through the landfill tax rebate system. Ian Wakelin, Managing Director of UK Waste, stated [31] that:

> We have well established links with these organisations and are greatly impressed by the quality of their work in raising awareness of recycling. These are areas which UK Waste has sponsored for several years and is an excellent way of using the money available to us through the rebates system.

10. The potential role of universities

One of the accepted uses for environmental body funds is active waste management research, with emphasis being placed on information provision and dissemination. Thus it seems likely that those universities currently active in waste management research (both academically and on a consultancy basis) will be in an ideal position to attract landfill tax credits for requested research programmes. The universities that are currently active in waste management research include Leeds, Loughborough, Luton, Nene College, Nottingham Trent, CSERGE (University College London and University of East Anglia), Kingston, Imperial College, Plymouth and South Bank. This list is not exclusive but is an indication of current interests based on the authors' experiences and academic associations. There is a wide range of research that is ongoing, with diverse interests including behavioural studies of households, economics of different waste management strategies, industrial restructuring since privatisation and compulsory competitive tendering, landfill and incineration technology developments, waste management flows and composition analyses, design of waste management facilities and the provision and design of waste plans for local authorities. Perhaps not all of these themes are relevant to the environmental bodies, but some of them will be potentially suitable for funding, particularly those proposals which intend to investigate methods of encouraging participation in recycling, assessments of different waste strategies for local authorities, or those that provide adequate and reliable data on waste flows in particular localities.

Universities are in a unique position in that they may be one of the few bodies that have both the time and necessary qualities required to operate an environmental body, whilst also benefiting from the funds generated for enhancing academic research of a practical need. This is a particularly fascinating development, which is perhaps not being exploited and developed as it might be, but it will not be long before academic departments all over the country are jumping on the band-wagon and putting in proposals to register trusts, are applying to landfill companies for funding, or are approaching environmental bodies with their research interests for potential funds. Thus, this is a really exciting time to be involved in waste management research, both practical and academic.

11. Conclusions

The landfill tax and its associated environmental bodies, which are to be funded from landfill tax credits, are a very new and untested form of environmental regulation which are currently being applied to the UK waste disposal industry. Their intention has been to artificially raise the cost of landfill to a level which accounts, in part, for the environmental externalities of this disposal method, which had previously been ignored. It is hoped that this rise in disposal costs will force companies and local authorities to re-assess their strategies for dealing with municipal waste, by making recycling, waste to energy, composting and minimisa-

tion more cost-effective in light of increasing landfill costs. In addition, the environmental bodies will allow disposal companies to recover upto 20% of their landfill tax payments if they are used to fund local environmental initiatives, thus allowing a tax on environmental pollution to generate some funds for environmental rehabilitation.

The recent introduction of these two initiatives has left the disposal industry somewhat in a state of shock, with a limited amount of response being acknowledged by the survey results. Perhaps it is too soon to make any critical analysis of the development of environmental bodies and their associated funding from landfill tax credits, but the findings are a little disappointing, considering the obvious potential benefits for all involved from this system. On the whole, under 30% of companies are actively looking to develop links with environmental bodies in the case study counties, with the remaining 70% are unwilling to comment while they assess their options, or are simply disinterested in the system. Although there are a large number of environmental bodies now registered, if there is no funding from disposal companies these trusts will not be able to function, and environmental improvement strategies will not be initiated. If this trend continues then the landfill tax will have only achieved one of its aims, that of increasing landfill costs to take account of environmental costs, but will have failed in its attempt to encourage the money generated to be funnelled into waste-related environmental improvement programmes, and may not have achieved the overall aim of shifting waste management activities to higher rungs on the waste management hierarchy. The response from the survey suggests that none of the companies expected anything relating to environmental bodies to be initiated within the next 6 months, with all 100% of interested companies in Surrey and 57% of companies in Northampton expecting some headway to be made within the year. This leads one to believe that there will be little effective funding of environmental bodies before 1998, with perhaps it taking as long as 5 years for the real benefits of this scheme to be evident. The experiences gained from this survey suggest that the industry at present does not have enough confidence to fully commit itself to environmental body funding, and that this situation will not radically alter within the next year until reports of success stories are provided.

The uses of environmental body funds most favoured by the funding bodies (landfill companies) were building restoration (36% of company responses), research and education (35%) and land remediation (29%). This suggests that there is a new market for educational institutions to operate in because over one-third of all funds are predicted to be made available for research and education. Perhaps it would be appropriate for university departments to register as environmental bodies so that they can have a significant impact on the uses of the funds; Luton University are currently in the process of filling in the forms, while the topic is also being discussed at Kingston University. Judging from comments made by the company representatives, it would appear as though companies will eventually support environmental bodies, but are being put off at present by continual communications from bodies requesting funds for their projects. At present these projects appear to have little local benefit and no benefit (direct or indirect) for the

companies in question, and thus they are unwilling to commit themselves. In the long term it would seem appropriate that companies will favour environmental bodies that are carrying out local education or land remediation, and more significantly research themes, rather than funding building restoration which is of little interest to the waste industry.

In the view of Dr Sills, Acting Chief Executive of ENTRUST, the environmental body scheme has been a coup by John Gummer, Secretary of State for the Environment, in an aid to recycle money raised through environmental taxation into local environmental initiatives. ENTRUST is a novel and imaginative innovation in the regulatory field, as it is in the private sector, nominally independent of government, and certainly independent of the waste industry that it regulates. However, the waste industry must take advantage of this 'gift' from the Treasury or avoid losing many of the potential benefits that may arise from it. Money if not recycled will be lost into the Treasury black hole and the scheme will fall into disrepute, as the Treasury argues that the environmental sector is not interested in the money available and will push for the scheme to be altered. Many of the benefits may be lost, and there is a real chance that the voluntary aspects of the scheme will be removed, with companies being forced to pay 20% of their tax payments into a central fund from which the Treasury will distribute funds nationally, removing the local emphasis, benefits and nature of the scheme. Few donations appear to have been made, which calls into question the Government's estimate last November that £10 million would be paid in landfill tax credits by the end of March 1997, and the Government's expectation that this figure will increase to £50 million in 1997/98.

There will be a need to continue to monitor the progress of the environmental bodies and the impact of the landfill tax over the coming years, as it seems inevitable that positive developments will occur, particularly in light of diminishing landfill availability. Soon disposal companies will see the obvious benefits of the environmental bodies for their company and the local environment and will begin to respond to requests from existing trusts to provide funding from their tax credits. This would appear to be a particularly fruitful area of future research, with the Government taking a positive step to alter the balance of the waste management market place, and to enable the initiation of local environmental improvements; moreover, perhaps university departments can get more actively involved in the running of these trusts, and benefit from the associated funds generated.

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