

**Environmental RTDI Programme 2000–2006**

**A Nationwide Review of Pay-By-Use (PBU)  
Domestic Waste Collection Charges in Ireland:  
Extensive Survey Findings  
(2005-WRM-MS-33)**

**Interim Report**

Prepared for the Environmental Protection Agency

by

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## **WASTE**

The Waste Section of the Environmental RTDI Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in this area. The reports in this series are intended as contributions to the necessary debate on waste and the environment.

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# Executive Summary

This study reports on the findings of the first phase of a two-part project examining pay-by-use (PBU) charging systems in Ireland conducted between May and September 2006. The second in-depth case study phase will be completed in April 2008. The aim of this first phase was to investigate the implementation of PBU domestic waste charges in Ireland in order to discern their impact on domestic waste management activities such as waste presentation, waste recycling and illegal waste diversion.

The nationwide review was conducted by collating figures on waste management behaviour and data on PBU charges for each of the 34 local authorities in Ireland. Information was collected using telephone and e-mail surveys, postal questionnaires (in association with the Department of the Environment, Heritage and Local Government (DoEHLG)) and data gathered by the Environmental Protection Agency (EPA) as part of the National Waste Database. The data were then analysed using SPSS, a computer-based statistical package that allows for analysis of both quantitative and qualitative data. SPSS was used to analyse data across local authorities in order to determine overall findings and trends on a nationwide scale. Each local authority was then analysed to determine the effects of PBU charges and any associated infrastructure on waste management behaviour on a case by case basis.

The key findings from the research are outlined below.

- **Waste collection** – In Ireland waste collection can be undertaken by both local authorities and by private waste collectors operating within a local authority's functional area. The research found that 53%<sup>1</sup> of local authorities have exclusively private waste collection within the local authority's functional area, 41% of local authorities have a combination of both private waste collectors and local authority collecting domestic waste, and 6% of local authorities do not have any private waste collectors within their functional area collecting domestic waste. The average number of waste collectors operating within each local authority's functional area is five. This

1. Note: All percentages are rounded to the nearest whole number.

means that collection practices can differ not only from local authority to local authority, but also within one local authority area.

- **PBU systems** – There are three systems of PBU charges currently used in Ireland: (i) volume-based systems, (ii) tag-based systems, and (iii) weight-based systems. Volume-based systems require householders to subscribe to a weekly bin collection, for which they pay an annual charge. This system is considered PBU as householders can select the size of bin they subscribe to; the annual charge is based on the volume of the bin, with larger bins incurring a higher annual charge. Tag-based systems include both tag-a-bag and tag-a-bin. These involve householders purchasing tags to attach to their bag or bin with collectors picking up only those bags and bins with the appropriate tag attached. The system is considered PBU as householders only pay for waste collection when they place bags or bins out for collection. Weight-based systems involve householders paying per kilogram of waste placed out for collection. The waste collector weighs the bin and bills the householder based on this weight.
- **Adoption of PBU systems** – Of the 32 local authorities in Ireland that responded to the postal questionnaire, 11 (32%) use one PBU system within their functional area, 19 (56%) use two, and two (6%) use all three systems. This use of multiple systems within a local authority's functional area is as a result of numerous waste collectors operating within the area. Tag-based systems are the most common, with the majority of local authorities (82%) using such systems through one or more waste collectors within their functional area. Volume-based systems are used in 62% of local authorities' functional areas, with weight-based systems used in only 15%. Waste collectors operating within six local authorities (18%) had not moved to local-authority-wide PBU charging at the time of the study and instead used a flat-rate charge in part of the local authorities' functional area. Flat charges are used by 16 waste collectors across the six local authorities.

- **Kerbside recycling** – The presence of kerbside recycling services was considered in relation to the amount of waste presented for collection, to investigate how kerbside recycling facilities were related to waste presentation. Of the 30 local authorities that responded to this question, 29 have a kerbside recycling service within their functional area. It should be noted that local authorities did not state whether or not this service is available to all householders in their functional area. Only one local authority, Carlow County Council, reported that no kerbside recycling service was currently in place. The local authority, which does not offer a kerbside recycling service, has the fifth highest waste presentation rate per person in the country, at 310 kg per person. The local authority, Galway City Council, with the lowest rate of waste presentation per person (126 kg) offers recycling collection on a weekly basis throughout its functional area. Interestingly, the local authority with the lowest rate of waste presentation does not currently use PBU charges; instead, householders are charged using an annual flat rate. This local authority focused on providing recycling services and education to reduce waste to landfill. This finding suggests that access to recycling and environmental awareness may play an equally significant role to that of economic instruments in reducing waste presentation.
- **Waste presentation rates<sup>2</sup>** – The relationship between PBU and waste presentation rates was also investigated using waste collection figures from the 2003 and 2004 EPA National Waste Database returns and from local authority responses to the postal questionnaire. The research revealed that average waste presentation rates in local authorities without PBU charges have increased over time (from 240 kg per person in 2003 to 266 kg per person in 2004, a 26 kg increase), whereas such rates in local authorities with PBU charges have decreased over time (from 227 kg per person in 2003, to 221 kg in 2004, to 219 kg per person in 2005). As more and more local authorities move from flat rate charges to PBU charges there is an overall nationwide trend of decreasing waste presentation rates year on year.

Although this figure has to be read in the light of an increasing recycling infrastructure, as detailed above, it suggests that PBU charges have influenced waste presentation rates in Ireland on a nationwide level.

- **PBU systems** – An aim of the study was to identify the success/lack of success in terms of waste management behaviour of the different PBU charging systems in place – volume-based, tag-based and weight-based systems. However, the research revealed that the local authority level was not the appropriate level at which to gather data for the comparison of PBU, for although waste presentation and recycling figures are gathered at a local authority level they are not disaggregated into figures per collector, whereas systems are implemented on a collector, not local authority, level. In order to analyse the influence of PBU systems on waste management behaviour, further study at the level of waste collectors rather than local authorities is required. Such analysis may be difficult when some data on waste collection are considered to be commercially sensitive by private waste collectors.
- **Illegal diversion** – Studies of PBU elsewhere have contended that their introduction may lead to increased illegal diversion of waste, at least initially. Local authorities were asked about incidences of illegal diversion prior to and after the introduction of PBU systems. However, exact figures are hard to establish in this area as many local authorities do not have detailed or comprehensive monitoring and management systems for illegal waste diversion activities. Interviews with local authority waste enforcement officers revealed a general perception that overall there has been an increase in the number of waste incidents reported to the local authorities. However, officers were keen to point out that this may not be solely related to the introduction of PBU charges, stressing the role played by increased environmental awareness and shifting social values that can contribute to a greater reporting of illegal activity.
- **Selection of charges** – The main motivation for local authorities when selecting the amount to charge householders under their selected PBU system was to cover the costs involved in collecting and disposing of household waste.

2. Waste presentation figures calculated in this research do not include recyclable waste presented for collection and therefore differ from EPA National Waste Database figures.

- **Ease of implementation** – Local authorities selecting to implement tag-based charges chose this system primarily because of its ease of implementation. Other factors that influenced their decision to use tag-based charges were cost factors and the equitable nature of the system. Local authorities selecting to implement weight-based charges did so because of its reflection of the ‘polluter-pays principle’, its discouragement of waste compacting and its creation of clear incentives to reduce waste presentation.
- **Difficulties** – Twelve local authorities stated that they experienced difficulties when implementing PBU charges; five stated that they did not experience difficulties. These difficulties included public resistance to charges, problems with enforcing the adoption of PBU and pressure on local authority resources. Local authorities using weight-based charges experienced more difficulties than those using tag-based charges.
- **Levels of satisfaction** – Thirteen local authorities stated that they were either satisfied or very satisfied with the impact of PBU charges within their functional area. The reasons given for satisfaction were increased recycling, decreased waste to landfill and greater cost recovery. Seven local authorities stated that they were dissatisfied with the impact of the charges, and seven expressed mixed feelings on the charges. The main reason given for dissatisfaction was the form of PBU charging used by private waste collectors within their functional area. Other reasons given for dissatisfaction were increased illegal waste diversion, the cost of waste collection if waste presentation figures decline and finally the view that PBU may encourage people to believe that recycling has no cost attached to it.
- There has been improvement in levels of recycling in the time period following the introduction of PBU although this increase is often a continuation of a general trend that was occurring before PBU was introduced (and it has also occurred in locations where PBU has not been introduced). Recycling behaviour is influenced by other developments such as an improved recycling infrastructure and changing public attitudes towards recycling activities.
- There has been a general decrease in the amount of waste produced in cases where PBU has been introduced whereas those areas without PBU systems have seen an increase in average rates of waste presentation.
- Current systems of information collection for waste-related activities, such as illegal diversion, recycling and waste presented, are dispersed and fragmented. As a result, it is difficult to compare the data collected across locations. In addition, data can be incomplete due to the retention of information by private-sector collectors claiming that it is commercially sensitive, or because of a lack of monitoring, such as with illegal waste activities.

For ongoing and effective monitoring of systems, a more comprehensive, consistent and complete system of data collection needs to be developed nationwide.

It should be noted that the findings relate only to local authority responses, and not to the experiences of private waste collection companies.

## **Conclusions**

- The adoption of different systems of PBU (and in some cases non-adoption) by different collectors (public and private) both within and across local authority boundaries makes the evaluation of system effectiveness difficult. More detailed case study analysis of different systems within and between local authorities needs to be conducted.
- Given the high degree of private-sector participation in waste collection and the fact that multiple public and private-sector collectors often operate within one local authority, it is not possible to accurately compare systems. However, although quantifiable data on the relative effectiveness of different PBU systems could not be collected, there were a number of concerns raised during the research:
  - Crude volume-based systems that require payment annually and no flexibility in terms of differential bin size collections offer little in the way of incentive to decrease waste presented. There was some concern that such systems are little better than a flat-rate fee and allow collectors to continue with business as usual in terms of collections.
  - By not enacting legislation to make PBU mandatory certain collectors continue to operate on a flat-fee basis. Concerns were raised by local

authorities that they had little ability to enforce PBU systems if private collectors did not implement them.

- ◊ The high level of private-sector involvement in waste collection means that in many cases local authorities have little control over access to information on waste collected or recycled, on systems and levels of charging, and on waiver systems. This prohibits effective and accurate monitoring and assessment of the effectiveness of PBU systems

- ◊ While illegal diversion has been mooted as an unwanted by-product of PBU, the systems for monitoring such activities frequently lack sophistication making the evaluation of this claim difficult. The sporadic, unpredictable and illicit nature of such behaviour makes the development of a monitoring system difficult and a time and resource intensive investment. The development of such monitoring systems could lead to both a better understanding of the actual occurrence of such events and also act as a deterrent for such behaviour.

# 1 Introduction

This study reports on the findings of the first phase of a two-part project examining pay-by-use (PBU) charging systems in Ireland conducted between May and September 2006. The second in-depth case study phase will be completed in April 2008. The aim of this first phase was to investigate the implementation of PBU domestic waste charges in Ireland in order to discern their impact on domestic waste management activities such as waste presentation, waste recycling and illegal waste diversion. The structures of PBU charging implemented in the country, i.e. ownership of waste collection, types of PBU charges used, fees charged for waste collection and the presence of waivers, were also investigated, alongside more qualitative aspects, such as why the PBU system in place was selected, advice taken on developing the charging system and local authority views on ease of implementing the chosen system and levels of satisfaction with its operation. Data were also gathered on recycling infrastructure and illegal waste diversion monitoring systems in each local authority (see [Appendix 1](#)).

By 1 January 2005 all domestic waste collection operators were required<sup>1</sup> to charge customers for their services using a PBU charging system, as announced by Minister for the Environment Martin Cullen in 2004 (DoEHLG, 2004c). This requirement denotes that customers can no longer be charged a flat rate for waste collection services; instead, customers will pay by volume or weight of waste placed out for collection. PBU domestic waste pricing charges households per unit of waste placed out for waste collection. A kilogram of waste, a bag of waste and a bin of waste can all be considered a unit for waste charging purposes; for example, a household can be charged per kilogram, per bag or per bin of waste collected. PBU charges were deemed appropriate by the Department of Environment, Heritage and Local Government (DoEHLG) as implementation of the 'polluter-pays principle' in the waste management sector. The decision to introduce PBU domestic waste charges was made on the back of a number of key waste policy documents released by the

Department. In 1997, the policy documents *Sustainable Development – A Strategy for Ireland* (DoEHLG, 1997a), *Recycling for Ireland* (DoEHLG, 1997b) and *An Action Programme for the Millennium* (DoEHLG, 1997c) were published, all of which focused on the need for changes to be made in the waste management sector. In 1998, *Waste Management – Changing our Ways* (DoEHLG, 1998) spoke of the necessity for a considerable reduction in the amount of waste going to landfill. Recent policy statements on waste such as *Preventing and Recycling Waste – Delivering Change* (DoEHLG, 2002), *The National Overview of Waste Management Plans* (DoEHLG, 2004a) and *Waste Management – Taking Stock and Moving Forward* (DoEHLG, 2004b) focused on introducing economic instruments to reduce the rising volume of household waste going to landfill. In 2002, the volume of household waste created was 1,426,662 t, with 90.7% waste going to landfill and only 9.3% of household waste being recycled (EPA, 2002). To facilitate the national target of 50% diversion of household waste from landfill by 2013, the policy document *Preventing and Recycling Waste: Delivering Change* (DoEHLG, 2002) outlined plans to move towards user-based collection of waste. PBU charges were selected for implementation as a route to reducing Ireland's dependence on landfill and increasing Ireland's recycling rates to reach the national target for 2013. Such charges give the public a financial incentive to reduce the amount of waste produced and presented for collection and disposal. In theory, PBU charges send a more accurate pricing signal for generation of refuse and therefore encourage householders to reduce waste, recycle more and change waste management habits (Nestor and Podolsky, 1998; Linderhof *et al.*, 2001). As figures for domestic waste in 2005 for each local authority became available, it was fitting to study the initial effects of the charges on waste in Ireland.

There currently exists a large volume of empirical literature on PBU charging. PBU waste collection charges have been in place in the United States since the 1970s and countries within Europe since the 1990s. The United States has substantial experience in applying incentive-based environmental policy in domestic waste management in the form of PBU charges for solid waste

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1. The implementation of PBU domestic waste charges is not detailed in legislation; information was sent to local authorities via circulars which are available for viewing at: <http://www.environ.ie>.

disposal (Nestor and Podolsky, 1998). The earliest incidences of user-based charges began in the 1970s and the majority of user-based charges were introduced in the 1990s, resulting in over 2000 US communities currently implementing these charges (Nestor and Podolsky, 1998) and the Netherlands and Sweden implemented PBU waste collection charges in the 1990s (Stern and Bartelings, 1999; Linderhof *et al.*, 2001). This length of experience has allowed considerable research into the effectiveness of this form of waste management.

Economic theory proposes that PBU pricing systems encourage households to reduce consumption of waste disposal services since they charge customers according to the amount they consume (Nestor and Podolsky, 1998). The theory suggests that householders will reduce the amount of waste they set out for collection either by recycling or reducing waste at source. Due to the proliferation of PBU charges for waste disposal, it has been possible to test whether theoretical predictions have been found to be effective in practice. Studies into PBU charges have examined the effects on waste for collection, waste recycled, source reduction and illegal dumping. The majority of the literature on the effects of user-based charges to date has focused on the effects on waste being put out for waste collection and recycling.

The effect of user-based charges on amount of waste presented for collection has been widely examined in other countries, with the majority of studies concluding that PBU charges successfully decrease the amount of refuse collected. Stern and Bartelings (1999) and Linderhof *et al.* (2001) found that weight-based charges had a strong positive effect on waste presentation in Sweden and in the Netherlands, in both the short and long term. Bauer and Miranda (1996) found that the charges successfully induce households to reduce the amount of waste put out for collection in their American case study locations. Studies into the effects of varying unit prices for waste collection have also been conducted. For example, Hong *et al.* (1993) studied the amount of waste put out for collection under different charging regimes and found that the unit price for waste collection did not significantly reduce the demand for waste collection services.

The literature on the effect of user-based charges on the amount of refuse recycled/recycling participation reveals mixed findings to date. For example, research conducted by Hong *et al.* (1993), Bauer and Miranda (1996) and

Stern and Bartelings (1999) found that user fees increase the probability that a household recycles frequently, suggesting a positive relationship between the amount of recycling performed and marginal pricing. However, Reschovsky and Stone (1994) found that the price of waste collection alone had no significant effect on the probability that a household recycles, whereas they found that when combined with a door-to-door recycling programme recycling rates increase by 27–58%, depending on the type of material. Supporting this finding, Jenkins *et al.* (2003) found that access to recycling programmes has a significant impact on recycling but the existence of a PBU waste collection charge was found to have no impact on the recycling of any of the five materials studied.

There has been little study into the relationship between unit-based charges and undesirable waste diversion. In theory, user-based waste charging may encourage households to carry out 'undesirable diversion' activities such as littering and burning or dumping waste (Miranda and Bynum, 2002). According to Miranda and Bynum (2002), the potential for undesirable diversion of waste constitutes a persistent criticism of unit-based pricing; however, there is very little empirical evidence of this currently.

To date nationwide research has not been undertaken into the impact of the newly implemented PBU domestic waste charges in Ireland, although two pilot studies into PBU have been conducted. A pay-by-weight pilot study undertaken by a private collector within Roscommon County Council's functional area experienced decreases of between 30 and 40% in waste presented on the introduction of the weight-based charge (see Dunne (2004, 2005) for details). A second pilot study on weight-based charges, conducted by the ESRI (2006) for Cork County Council, found a 45% reduction in the weight of waste collected from households in the year subsequent to pay-by-weight charges compared to the year before the new charges.

The remainder of the report is divided up into three sections – methodology, nationwide analysis, and conclusions. The methodology outlines the multiple processes used in the study and details the problems encountered collecting data in the research. The findings of the study will then be looked at in detail and conclusions drawn.

## 2 Methodology

The research adopted a combination of both quantitative and qualitative techniques. Data were collected using telephone and e-mail surveys, postal questionnaires and were also obtained from the Environmental Protection Agency (EPA).

Based on the findings of a literature review of PBU systems (O'Callaghan-Platt and Davies, 2006) and discussions with experts from the EPA and the DoEHLG, who formed the Steering Group for the project, the following information was identified as significant:

- The PBU system adopted
- The date that PBU charges were introduced
- Charges associated with the PBU system
- Waste presentation levels prior to PBU charges
- Waste presentation levels subsequent to PBU charges
- The recycling infrastructure established in the local authority
- Recycling levels prior to PBU charges
- Recycling levels subsequent to PBU charges
- The existence and nature of illegal waste diversion monitoring systems
- Number and type of illegal waste diversion incidents prior to PBU charges
- Number and type of illegal waste diversion incidents subsequent to PBU charges.

Further questions were developed to gather a more rounded view of the local authorities' experiences of PBU charges including:

- Reason for selecting the particular form of PBU system
- Advice (if any) sought on PBU systems
- Reason for selecting PBU charge, i.e. cost per kg/tag/bin.

Several other questions were included in order to find out about the wider context onto which the PBU system was being imposed:

- Ownership of domestic waste collection services
- Domestic waste charges prior to PBU charges
- Presence of a waste charges waiver scheme
- Illegal waste diversion fines and prosecutions prior to PBU charges
- Illegal waste diversion fines and prosecutions subsequent to PBU charges.

This information was collected through a combination of surveys and interviews conducted from May to August 2006, as detailed below:

- **Telephone and e-mail survey**

The illegal diversion aspect of the study was conducted via telephone and e-mail surveys of all 34 local authorities. Local authority environment or waste management departments were contacted to gather details of waste enforcement officers in the local authority. In the majority of cases, the name, number and e-mail address of the waste enforcement officer(s) was provided; in the remaining cases other members of the environment or waste management department were identified instead. These recommended members of staff were generally senior executive officers or senior engineers within the department, who were felt by some local authorities to be better placed to answer the questions. The waste enforcement officer/other contact was e-mailed with details of the research and the survey questions and invited to participate in the project. The e-mail was followed up by a phone call to establish a suitable date for the telephone survey. Each telephone survey took approximately 20–30 min. A minority of local authorities opted to respond to the survey via e-mail.

- **Postal questionnaires**

Data on waste, recycling and PBU were gathered using two questionnaires, one questionnaire

developed by Trinity College Dublin and the other developed by the DoEHLG. Both questionnaires were sent out by the DoEHLG to the County Manager/City Manager of each of the 34 local authorities. The DoEHLG questionnaire received a 100% response rate. Thirty-two of the 34 local authorities responded to the Trinity College Dublin questionnaire. Two local authorities did not respond to the postal questionnaire – Donegal County Council and Mayo County Council. Owing to this, the majority of the questions are analysed based on the responses of the remaining 32 local authorities only. Three local authorities stated that a combination of private and public collectors operated within their functional area, but did not include details of the private waste collectors.

- **Information from the EPA**

Data on waste and recycling were also gathered from the EPA. The EPA provided figures from 2003 and 2004 local authority returns gathered for the National Waste Databases. Thirty-three out of 34 local authorities agreed that this information could be made available to the project.

Data were analysed using SPSS, a computer-based statistical package, which allows for analysis of both quantitative and qualitative data, via coding. SPSS was used to determine overall findings and trends on a nationwide scale. Each local authority was then analysed individually to determine the effects of PBU charges and any associated infrastructure on waste management behaviour on a case-by-case basis.

Illegal waste diversion was addressed separately to issues relating to waste presented for collection and recycling. This separation was a practical rather than a conceptual distinction as different personnel within local authorities often deal with these issues. Waste enforcement officers predominantly cover illegal waste activities, whereas waste and recycling figures may be collected by a variety of officers within waste management or environment departments of a local authority. The local authority was taken as the unit of study because this is the level at which figures for waste and recycling are gathered and illegal diversion monitoring takes place.

## **2.1 Problems Experienced in the Study**

### ***2.1.1 Problems found with the illegal waste diversion survey***

As several local authorities responded via e-mail whereas others took part in the telephone survey this led to different depths of detail in responses. The local authorities that responded by e-mail answered the questions directly but did not give much detail on issues such as the forms of illegal waste diversion monitoring used within the local authority; they also did not divert from the set questions to bring up other issues they felt were pressing. Respondents in the telephone study were more likely to give greater depth of detail on monitoring systems; they also tended to bring up other issues they felt were relevant to the study. For example, these respondents commented on issues of public awareness and shifting social values. Telephone surveys also allowed for clarification on ambiguous points. Nonetheless, telephone surveys took a substantial amount of time because of the difficulty experienced in contacting waste enforcement officers. The nature of a waste enforcement officer's job is to be out in the local area dealing with illegal waste diversion incidents, meaning they are only in their offices for brief periods.

### ***2.1.2 Problems with access to data***

Owing to the combination of both private and public ownership of waste collection within local authorities in Ireland complications arose in gathering desired data. In many cases, data on charges used by private collectors were not available. All questionnaires were completed by local authority personnel whose experience of private collectors' practices might be limited. For example, local authorities were asked whether waivers exist in their functional area; it is unclear from the response in many cases whether or not the answer applies to households served by all collectors in the local authority, or only to those served by public waste collectors. Owing to time constraints it was not possible to clarify ambiguity in these cases.

In several cases, it was unclear whether questions in the postal questionnaire were understood fully by the local authorities. For example, local authorities were asked to outline any recycling infrastructure introduced since the implementation of PBU charges. It would be expected that local authorities would mention kerbside recycling services; however, very few local authorities mentioned

this. Further time would have been required to determine whether local authorities fully understood the question.

Data were only gathered for the years 2003, 2004 and 2005. This time frame was deemed sufficient initially, but findings have revealed that a wider time frame would be required to determine the impact of PBU charges as ten local authorities had introduced PBU charges prior to 2003 and four local authorities introduced them at the beginning of 2003. In the majority of cases, these charges were pay-by-volume charges introduced by private waste collectors operating within the local authority's functional area.

Data on the number of illegal diversion incidents found in local authorities proved difficult to gather, as they are recorded differently in each local authority, limiting comparison across local authorities. In many cases, data collected by local authorities was not only limited but had only been collected over a short time period.

### ***2.1.3 Limitations of the unit of analysis***

It was established at the initiation of the project that the local authority was the best unit of analysis at which to study the impact of PBU systems as it is the level at which relevant information on waste, recycling and illegal waste behaviour is gathered. However, during the data collection phase it became clear that the existence of multiple collectors within many local authorities, both public and private, often using different systems (pay-by-weight, volume, or tag) and different charges per unit meant that the local authority scale of analysis obscured variations between different systems and charges. Future research would need to focus on individual collectors operating in distinct locations using a particular system in order to make accurate comparisons across different types of PBU systems and between similar systems in operation in different locations.

## 3 Nationwide Analysis

### 3.1 PBU Domestic Waste Charges

#### 3.1.1 Collection of domestic waste

Local authorities and private waste collectors can operate domestic waste collection in Ireland. Private waste collection companies make an application to the relevant local authority requesting a permit to collect waste within a local authority's functional area. The use of privately controlled waste collectors is regulated by the Waste Management (Collection Permit) Regulations, 2001 and the Waste Management (Collection Permit) (Amendment) Regulations, 2001 (SI No. 540 of 2001). Domestic waste collection across Ireland can be operated within each local authority by:

- Exclusively local authority
- Exclusively private waste collection companies
- A combination of local authority and private waste collection companies.

Section 33 of the Waste Management Act, 1996 (DoEHLG, 1996) provides that each local authority shall collect or arrange for the collection of household waste within its functional area except when:

- An adequate waste collection service is already available
- The estimated costs of the collection of the waste concerned by the local authority would in the opinion of the authority be unreasonably high
- The local authority is satisfied that adequate arrangements for the disposal of the waste can reasonably be made by the holder of the waste.

Analysis of the local authority data revealed that a slight majority of the local authority functional areas use exclusively private waste collectors, with 53%<sup>2</sup> of local authorities without any public collection service<sup>3</sup>. Public collectors operate in 47% of local authorities, though in 32% of these cases this public collection service is operated alongside private waste collection. See [Table 3.1](#) for details<sup>4</sup>.

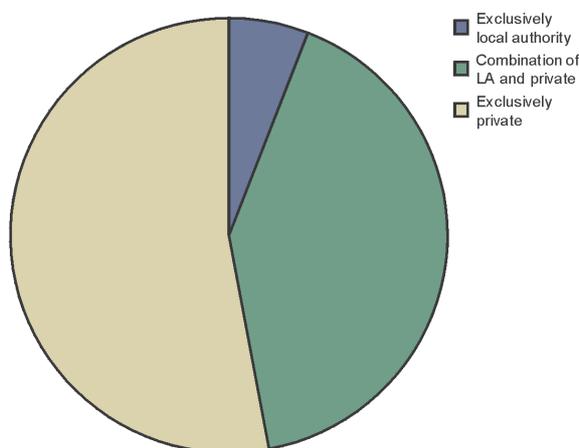
This finding supports recent figures for waste collection by Forfas, in their 2006 report *Waste Management Benchmarking; A Baseline Assessment* (Forfas, 2006). This study revealed the extent of private waste collection in Ireland, finding a significantly higher proportion of waste collection in Ireland under private ownership than in the other eight countries used in the benchmarking study: Austria, Czech Republic, Denmark, Netherlands, New Zealand, Scotland, Singapore and Sweden. The study states that “Ireland is almost unique among the benchmark countries in having private services directly involved in the collection of waste without any municipal involvement in establishing the contract and determining what happens to the waste” (Forfas, 2006, p. 22).

2. All percentages are rounded to the nearest whole number.
3. All figures for 2003–2005 data should be taken as unverified. The 2003 and 2004 data were collected by the EPA and may be erroneous as figures available are based solely on local authority National Waste Database returns before verification took place. The 2005 figures were gathered from local authorities through the TCD questionnaire; owing to time constraints it was not possible to verify figures.
4. It should be noted that three of the local authorities that answered “combination of local authority and private waste collectors” in the questionnaire then subsequently only gave details of the local authority collection, not private collection.

**Table 3.1. Ownership of domestic waste collection in Ireland.**

Ownership of domestic waste collection	Number of local authorities	Percentage of local authorities <sup>1</sup>
Exclusively local authority	2	6
Combination of local authority and private waste collectors	14	41
Exclusively private waste collectors	18	53
<b>Total</b>	<b>34</b>	<b>100.0</b>

<sup>1</sup>These percentages are illustrated visually in [Fig. 3.1](#).



**Figure 3.1. How waste collection is undertaken within local authority functional areas.**

### 3.1.2 Number of collectors in local authorities

As a result of this mixed control of domestic waste collection there may be numerous waste collectors operating within each local authority functional area. Table 3.2 presents the number of different collectors found within these functional areas. The findings show that in one case 16 waste collectors operate within one functional area. The analysis finds that the average number of waste collectors within a functional area is five.

**Table 3.2. Number of waste collectors operating within a local authority functional area.**

Number of waste collectors	
Minimum	1
Maximum	16
Average	5

In total, 136 waste collectors operate in the country, including both local authorities and private waste collectors, as named by local authorities. Twenty-two of these collectors are local authorities with the remaining 114 collectors private<sup>5</sup>.

Although exact data were not gathered on the size of waste collectors, analysis reveals that 61 collectors operate in only one local authority and 75 private collection companies operate in the functional area of

5. Note: two local authorities state that they use a combination of local authority and private collectors within their functional area but do not state how many private collectors operate within their functional area; therefore accurate figures for these two local authorities are missing.

more than one local authority. Of the companies that operate in the functional area of more than one local authority, 18 operate within two local authorities. The remaining larger collection companies operate in a number of local authorities as follows: four operate in three local authorities, two companies operate in four local authorities, two operate in six, and one operates in seven local authorities across the country. It is possible that waste management companies may operate under different names in different local authorities.

### 3.1.3 Waste charging systems in operation

#### 3.1.3.1 Flat-rate charges

Department of the Environment guidelines obliged all domestic waste collectors to charge householders under a PBU charging system from 1 January 2005<sup>6</sup> (DoEHLG, 2004c). On this basis, flat-rate waste collection should no longer be used. Despite this ruling, Table 3.3 shows that within six local authorities householders were still charged using a flat-rate system in part of the functional area at the time of the study, May to September 2006. In one case, this flat-rate charge is operated by the local authority, the remaining cases are operated by private collectors within five local authorities.

When looked at by individual waste collectors, the analysis reveals that 16 service providers still use a flat waste collection charge, see Table 3.4.

Private waste collectors are more likely to offer a flat waste collection charge than local authority collectors, with 12% of private collectors as opposed to 5% of local authority collectors using this mechanism.

The average charge under a flat-rate system is €374.81 per annum, see Table 3.5.

#### 3.1.3.2 PBU charges

Waste collection companies are obliged to use PBU charges but can chose to implement any PBU charging system at their own discretion. Analysis of the nationwide data reveals that PBU charges in Ireland can be categorised into three groups: volume-based charges, tag-based charges and weight-based charges. See Table 3.6 for details of these systems. Of these three systems, past research has found weight-based charges to be the most effective, and volume-based charges to be

6. The DoEHLG sent round circulars to local authorities on the introduction of PBU which can be accessed from the DoEHLG website <http://www.environ.ie>.

**Table 3.3. Use of flat charge within local authority functional area.**

Use of a flat charge	Number of local authorities	Percentage of local authorities
Yes – use of flat charge in part of local authority	6	18
No – flat charges removed	27	79
<b>Total</b>	<b>33</b>	<b>97</b>
Missing response	1	3
<b>Total</b>	<b>34</b>	<b>100.0</b>

**Table 3.4. Use of a flat waste collection charge by waste collector.**

Use a flat waste charge	Number of waste collectors
Yes	16
No	106
Other	2
<b>Total</b>	<b>124</b>
No answer	12
<b>Total</b>	<b>136</b>

**Table 3.5. Charges under a flat-rate waste collection system.**

	Annual charge (€)
Minimum charge <i>per annum</i>	300.00
Maximum charge <i>per annum</i>	520.00
Mean charge <i>per annum</i>	374.81

the least effective, in terms of reduction of waste to landfill and increase in waste recycled (Fullerton and Kinnaman, 1996; Miranda *et al.*, 1996; Nestor and Podolsky, 1998; Dijkgraaf and Gradus, 2004). Despite this, analysis of the PBU systems used within Ireland found that tag-based systems are the most popular, with 28 local authorities (82%) using this system through one or more collectors within its functional area. This is followed in popularity by a volume-based system, with collectors within 21 local authorities (62%) using this system. Weight-based systems are used the least, with collectors in only five local authorities (15%) using this system.

### 3.1.3.3 Tag-based system

Tag-based systems, namely tag-a-bag and tag-a-bin, require householders to purchase tags and attach them to their waste collection bag or bin. In the case of tag-a-bin, households are commonly given the option of several bin sizes, the standard bin sizes available are 140 l and 240 l. A tag is available for each size bin, with the 140-l tag for purchase at a lower cost than the 240-l tag. Each time a householder wants their bin or bag to be collected, they attach the appropriate tag and place it out for collection.

By paying each time the bin is collected this system closely links volume of waste to waste charges. Table 3.7 displays the tag costs currently charged across Ireland for bags and bins. This system is easy for householders to use and provides direct incentives to reduce the amount of waste placed out for collection.

A total of 28 of the 34 local authorities in Ireland use a tag-based system in all or part of their functional area. Table 3.8 breaks down these 28 local authorities to show which categories of waste collectors favour tag-based systems. The figures show that tag-a-bag and tag-a-bin are commonly used in all three categories of waste collectors, with both public and private selecting to implement this system.

Tag-based systems are not only easy to use from a householder perspective, but are also easy to implement by waste collectors. As householders purchase tags from shops, waste collectors do not have the administrative costs of billing householders. This system also does not require expensive waste collection equipment; a standard waste collection truck is suitable. However, one of the problems associated with tag-based systems is that they encourage householders to compact their waste, a phenomenon known as 'Seattle Stomp' (Fullerton and Kinnaman, 1996). This practice allows householders to fit a greater volume of waste into their bag/bin without incurring additional costs. Another downside of a tag-based system, from a waste collector perspective, is the lack of revenue certainty. If the system is 'successful', in as much as householders reduce the amount of times they place a bag or bin out for collection, the waste collector will have a reduced income and may be unable to meet the costs of collecting waste. This uncertainty regarding revenue has resulted in many waste collectors selecting to charge householders a flat-rate service charge in addition to the tag charge. Analysis of the data reveals that 59% of the 28 local authorities using a tag-based system, in all or parts of their functional area, have also selected to use a flat-rate service charge. Table 3.9

**Table 3.6. Summary of PBU charging systems used in Ireland.**

System	Description	Advantages	Disadvantages
<b>Volume-based system (also known as can subscription in the international literature)</b>	Households subscribe to a certain bin size and number of bins in advance. Households choose between different volumes of waste collection bin (small and large bins).	<ul style="list-style-type: none"> <li>• Unlike bags and stickers, a waste bin is reusable (Skumatz, 1993)</li> <li>• Revenues from can-subscription systems are stable because fixed costs can be put on the smallest service level, reducing revenue risk (Skumatz, 1993)</li> <li>• Simple system – easily comprehensible for users</li> </ul>	<ul style="list-style-type: none"> <li>• Volume-based systems lack the ability to cater for fluctuating waste levels</li> <li>• Changes to the subscription have to be requested in advance and in order to change can subscriptions quickly a household is required to incur a transaction cost. As a consequence, the relationship between cost and waste is not as sophisticated as with other user-pricing systems (Nestor and Podolsky, 1998)</li> <li>• Container sizes tend to be measured in fairly large increments, so customers must recycle a whole can to save money (Skumatz, 1993)</li> <li>• There is no recycling incentive below the smallest volume size available (Skumatz, 1993)</li> </ul>
<b>Tag-based system (tag-a-bag/tag-a-bin/pay-per-lift)</b>	Households have to buy a specific tag for their bin bag or wheelie bin. Only bags or bins with the relevant tags are collected.	<ul style="list-style-type: none"> <li>• Households can fine-tune the quantity of disposal services consumed to accommodate any changes in recycling and other waste management behaviours that affect disposal (Nestor and Podolsky, 1998)</li> </ul>	<ul style="list-style-type: none"> <li>• There is a certain element of revenue uncertainty as the recovery of fixed costs is not assured. This system can be used in conjunction with a flat-rate service charge to address this problem.</li> <li>• Customers must obtain, store and use stickers. (Skumatz, 1993)</li> </ul>
<b>Weight-based system</b>	The collection vehicle weighs the householder's bin and charges accordingly. A greater weight of waste results in a higher collection fee.	<ul style="list-style-type: none"> <li>• Does not encourage compaction of waste (Fullerton and Kinnaman, 1996)</li> <li>• Measures more precise increments of waste generation than do volume-based systems. Better recycling incentive (Skumatz, 1993)</li> </ul>	<ul style="list-style-type: none"> <li>• Complicated billing system (Skumatz, 1993)</li> <li>• High administrative costs</li> <li>• High capital costs for infrastructure and maintenance of weighing equipment</li> <li>• Risk of technology failure</li> <li>• Opportunity for contestation of charges applied if an extensive checking system is not applied</li> </ul>

Source: Adapted from O'Callaghan-Platt and Davies (2006).

**Table 3.7. Tag prices for bags, 140-l and 240-l bins (€).**

	Minimum tag price	Maximum tag price	Average tag price
Price per bag tag	2.65	6.30	4.70
Price per 140-l bin tag/lift	3.00	15.00	6.82
Price per 240-l bin tag/lift	4.29	16.00	8.77

**Table 3.8. Use of a tag-based system by categories of waste collectors.**

Use of a tag-a-bag/tag-a-bin	How waste collection is undertaken in local authority functional area			Total
	Exclusively local authority	Combination of local authority and private	Exclusively private	
Yes	2	11	15	28
No	0	2	3	5
<b>Total</b>	<b>2</b>	<b>13</b>	<b>18</b>	<b>33</b>

displays the variation in flat-rate service charges applied to tag systems, from no flat-rate service charge to an annual charge of €330.

**Table 3.9. Tag-based system flat-rate service charges.**

	Tag-a-bag/tag-a-bin flat-rate service charge (€)
Minimum charge	0
Maximum charge	330
Average charge	66.32

For householders living in areas with a flat-rate service charge, the relationship between waste placed out for collection and total cost of waste services is less clear than for householders that are not issued a flat-rate service charge. In paying a flat-rate service charge, the householder is no longer using a pure PBU charging system.

Looking at the data on tag-based charges by waste collector, the flat-rate service charge issued by waste collectors under a tag-a-bag system ranges from €80 to €180, with an average flat-rate service charge of

€142.50. The charge per tag under a tag-a-bag system varies from €3 to €16, with a mean tag charge of €5.73. The flat-rate service charge and the charge per bin tag/lift issued by waste collectors under a tag-a-bin system varies based on the size of the bin, see [Table 3.10](#).

#### 3.1.3.4 Volume-based system

Volume-based systems, commonly known as can-subscription systems in the international literature, require householders to subscribe to a weekly waste collection service for which they pay an annual charge. This system is classed as a PBU charging mechanism as bins of differing sizes are available to the householder at different costs, with smaller bins costing less than larger bins; in this way householders pay more if they choose to opt for a large bin. Internationally, this system has been found to be the least effective in reducing waste to landfill and increasing recycling, as householders have no incentive to reduce the amount of waste they place out for weekly collection below the amount they can fit into their bin (Fullerton and Kinnaman, 1996; Nestor and Podolsky, 1998; Dijkgraaf and Gradus, 2004).

A total of 21 of the 34 local authorities in Ireland use a volume-based system in all or part of their functional area. [Table 3.11](#) breaks down these 22 local authorities to show

**Table 3.10. Flat-rate service charges and tag/lift charges under a tag-a-bin system (€).**

Tag-a-bin charges	Minimum charge	Maximum charge	Average charge
Flat-rate charge for 140-l bin	30.00	290.00	163.25
Cost of tag/lift 140-l bin	3.00	10.00	5.27
Flat-rate charge for 240-l bin	30.00	348.00	148.00
Cost of tag/lift 240-l bin	4.00	15.00	8.43

**Table 3.11. Use of a volume-based system by categories of waste collectors.**

Use of a volume-based system	How waste collection is undertaken in local authority functional areas			Total
	Exclusively local authority	Combination of local authority and private	Exclusively private	
Yes	0	7	14	21
No	2	6	4	12
<b>Total</b>	<b>2</b>	<b>13</b>	<b>18</b>	<b>33</b>

which categories of waste collectors favour volume-based systems. This system is favoured by private waste collectors.

This system may appeal to private waste collectors owing to its ease of implementation, its low administrative burden and its ability to guarantee a set income. This system does not require expensive equipment. From an administrative perspective, issuing bills to a household for a set annual charge is easier and less costly than issuing bills to each household based on individual use of the collection service. Private companies in particular would be attracted to the revenue certainty granted by this system. Householders subscribe to a bin size at the beginning of the year and are then charged based on this bin size. The standard size bins available to householders are 140 l and 240 l, although several collectors offer 80-l, 120-l and 360-l bins. Collectors in ten local authorities offer 120-l bins in place of the standard 140-l bin, collectors in four local authorities offer 360-l bins and within two local authorities 80-l bins are available to householders. [Table 3.12](#) outlines the various charges to householders for subscription to the 140-l and 240-l bins.

The average annual charge for a 140-l bin across Ireland is €306.17; the mean annual charge for a 240-l bin is €380.47. Based on these mean charges there is an annual price difference of €74.31 between use of a 240-l bin and a 140-l bin. This relatively small price difference over the period of a year may encourage householders to select a 240-l bin over a 140-l bin, reducing further the incentive to reduce waste and recycle.

The data reveal that whereas the majority of volume-based systems function as outlined above, several collection companies offer slightly modified volume-based

systems. One large collection company, operating in several local authority functional areas, has implemented a volume-based system with elements of pay-by-weight. This company gives households the option of using a 120-l bin or a 240-l bin; they are then charged an annual charge for this bin and in addition pay a charge based on the average weight of waste for that bin size. For example, the annual charge for a 240-l bin is €242.66; the average weight for a 240-l bin in a year is given as 800 kg. The householder is charged the annual charge plus the average weight charge (with each kilogram charged at 14 cent) on their bill. If the household's total weight is under the average weight they receive a discount on their next bill, and if the household's total weight is over the average weight they are charged for the additional weight. This system may offer a greater incentive to householders to reduce the amount of waste they place out for collection than does the standard volume-based system. However, it is not clear from the data what proportion of householders have had refunds or extra charges under this system nor the extent of these refunds/charges. Private waste collectors in eight of the 21 local authorities using volume-based charges within their functional area offer this system of volume-based charges with elements of pay-by-weight.

Looking at the data on volume-based charges by waste collector reveals the extent of the variations charged under a volume-based system, see [Table 3.13](#).

### 3.1.3.5 Weight-based system

Weight-based systems charge households based on the weight of waste they place out for collection. Waste collection trucks weigh the bin when collecting the waste and the householder is charged based on the weight of the waste in the bin. Previous studies have found pay-by-

**Table 3.12. Annual charge for 140-l and 240-l subscription bins (€).**

	Minimum charge	Maximum charge	Average charge
Annual price for 140-l bin	225.00	468.20	306.17
Annual price for 240-l bin	300.00	547.60	380.47

**Table 3.13. Annual volume-based bin charges by waste collector (€).**

Annual volume-based bin charges	Minimum annual charge	Maximum annual charge	Average annual charge
Annual charge for 120-l bin	180.00	354.00	273.33
Annual charge for 140-l bin	215.00	369.20	292.90
Annual charge for 240-l bin	280.00	516.00	369.06

weight to be the most effective of the PBU systems as it provides a direct relationship between the amounts of waste placed out for collection and the waste charge, but does not encourage waste compaction (Miranda *et al.*, 1996, Nestor and Podolsky, 1998).

As noted in the previous section a number of Irish collectors state that they use a weight-based charge but this study has classed some of these as volume-based charges with pay-by-weight aspects because these collectors charge householders a flat fee initially for a particular size of bin (volume based) and then set an average weight limit for that size of bin. The collector then calculates the average weight of a bin and if householders go below or over this weight at the end of the year/6 months they will get credit or be charged extra on their next bill. This system of getting credit off the next bill in 6 months time removes the direct impact of the weight of waste; householders do not immediately feel the direct effect of reducing waste, creating less of an incentive to reduce waste for presentation.

A total of five of the 34 local authorities in Ireland use a true weight-based system by collectors in all or part of their functional area. Table 3.14 breaks down the five local authorities using pay-by-weight to show which categories of waste collectors favour weight-based systems. The analysis reveals that this system is used by both public and private waste collectors.

A reason for the low uptake of pay-by-weight charges may be the high infrastructure and administration costs associated with this form of PBU charge. The equipment used to weigh waste and store this information for each household is expensive. From an administrative

perspective, this system requires individual bills to be drawn up for each household, calculating the amount owed based on the weight of their waste.

The charges issued per kilogram of waste differ considerably between collectors. Table 3.15 outlines the per kilogram amounts charged by pay-by-weight customers across the country.

As with all purely PBU charging systems, pay-by-weight waste collectors are not guaranteed fixed revenue, prompting them to use annual flat-rate service charges. The flat-rate service charge varies in its cost, as outlined in Table 3.16.

As detailed above, householders issued a flat-rate service charge experience a less direct relationship between waste placed out for collection and cost, and are no longer using a pure PBU charging system. The relationship between the flat-rate service charge amount and the amount charged per kilogram may influence the success of the pay-by-weight system at reducing waste placed out for collection. For example, one waste collector using a weight-based system charges householders a €476 flat-rate service charge, and 16 cent per kilogram of waste, whereas another charges a €120 flat-rate service charge and 46 cent per kilogram of waste. Although both systems are weight-based, the second collector will create a greater incentive to reduce waste than the first.

#### **3.1.4 Use of a variety of systems within each local authority functional area**

As outlined in Section 3.1.2, there are on average five waste collectors operating within the functional area of

**Table 3.14. Use of a weight-based system by categories of waste collectors.**

Use of pay-by-weight	How waste collection is undertaken in local authority functional area			Total
	Exclusively local authority	Combination of local authority and private	Exclusively private	
Yes	0	3	2	5
No	2	10	16	28
<b>Total</b>	<b>2</b>	<b>13</b>	<b>18</b>	<b>33</b>

**Table 3.15. Amount charged per kilogram of waste across Ireland.**

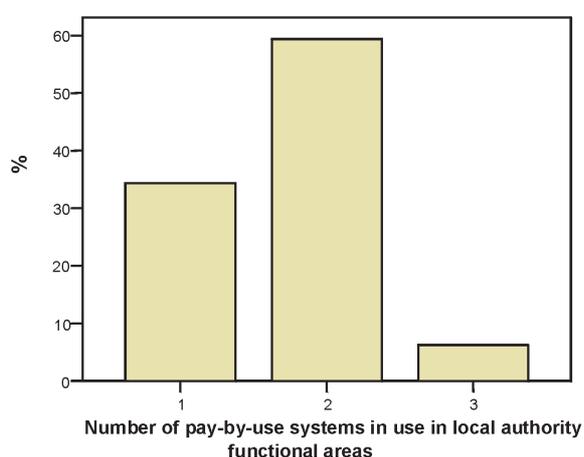
	Charge per kg of waste (cent)
Minimum charge	16
Maximum charge	46
Average charge	22

**Table 3.16. Annual flat-rate service charges for pay-by-weight customers (€).**

	Pay-by-weight flat-rate
Minimum charge	80.00
Maximum charge	436.00
Average charge	252.50

each local authority. Each waste collector may choose to introduce any domestic waste collection charging system that falls within the classification of PBU. This flexibility to select a PBU charging system has resulted in local authority areas having several charging systems in place. Analysis of the data has found that the majority of local authority areas (19 local authority areas (56%)) use two PBU systems throughout their functional area, 11 local authority areas (32%) use only one PBU system and two local authority areas (6%) use three PBU systems. This is illustrated in Fig. 3.2.

The use of several PBU systems within each local authority area hinders the ability to investigate whether or not certain systems are more effective at reducing waste to landfill, as figures for waste to landfill are gathered at



**Figure 3.2. Variety of PBU systems in use in local authority functional areas.**

local authority level. It is therefore possible that local authorities using a combination of, for example, a weight-based system and a volume-based system may have experienced a substantial decrease in waste being placed out for collection in areas using the weight-based system but that this reduction will be insignificant once amalgamated with waste figures for the rest of the county. Using more than one system will prevent detection of which systems are the most and least effective. Furthermore, within local authorities using only one waste charging mechanism there may still be several waste collectors. These waste collectors may charge different amounts for waste collection even within the same waste collection system. This hinders the ability to detect whether or not there is a direct link between actual cost of waste within a specific charging system and the amount of waste placed out for collection.

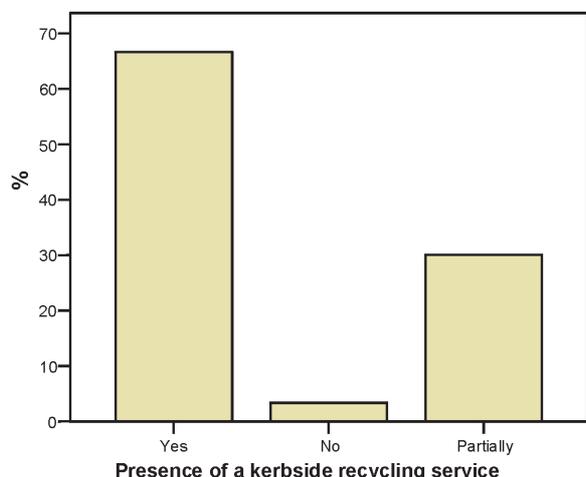
## 3.2 Recycling Infrastructure

### 3.2.1 Kerbside recycling

Local authorities were asked if households within their functional area had access to a kerbside recycling collection service. Four local authorities did not respond to the question. Of the 30 local authorities that did respond, 20 (59%) stated that there is a kerbside recyclables collection within their functional area. In many cases it is not explicit whether or not this collection service is available throughout the administrative area. Nine (26%) local authorities stated specifically that a recycling service exists in parts but not all of their functional area. In the majority of cases, the areas that do not have access to a recyclable collection are areas serviced by small private waste collectors. Householders in only one local authority area do not have access to a kerbside recycling collection at all. Many local authorities state that provision of kerbside recycling is a requirement for private collectors under the waste permits issued by the council. These responses are illustrated in Fig. 3.3.

### 3.2.2 Changes in recycling infrastructure

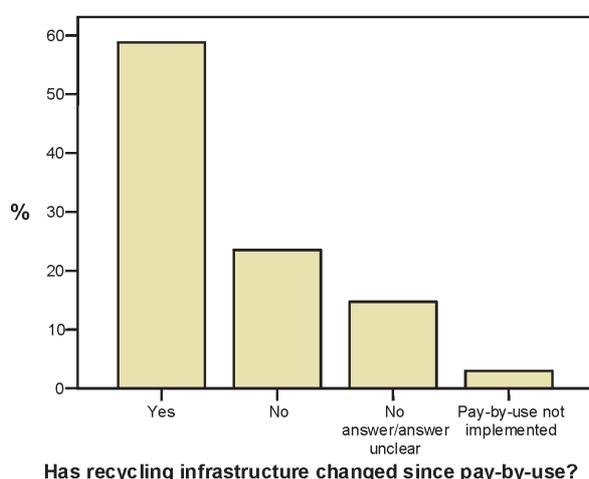
Local authorities were asked if changes had been made to the provision of their recycling infrastructure since the introduction of PBU charges. Five of the local authorities did not answer and one local authority said that PBU charges have not yet been implemented. Of the 28 local authorities that responded to the question, 20 (59%) answered that changes have been made to the recycling



**Figure 3.3. Presence of a kerbside recycling service.**

infrastructure, and eight (23%) responded that no changes have occurred, see Fig. 3.4.

Thirteen local authorities had expanded their network of civic amenity sites or increased the range of materials collected at these sites. Eight increased the number of bring banks in their functional area. This expansion was assisted by funding available under the DoEHLG's recycling infrastructure grant scheme (DoEHLG, 2002). Three local authorities stated that they introduced a kerbside collection service; in two of these cases the collection service included both a recyclables collection and an organic waste (brown bin) collection. Three local authorities scaled back on the range of materials collected at bring sites in line with their expansion of kerbside recycling services.



**Figure 3.4. Changes in recycling infrastructure provision since PBU.**

### 3.2.3 Analysing recycling infrastructure and PBU

Twenty-seven local authorities of the 34 provided answers on both waste presentation and the presence of a kerbside recycling collection. These local authorities were examined to determine if a relationship exists between kerbside recycling and the amount of waste householders are presenting for collection.

The average presentation rate in local authorities that answered 'yes' to the presence of a kerbside recycling collection service is 222 kg, 31 kg greater than the average presentation rate of 191 kg found in local authorities that answered 'partially' to this question<sup>7</sup>.

The local authority that does not offer a kerbside recycling service has the fifth highest waste presentation rate per person, at 310 kg. The local authority with the lowest waste presentation rate per person in Ireland is Galway City Council. This local authority uses a combination of both public and private waste collectors, although 90% of the households in the city have their waste collected publicly by the City Council. The local authority does not currently operate a PBU charging system. Instead, households pay a flat annual rate for domestic waste collection. However, Galway City Council operates a weekly three-bin collection system: black, green and brown, a system that has been in place since 2001. The success of Galway City Council may be because recycling is well established in the local authority. Galway City Council also embarked on an education campaign across the city to promote waste reduction and the use of recycling facilities. A member of the Galway City Council waste enforcement team was interviewed for the study and commented that there were high levels of environmental awareness and knowledge of waste management issues amongst householders in the local authority. This level of awareness may be in part responsible for prompting waste reduction behaviour. The presence of an organic waste collection may also be a contributory factor. In addition to a green bin collection, Galway City Council collects organic waste from all households. This allows householders to use this bin for food waste instead of using the black, landfill bin. Only

7. As the question on kerbside recycling was open-ended, and therefore did not require local authorities to select options such as yes, no or partially, many local authorities that offer a recycling service in part of their functional area, but not throughout all of the county/city may have answered 'yes' to the presence of kerbside recycling. On this basis, local authorities that answered 'yes' to this question should not be assumed to offer full kerbside coverage.

three local authorities in the country stated that they currently offer a brown bin service; in one case this service is only offered to part of the local authority as a pilot study. Galway City Council offers a weekly collection of recyclable and organic waste, whereas the majority of local authorities across the country collect recyclables on a monthly or fortnightly basis and the Council does not charge householders each time their recyclables or organic waste bin is presented for collection. This may encourage householders to present these bins for collection more frequently than householders in local authority areas that charge for a recyclables collection. This case highlights the value of environmental education and a waste diversion infrastructure in reducing waste presentation and demonstrates that PBU is not the only way to reduce waste.

The local authority with the highest waste presentation rate per person in Ireland is Offaly County Council. This local authority uses exclusively private waste collectors for domestic waste collection. A kerbside recyclables service is available to 9,400 households in the county. According to 2004 EPA returns, there are 20,114 households in Offaly County Council, although this uses 2002 Central Statistics Office data and so may not be accurate. Recyclables are collected from households twice a month. Private waste collectors operate the recyclables collection alongside their waste collection at no additional cost; however, less than half of the county has access to kerbside recycling, and this may account for the high waste presentation rate.

### **3.3 Systems for Monitoring Illegal Waste Diversion**

Telephone interviews were conducted with all 34 local authorities on the illegal diversion of domestic waste within their functional area. Each local authority was asked to describe their system for monitoring and tackling illegal waste diversion. Details were collected on methods the public can use to report illegal waste diversion incidents, methods of recording this information, and systems for tackling illegal waste diversion; these systems can be broadly divided into reactive and proactive approaches.

#### **3.3.1 Public reporting of illegal waste diversion**

In all local authorities, the public can contact the council and report incidents of illegal waste diversion. There are several methods of contacting the local authority available

to the public: many local authorities have a dedicated phone line or 'hotline', other local authorities receive complaints through the general environment department phone line. All local authorities accept reports over the counter in their offices and the public can contact litter wardens or community wardens directly with a complaint. Currently the majority of local authorities do not accept reports via e-mail.

Overall the majority of local authorities feel that there has been an increase in the number of illegal waste complaints received from the public. Many of these local authorities were keen to stress the role of increased public awareness of waste issues in this increase. This feeling has been confirmed by the 2005 EPA report on attitudes (Davies *et al.*, 2005), which found that 56% of respondents felt that waste management is the most important environmental issue in Ireland currently. This issue of increased public awareness is looked at in more detail in [Section 3.3.5](#).

#### **3.3.2 Recording systems**

Several methods are used in Irish local authorities to record incidents of illegal waste diversion<sup>8</sup>. These methods are:

- **Book of records:** Several local authorities continue to record illegal waste incidents on paper rather than in a central computer database. This has disadvantages in terms of data retrieval and a lack of centralised data, with small council offices throughout the local authority each keeping their own records. The majority of local authorities used this method for recording illegal waste diversion incidents until recently.
- **Excel database:** The majority of local authorities currently use Excel to store data on illegal waste diversion. The database is limited in its ability to manipulate the data. For example, this system does not allow waste officers to isolate particular forms of illegal waste activity, for example backyard burning, from other forms.

8. Local authorities are currently operating within the third Customer Services Action Plan (2005–2007), developed by the Department of Enterprise, Trade and Employment. The Action Plan includes objectives on citizen response time, coherent and accurate communication and the use of information technology to reach the customer service potential of a local authority (Department of Enterprise, Trade and Employment, 2005).

- **eDirect database:** This is a contact management system designed for the Local Government Computer Services Board. The system allows a citizen to present a query/problem to their local authority using telephone, fax, e-mail, letter or by calling into the offices. The query/problem will then be input into the database which is accessible throughout the local authority. The database sends the message to a relevant local authority officer with the least workload. The citizen receives confirmation of the receipt of the query/problem and an identification number. The identification number allows the citizen to log onto the database and view the progress on their query. Each query is given a deadline for resolution; when the local authority officer resolves the case and inputs this into the system, the system responds to the citizen.
- **Other complaints management database developed for local authorities:** Several local authorities have had a database developed specifically for their use. For example, Galway City Council uses a database called IServe; litter wardens can download information from this onto their hand-held palm recorder.

The data recorded include incidents reported by the public. It does not always include incidents identified by litter or community wardens or incidents reported by the public directly to the wardens. In a number of cases until recently, the incidents recorded were only those that were followed up by the local authority and resulted in fines and/or prosecutions.

Data are recorded in several different ways in different local authorities; for example, litter and waste are considered separate issues and incidents are recorded under each issue, but different local authorities define these in different ways; some local authorities consider fly-tipping as a waste issue, but others consider it to be a litter issue. This affects how fly-tipping is recorded in databases and may skew any illegal diversion figures collected by local authorities. Backyard burning is sometimes classed as a litter issue but can also be considered an air pollution case and so could be recorded under either of these categories. Many local authorities lump together all environmental complaints, to include air, water, waste and noise, which means that it is not possible to disaggregate specific complaints per sector. As noted above, many local authorities allow litter

wardens to receive complaints directly and deal with them themselves without these ever being recorded in a local authority database of illegal waste incidents, and so commonly databases only include reports from the public and then incidents discovered/investigated by litter wardens that result in fines/warning letters being issued. Local authorities tend to issue on-the-spot fines under the Litter Act rather than fine using the Waste Management Acts which is a more complicated procedure.

### 3.3.3 *Reactive policies*

#### 3.3.3.1 *Responding to public complaints*

All local authorities use the same system to respond to public complaints. A complaint is received from the public; this is then passed onto a litter warden, or community warden if present. The warden follows up the complaint and if possible issues a warning letter or an on-the-spot litter fine. If the warden finds it is a significant waste problem, such as a large dump, it will be passed onto a waste enforcement officer who will tackle it using the Waste Management Acts. The majority of local authorities stated that they follow up all complaints by the public, although several said that, owing to a lack of resources, this is not possible currently.

### 3.3.4 *Proactive policies*

#### 3.3.4.1 *Monitoring households without a waste collection service*

Sixteen local authorities stated that they monitor households without a waste collection service within their functional area. Six local authorities said that they plan to begin monitoring these households shortly. The local authorities that monitor households do this by making door-to-door enquiries. The majority of local authorities conducting household monitoring select an area within their functional area at random and call to each household to determine their methods of waste disposal. Several local authorities post leaflets on recycling, information on householder obligations under the Waste Management Acts and waste audit forms for completion in advance of calling to doors. The waste enforcement team of one local authority went out with private waste collectors on their routes for several months to establish which households do not use a waste collection service, before calling to these houses for details on how they dispose of their waste. Householders are asked to provide bills or receipts for their waste disposal and those that are unable to do so are told that a waste officer will call to them again in a month's time to see their disposal receipts for the

intervening period. The frequency that local authorities monitor households for waste collection varies. One local authority selects an area once a month and knocks on all the doors in the area. The majority of local authorities have periods of time several times a year when they will call to households. Other local authorities have conducted a household survey for the first time only recently.

#### *3.3.4.2 Monitoring fly-tipping black spots*

Fourteen local authorities stated that they monitor fly-tipping black spots within their functional area. These local authorities use a variety of methods to monitor black spots. Black spots are monitored by litter and community wardens on patrol. Local authorities also use a mix of both hidden cameras and visible cameras in black spots. Visible cameras are commonly used in bottle banks to discourage fly-tipping. Hidden cameras are often used in other fly-tipping areas to try to identify offenders. Local authorities have had mixed experiences with use of cameras. The majority appear to have had little success in identifying offenders from images captured by cameras. Waste enforcement officers commented that offenders park away from the cameras to prevent their license plate being recorded and that they simply turn their backs to the cameras when dumping the waste. The images captured are commonly not clear enough to be used as evidence against a person, and so a fine cannot be issued. On this basis several local authorities currently using cameras are planning to phase out their use. Nonetheless several local authorities have had positive experiences of cameras, securing prosecutions based on the images. In these cases, waste enforcement officers felt that in the absence of sufficient numbers of waste enforcement staff that cameras do help. A number of local authorities that are not currently employing cameras for waste enforcement are planning to install them in the near future. Two local authorities stated that they have used helicopters in the past to identify new fly-tipping areas.

#### *3.3.4.3 Monitoring unauthorised waste collectors*

Fourteen local authorities stated that they monitor the activities of unauthorised waste collectors within their functional area. Road checkpoints in conjunction with the Garda Síochána are used. Vans are stopped and checked for waste and waste permits by waste enforcement officers. Offenders are fined for collecting waste without a permit. Checkpoints also reveal the identity of 'man-in-van' collectors to the local authority and the Gardaí for further monitoring. Local authorities conduct checkpoints several times a year.

#### *3.3.5 Public awareness and shifting social values*

Seventeen of the thirty-four local authorities interviewed commented on the role played by increasing public awareness of waste management issues. Waste enforcement officers felt that the public have become considerably more informed on waste issues in recent years, which they felt may account for increased numbers of waste incidents being reported by members of the public. Many local authorities were keen to stress the importance of public awareness in terms of complaints received from the public, with a general opinion that any upsurge in public complaints was most likely owing to this awareness than to any impact of PBU charges. For example, the negative environmental impact of backyard burning is now known to the public; in the past, burning waste would have been considered an appropriate way to dispose of waste and would not have been reported to local authorities. Increased awareness in recent years by the public of the dangers of backyard burning has resulted in this activity being considered unacceptable by many and being reported as an illegal waste activity to the local authorities.

Several waste enforcement officers highlighted the flip side of increased public awareness – a decreased amount of evidence in fly-tipped domestic waste. Fly-tipped waste is less likely to contain personal details, such as bank statements, than in the past, preventing litter wardens from tracing the person responsible. Local authorities commented that people are getting 'cute', using shredders to hide personal information. Many felt that there were differences between one-off fly-tippers and serial dumpers, with one-off fly-tippers more likely than serial dumpers to leave evidence in their waste. This has led to a situation in some local authorities where the serious serial offenders are not being caught, resulting in decreased numbers of fines issued for fly-tipping, although not a decreased number of fly-tipping incidents. Several local authorities felt that this lack of evidence is the biggest illegal waste diversion problem they face currently, with concerns that fly-tipping will continue as they are unable to fine and prosecute serial offenders.

Several waste enforcement officers spoke of the role of shifting social values and their impact on illegal waste diversion. A disintegration of local communities was felt to be responsible for both increased illegal diversion activity and increased public reporting of such activities. Local authorities stated that an influx of people from outside the

community has resulted in increased illegal diversion activity; this may be attributed to a lack of local pride as people feel no sense of belonging to the area. In addition, a breakdown of a sense of community may mean that people are more likely to report their neighbours' illegal diversion activities to the local authority. Local authorities stated that many people have the attitude that they have paid their own waste charges so why should somebody else get away without paying and litter the local area, while some people were reporting maliciously against neighbours. Commonly local authorities will come to know these households as they will repeatedly report each other, when the litter warden investigates these cases he/she will commonly uncover planning disputes between the neighbours.

### 3.3.6 Waiver schemes

Seventeen of the 32 local authorities that responded to the PBU questionnaire have a waste charges waiver scheme in place (Fig. 3.5). It is not clear in the majority of cases whether or not householders using a private collection service can avail of this waiver, although several local authorities do state that it only applies to local authority waste customers. Fourteen local authorities have no waiver scheme. One local authority, Cavan County Council, does not have an official waiver scheme in place but states that "all requests for assistance are dealt with on an individual basis".

The two local authorities that offer exclusively local authority domestic waste collection both offer waivers, all but one of the local authorities that operate collection services alongside private collectors have a waiver scheme. Four local authorities that use private waste collectors exclusively have waiver schemes in place, whereas 13 do not. See Table 3.17.

The eligibility criteria for waiver schemes are similar in all local authorities. The scheme usually applies to households living exclusively on state pensions and social welfare. Low-income households, where income is below

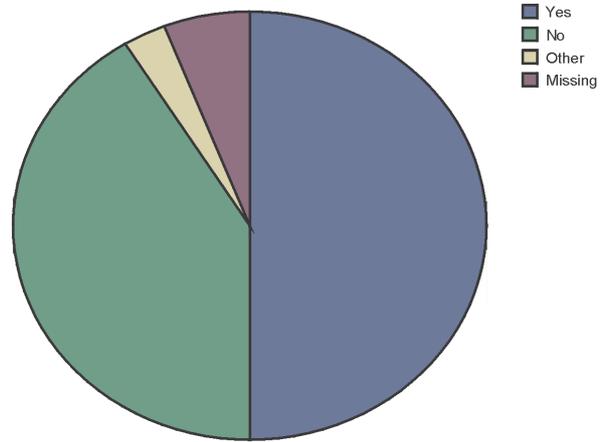


Figure 3.5. Presence of waste charge waiver.

the taxable level, are considered eligible for a waiver in several local authorities.

## 3.4 Analysing PBU

### 3.4.1 PBU and waste presentation

Waste presentation figures were gathered for 2003 and 2004 from EPA National Waste Database returns. All local authorities were asked by the EPA for consent to the use of these figures in EPA-funded projects. One local authority did not give consent; figures for this local authority have not been used in this project. 2005 figures were gathered directly using a questionnaire sent out to all local authorities. Thirty-two of the 34 local authorities completed the questionnaire. As with the 2003 and 2004 figures, these figures have not been validated owing to time constraints and are taken entirely from the questionnaires completed by the local authorities.

In order to gain meaning from the waste presentation figures for each local authority, it was necessary to calculate kilograms of waste presented per person per year, as local authorities differ substantially in the size of their population. Population figures were gathered from the Central Statistics Office Censuses of 2002 and 2006. EPA National Waste Database returns show that local

Table 3.17. Presence of waste charge waiver in local authorities.

How waste collection is undertaken	Presence of waste charge waiver			Total
	Yes	No	Other	
Exclusively local authority collection	2	0	0	2
Combination of local authority and private collection	11	1	1	13
Exclusively private collection	4	13	0	17
<b>Total</b>	<b>17</b>	<b>14</b>	<b>1</b>	<b>32</b>

authorities used 2002 Census figures in their own calculations for 2003 and 2004 waste figures. The 2006 Census figures were used to calculate kilograms of waste per person for 2005.

Once kilograms of waste per person per year calculations were completed for 2003, 2004 and 2005 waste presentation, it was possible to calculate the difference in presentation per person from year to year.

Analysis of the waste presentation rate per person across the country has revealed that overall waste presentation has decreased in the time period studied (2003–2005). This trend of decreasing waste presentation may be as a consequence of PBU charges. However, owing to the number of variables present, such as increased recycling infrastructure and increased environmental awareness, it is not possible to attribute this trend to economic instruments alone.

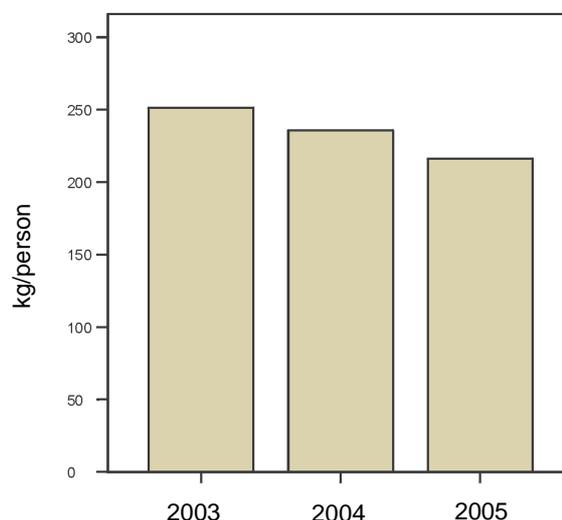
However, when figures are broken down according to use of PBU charges a different picture is revealed. In 2003, the average presentation rate per person in local authorities without PBU charges in place was 240 kg, whereas that per person in local authorities with PBU charges in place was 227 kg. In 2004, the average presentation rate per person in local authorities without PBU charges in place was 266 kg, whereas that per person in local authorities with PBU charges in place was 221 kg. In 2003, there was a 13 kg difference in average waste presentation rate between local authorities with and without PBU charges; in 2004, this difference rose to 45 kg per person.

The amount of waste presented per person in local authorities with PBU charges decreased from 2003 to 2004 by 6 kg, whereas the amount of waste presented per person in local authorities without PBU charges increased from 2003 to 2004, from 240 kg to 266 kg, a 26-kg increase per person. The presence of PBU charges may be responsible for reducing waste presentation levels in local authorities with PBU charges. This decrease continued into 2005 in local authorities using PBU charges, with the average presentation rate dropping to 219 kg, a further drop of 2 kg per person. By 2005, all but two local authorities had implemented PBU charges within their functional area. Of the two local authorities that had not implemented PBU charges in 2005 one of them did not provide details of their 2005 waste figures, the second local authority is Galway City Council.

The amount of waste presented per person in local authorities using a PBU charge has decreased from 2003 to 2005, whereas that in local authorities that are not using a PBU charge has increased. As more local authorities move from flat charges to PBU charges, and so reduce their waste presentation rate, the overall waste presentation rate *per capita* on a nationwide scale shows a year-on-year drop in presentation rate, as seen in Fig. 3.6. This finding indicates that PBU charges have reduced waste presentation rates in Ireland on a nationwide level.

To determine any factors influencing the extent or lack of success of PBU in reducing waste presentation, 12 local authorities were examined in detail. These 12 local authorities were selected for study as they moved to PBU charging during the period 2003 to 2005 (the period for which waste figures were available to the study). Table 3.18 outlines the change in waste presentation experienced by the 12 local authorities that moved to PBU during the 2003–2005 time frame.

Nine of these 12 local authorities saw a decrease in waste presentation subsequent to introducing PBU waste collection charges, and three saw an increase. Analysis of all 12 local authorities did not reveal any patterns promoting success across all local authorities that experienced a reduction. A successful reduction of waste presentation was experienced in local authorities under all types of control (public, private, combination of public and private) and using all types of PBU system (volume-based, tag-based and weight-based). No factors were



**Figure 3.6. Trend in nationwide average waste presentation per person, 2003–2005.**

**Table 3.18. Impact of PBU waste charges on waste presentation.**

Local authority	Date introduced PBU charges	Difference in kilograms of waste collected per person/per year in the year prior to and subsequent to the introduction of PBU charges (2004–2005 difference)
Clare	December 2004	–56 kg
Dun Laoghaire–Rathdown	January 2005	–133 kg
Kerry	January 2005	–34 kg
Laois	January 2005	+39 kg
Leitrim	January 2004	+1 kg (2003–2004 difference)
Limerick County	December 2004	–76 kg
Longford	January 2005	–81 kg
South Dublin	February 2004	–52 kg (2003–2004 difference)
South Tipperary	February 2004	–91 kg (2003–2004 difference)
Cork City	January 2005	–84 kg
Dublin City	January 2005	–7 kg
Limerick City	December 2004 <sup>1</sup>	+11 kg

<sup>1</sup>One company used PBU prior to this.

identified that promoted greater waste reduction levels within a PBU structure.

### 3.4.2 PBU and waste recycling

Local authorities were asked to outline their recycling infrastructure in the postal questionnaire. The local authorities stated whether or not they, or private collectors operating within their functional area, offered a kerbside recycling service; they also gave details of the presence of bring banks and civic amenity centres. Local authorities were also asked to detail any changes to recycling infrastructure since the introduction of PBU charges within their functional area. This information was outlined in further detail in [Section 3.2](#).

Local authorities were asked to outline the tonnage of recyclables collected within their functional area in 2005. These figures are also available for 2004 and 2003, using EPA National Waste Database local authority returns. On comparing kerbside recycling figures prior to and subsequent to introduction of PBU charges, for the 12 local authorities that moved to PBU charges during the period for which figures were available to the study, there is a clear increase in the tonnage of dry recyclables collected from kerbsides, see [Table 3.19](#).

This increase in kerbside recycling may be as a result of PBU charges or of access to recycling services. To investigate whether or not recycling rates increased without the presence of PBU charges, [Table 3.20](#)

presents the change in tonnes of dry recyclables collected from households in the 2 years prior to PBU charges.

[Table 3.20](#) illustrates that overall the change in the amount of kerbside recyclables collected in the year subsequent to PBU charges is similar, in the majority of cases, to the change in the amount of kerbside recyclables collected in the two years prior to the charges.

No local authority stated that kerbside recycling services were increased subsequent to the introduction of PBU charges. Based on this response it cannot be assumed that the increase in kerbside recycling is as a result of increased service provision. On this basis, initial access to the service, increased environmental awareness and the introduction of PBU charges may have worked together to give a year-on-year increase in kerbside recycling. However, further details on the number of households with access to kerbside recycling services are necessary to determine the impact of PBU charges on kerbside recycling.

### 3.4.3 PBU and illegal waste diversion

It has not been possible to evaluate quantitatively the impact of PBU domestic waste charges on illegal waste diversion. Local authorities did not record data on numbers of illegal waste diversion incidents prior to PBU charges, ruling out the possibility of making comparisons. Most of the local authorities did not have dedicated waste enforcement teams or community wardens prior to PBU charges. Central government funding for community

**Table 3.19. Impact of PBU charges on waste recycled at kerbside.**

Local authority	Date introduced PBU charges	Difference in tonnes of dry recyclables collected per year in the year prior to and subsequent to introduction of PBU charges (2004–2005 difference)
Clare	December 2004	-3,317 <sup>1</sup>
Dun Laoghaire–Rathdown	January 2005	+2,357
Kerry	January 2005	+798.68
Laois	January 2005	+1,025.94
Leitrim	January 2004	+660 (2003 and 2004 difference)
Limerick County	December 2004	+1,671.28
Longford	January 2005	+1,171.93
South Dublin	February 2004	+4,512 (2003 and 2004 difference)
South Tipperary	February 2004	+2,373 (2003 and 2004 difference)
Cork City	January 2005	+5,241.18
Dublin City	January 2005	+4,460
Limerick City	December 2004 <sup>2</sup>	+385.89

<sup>1</sup>The reasons for Clare County Council's decrease in dry recycling from 2004 to 2005 are not evident from the postal questionnaire response.

<sup>2</sup>One company used PBU prior to this.

**Table 3.20. Kerbside recycling trend in the two years prior to introduction of PBU charges in local authorities introducing the charge in late 2004/early 2005.**

Local authority	Difference in tonnes of dry recyclables collected per year in the year prior to and subsequent to introduction of PBU charges (2004–2005)	Difference in tonnes of dry recyclables collected per year between 2003 and 2004
Clare	-3,317 <sup>1</sup>	+3,170
Dun Laoghaire–Rathdown	+2,357	+9,551
Kerry	+798.68	+976.87
Laois	+1,025.94	+1,050.60
Limerick County	+1,671.28	+1,919
Longford	+1,171.93	+377.85
Cork City	+5,241.18	+1,193
Dublin City	+4,460	+3,145
Limerick City	+385.89	-939 <sup>1</sup>

<sup>1</sup>It was not possible to ascertain the reasons for this decrease in kerbside recycling from the questionnaire responses.

wardens only began in 2002. Throughout the country the number of recorded illegal waste diversion incidents has increased in recent years; however, there are a number of factors that may account for this increase such as improved environmental awareness leading to increased public reporting of incidents, improved recording systems, increased funding of waste enforcement staff, and increased funding allowing for improved methods of monitoring illegal waste diversion. In interviews conducted with all 34 local authorities, the majority were keen to stress the above factors as reasons for increased numbers of recorded illegal diversion incidents year on

year. Nonetheless, several local authorities did feel that PBU was an additional factor, but they had no detailed or accurate figures to support these claims.

### 3.5 Impact of PBU System

Waste collection figures used in this research were gathered at local authority level, grouping together all waste collected by all waste collectors into one figure. Owing to the number of waste collectors operating within each local authority's functional area using an array of different waste charging systems, it is not possible to say conclusively whether one system is more effective at

reducing waste presentation rates than another. The use of a certain system may be effectively reducing the amount of waste presented in a local authority, but this may not be visible owing to use of other systems within the local authority possibly increasing presentation rates. The absence of detailed data on the number of households served by each waste collector in a local authority prevents any knowledge of which system is most widely used within a local authority's functional area and therefore affects the ability to truly assess the impact of a charging system on household waste.

Of the 34 local authorities, only five use one system throughout most of their functional area; these five are local authorities where the council collects the majority of the waste, with private collectors absent from the area or only collecting from a small percentage of the houses. All five use a tag-based system, some with and some without a flat-rate service charge. Of these, one local authority did not provide details of its 2005 waste collection figures; this local authority will be discounted in this analysis.

The mean amount of waste presented per person across the country in 2005 was 216 kg, with 126 kg as the minimum (Galway City Council) and 482 kg as the maximum (Offaly County Council). The four local authorities using almost exclusively tag-based systems experienced waste presentation rates of 158 kg, 211 kg, 247 kg and 322 kg in 2005. This finding of two local authorities demonstrating an above-the-average waste presentation rate and two below may suggest that use of a tag-based system is not particularly successful in reducing waste presentation. Owing to the size of this limited survey, this finding should not be taken as conclusive evidence on the impact of tag-based systems. From the information available for this research, it has not been possible to distinguish between the three PBU systems in terms of effectiveness in reducing waste presentation.

### **3.6 Selection of PBU system**

#### **3.6.1 Reasons for selection**

Local authorities were asked to outline the reasons they selected the PBU system in place over other PBU systems. This was asked in order to determine the attributes of different PBU systems from the perspective of local authorities. Fifteen (44%) of the local authorities stated that the question was not applicable to them as private collectors operate exclusively in their functional

area, and therefore they had had no input or influence on the decision. One local authority did not answer the question. Three local authorities are not included in this analysis, of which two did not respond to the questionnaire and the third has not introduced PBU charges. Fifteen (44%) answered the question. Of these 15, 13 local authorities use a tag-based/pay-per-lift system (although in several cases private collectors operating within their functional area used volume-based systems). Ten local authorities who chose this system were influenced by its ease of implementation and administration. Five local authorities cited cost factors as a reason for choosing this system, stating that tag-based systems minimise costs to the local authority and simplify income collection. When used in conjunction with a flat-rate service charge local authorities have noted that this guarantees revenue collection. Two local authorities felt that this system is in line with the polluter-pays principle and two felt it was an equitable system. One local authority stated that implementing a tag-based system allowed them to increase the capacity of their service by reducing their costs, allowing them to take on further waste collection routes.

Two local authorities that replied to this question use a weight-based system of domestic waste charging. One of these local authorities stated that it introduced this system as it felt it met DoEHLG guidelines. The other local authority introduced pay-by-weight based on a number of factors: it felt that this system most accurately applies the polluter-pays principle, is a clear and transparent charging system, prevents waste compacting and provides a clear incentive to reduce waste presentation and increase recycling. It also notes that the EPA National Waste Database is compiled using weight-based statistics.

No local authority that responded to this question used volume-based charges. This is because volume-based charges are dominated by the private sector. This demonstrates the need for contact with the private sector in further research.

#### **3.6.2 Advice sought**

Local authorities were asked to detail any advice they sought, and the sources of this advice, when selecting a PBU system. Thirteen (38%) of the local authorities stated that the question was not applicable to them as private collectors operate exclusively in their functional area, with no local authority input. Two local authorities did not answer this question (6%). Three local authorities are not

included in this analysis, two did not respond to the questionnaire and the third has not introduced PBU charges. Sixteen (47%) answered the question. Five of the 16 local authorities replied that they sought no external advice. Of the remaining local authorities, nine looked to the experiences of other local authorities and sought their advice on PBU systems. One local authority reviewed existing systems in Europe. Two local authorities held a pilot study into a charging system and then chose whether or not to adopt this system based on their findings. Two selected a PBU system in consultation with waste collectors within their functional area. Two local authorities used a consultancy to assess the PBU options and select an option suitable for the local authority.

### **3.6.3 Selection of charges**

The local authorities were asked to give details of how they set the charges issued under the PBU system. Eight local authorities stated that this question was not applicable to them as the collection is exclusively private. Twenty-one (62%) local authorities answered the question. Twelve of the 21 local authorities that answered the question stated that the charges were selected to cover the costs of providing the service. Two local authorities selected their charges based on charges already used by other nearby local authorities. Two replied that market forces dictated their charges, citing the need to remain competitive with other waste collectors operating in the area. One local authority chose its charges to avoid a dip in income and one local authority based its charges on what it felt would be a fair and acceptable charge for householders.

## **3.7 Implementation Issues**

### **3.7.1 Ease of implementation**

Twenty-nine local authorities answered this question. Twelve local authorities (35%) responded that they experienced difficulties implementing PBU charges. Five local authorities (15%) responded that they did not experience any difficulties. Twelve local authorities (35%) responded that the question was not applicable to them, as waste is collected by private waste collectors exclusively. Difficulties experienced included public resistance to the charges, problems enforcing charges in waste collection permits, pressures on local authority resources, and stolen bin tags.

### **3.7.2 Factors influencing ease of implementation**

According to the literature on PBU charges, tag-based systems are the easiest PBU systems to introduce, whereas weight-based systems are the most difficult to implement (Miranda *et al.*, 1996). As private-sector operators were not included in this phase of the research, only the experiences of local authorities were revealed. On this basis, only the difficulties experienced with systems used by local authority collectors can be assessed.

One council introduced a volume-based charging system; this local authority did not experience any difficulties in implementation. Eleven councils introduced a tag-based charging system. Of these 11, 36% (4) did not experience any difficulties and 64% (7) did experience difficulties. Two councils implemented a weight-based system and both (100%) experienced difficulties. One of the councils that implemented pay-by-weight also implemented a tag-based system in parts of the county; therefore its response may apply to both systems.

Of the seven councils that experienced difficulties, implementing a tag-based charge, two local authorities experienced difficulties specific to the use of tag-based charges. These two local authorities stated that tags were stolen off bins, creating difficulties with implementation. The remaining difficulties experienced by local authorities using tag-based charges included initial public resistance to the implementation of the charges and financing difficulties when implementing charges.

Both local authorities implementing pay-by-weight charges experienced difficulties, although the majority of these difficulties do not appear to be specific to the use of a weight-based system. One council experienced difficulties meeting the demand for recycling facilities on implementation of the pay-by-weight charges. The second local authority experienced staffing pressures owing to the level of public enquiries generated. The ongoing maintenance of data collection was also given as a difficulty experienced; this difficulty may be specific to weight-based charges as this system is considered to be the most demanding in terms of administration.

These findings appear to support findings presented in the literature, with 64% of local authorities that use tag-based systems in their functional area experiencing difficulty with implementation of PBU charges as opposed to 100% of local authorities that use weight-based

systems in their functional area, though as noted above, difficulties experienced do not always appear to be system specific.

### 3.8 Local Authority Satisfaction with PBU Charges

#### 3.8.1 Levels of satisfaction

Local authorities were asked how satisfied they are with the effects to date of the PBU charges implemented in their functional area. Five local authorities stated that they were very satisfied and eight stated that they were satisfied with the effects to date of PBU charges within their functional area, citing increased recycling, decreased waste to landfill and greater cost recovery as reasons for their satisfaction.

Seven local authorities expressed dissatisfaction with the effects of PBU charges. Four of these local authorities expressed dissatisfaction with the form of PBU charges used by private waste collectors within their functional area. Within these four local authorities volume-based and tag-based systems are the predominant forms of charging for waste collection. One of these local authorities stated a preference for weight-based charging, although this is not used within its functional area. A second local authority states its dissatisfaction with the tag-based system in place saying that *“this system is the basic acceptable minimum standard”*. Three local authorities cite an increase in unauthorised waste diversion since the introduction of the PBU charges as the reason for their dissatisfaction.

Seven local authorities expressed mixed feelings towards the effects of PBU in their functional area. They felt satisfied with the charges in terms of their impact on waste to landfill and recycling, but they also had reservations with regard to the impact on lower-income households, the impact on waste collectors' costs in the face of decreased presentation rates, the lack of competition, the breakdown of the charging structure, increases in unauthorised waste diversion, charging systems in place within their functional area, and fuelling the notion that recycling is free. One local authority stated that *“the fixed element of the charges is considerably higher than the variable element, and big efforts made in separating waste at source is not being proportionately reflected in reduction in overall charge”*. The local authority notes that there is a lack of transparency in how the total charge is calculated, with itemised bills not issued to householders by collectors, prompting the concern that the reduced waste to landfill is not reflected in reduced costs to consumers which may reduce householders' ability to see the real benefit of their source reduction. Local authorities are also concerned that a reduction in presentation rates will lead to increased financial pressure on the local authority, and are concerned about their ability to fund free green and brown bin collection services in the future.

#### 3.8.2 Factors influencing satisfaction

Table 3.21 examines whether the impact of PBU in terms of waste presented per person/year influences the level of satisfaction with the charges experienced by local authorities. The local authorities shown are those that implemented charges during the period 2003–2005, the years for which this project has access to waste

**Table 3.21. Local authority satisfaction and change in waste presented subsequent to PBU.**

Local authority	Satisfaction with effects of PBU charges	Impact of PBU charges in terms of waste presented per person/year (kg)
Clare	Mixed feelings	-56
Dun Laoghaire–Rathdown	Mixed feelings	-133
Kerry	Satisfied	-34
Laois	Unsatisfied	+39
Leitrim	Very satisfied	+1
Limerick	Mixed feelings	-76
Longford	Unsatisfied	-81
South Dublin	Satisfied	-52
South Tipperary	Unclear response	-91
Cork City	Mixed feelings	-84
Dublin City	Very satisfied	-7
Limerick City	Mixed feelings	+11

presentation figures, and therefore the only local authorities in which the impact of the charges can be seen.

Three of these local authorities experienced increases in waste presentation subsequent to implementing PBU charges; of these, one local authority feels unsatisfied, one expressed mixed feelings and one feels very satisfied with the effects of the charges. Laois County Council feels dissatisfied with the charges based on the system of PBU charges used within the local authority. The private collectors operating within the local authority use a volume-based charging system; the local authority states that its reason for dissatisfaction is that *“pay-by-weight offers more incentive to recycle than pay-by-volume”*. Limerick City expressed mixed feelings on its satisfaction with PBU charges, stating that there is a shortage of competition in the waste business and it is difficult to see the true effects of PBU. Recycling rates have increased; however, householders find that the PBU system is not transparent; it states *“It is difficult for householders to see the true benefits, i.e. cost savings, for increased recycling rates because the proportion of the flat-rate service charge attributable to weight is relatively low comparable to the overall charge”*. It feels that the PBU system also has the disadvantage of fuelling the notion that recycling is ‘free’ with no associated costs.

Leitrim County Council expressed satisfaction with the impact of the charges to date, despite a slight increase in waste presentation per person. The high compliance rate with PBU charges across the county is cited as the reason for its satisfaction.

Nine local authorities experienced a decrease in waste presentation subsequent to the introduction of PBU charges. Of these nine, four local authorities expressed mixed feelings towards the impacts of PBU charges, three expressed satisfaction, one expressed dissatisfaction and one local authority gave an unclear response on its satisfaction level.

Two of the local authorities expressing satisfaction did not offer reasons for their satisfaction. The third local authority stated that *“The introduction of charges has resulted in the diversion of waste from landfill, increased recycling and public awareness of waste management issues generally. The council is also recovering part of the cost of this expensive service from those who receive the service,*

*whereas previously it was funded solely from its own resources”*.

Longford County Council expressed dissatisfaction with the impact of the charges, saying that they have resulted in an increase in littering and fly-tipping in the local authority.

Four local authorities, Clare County Council, Cork City, Dun Laoghaire–Rathdown, and Limerick County, expressed mixed feelings in terms of their satisfaction with PBU charges. All four were satisfied with the environmental impact of the charges; however, they felt that several negative issues arose from use of the charges.

Clare County Council stated that it is satisfied that PBU is succeeding in diverting waste from landfill to recycling. However, the local authority has heard reservations expressed by many householders about the charging structures used in its functional area. There is dissatisfaction that the fixed element of charges is considerably higher than the variable element, and big efforts in separating waste at source is not being proportionately reflected in reduction in overall charge. Itemised bills are not issued by waste collectors; this leads to a lack of transparency in seeing how the total charge is calculated. The local authority feels that customers need to see the PBU system being operated very transparently and be ‘rewarded’ for their efforts in reducing waste volumes through lower charges. Limerick County Council reiterates these concerns, saying *“it is difficult to see the true effects of PBU. Recycling rates have increased – however individual householders find that the PBU system is not transparent. It is difficult to see the true benefits, i.e. cost savings, for increased recycling rates because the proportion of the flat-rate service charge attributable to weight is relatively low compared to the overall charge. It is also difficult for householders to compare services of different operators. The PBU system also has the disadvantage of fuelling the notion that recycling is ‘free’ with no associated costs”*. Dun Laoghaire–Rathdown also has concerns over the cost of recycling, stating that *“financially, pressures arise when unit costs increase as householders present less waste for landfill. Costs of green bin (plus future brown bin) require review, i.e. direct charge or not?”* Cork City Council expressed concern over an increase in illegal dumping within the City, and the weight of the wheelie bins.

## 4 Summary and Conclusions

### 4.1 Summary of Key Findings

#### 4.1.1 Waste collection

- The research found that 53% of local authorities use exclusively private waste collection, 41% use a combination of both private waste collectors and the local authority to collect domestic waste, and 6% do not use any private waste collectors within their functional area to collect domestic waste.
- The average number of waste collectors operating within each local authority's functional area is five.

#### 4.1.2 Charging systems

- There are three systems of PBU charges used in Ireland: volume-based systems, tag-based systems and weight-based systems.
- Of the 34 local authorities in Ireland, 20 (59%) use two PBU charging systems within their functional area, nine (26%) use one system, and five (15%) use three systems.
- The majority of local authorities (82%) use tag-based systems through one or more waste collectors within their functional area. Volume-based systems are used in 65% of local authority functional areas, and weight-based systems are used in 21%. Six local authorities (18%) still use a flat-rate charge in part of their functional area. Flat charges are used by 16 waste collectors in the country.

#### 4.1.3 Recycling

- Twenty-nine local authorities responded that a kerbside recycling service is present within their functional area. One local authority responded that no kerbside recycling service is currently in place.
- The local authority that does not offer a kerbside recycling service has the fifth highest waste presentation rate per person in the country, at 310 kg per person.
- Local authorities experienced an increase in recycling subsequent to the introduction of PBU charges. However this increase may be the result of improved access to kerbside recycling, as information was not

available to the research on the number of households with access to kerbside recycling prior to and subsequent to PBU charges.

- Analysis of kerbside recycling prior to PBU charges revealed that kerbside recycling increased without PBU charges being present. This may reveal that access to recycling services is a key factor in increasing recycling behaviour in households.

#### 4.1.4 Waste presentation

- The local authority with the lowest rate of waste presentation per person, 126 kg, offers universal recycling collection on a weekly basis. This local authority does not use PBU charges; instead, householders are charged using an annual flat rate. This local authority focused on providing recycling services and education to reduce waste to landfill. This finding suggests that access to recycling and environmental awareness may play as great a role in reducing waste presentation as the use of economic instruments.
- Average waste presentation rates in local authorities without PBU charges have increased over time, from 240 kg per person in 2003 to 266 kg per person in 2004, a 26-kg increase.
- Average waste presentation rates in local authorities with PBU charges have decreased over time, from 227 kg per person in 2003, to 221 kg in 2004, to 219 kg per person in 2005.
- As more and more local authorities moved from flat-rate charges to PBU charges, there is an overall nationwide trend of decreasing waste presentation rates year on year. This finding could indicate that PBU charges have reduced waste presentation rates in Ireland on a nationwide level.

#### 4.1.5 Illegal waste diversion

- Data on numbers of reported illegal waste diversion incidents do not exist in the majority of local authorities for the years prior to PBU charges; this prevented analysis of the impact of PBU charges on illegal waste diversion.

- Interviews with local authority waste enforcement officers revealed that overall there has been an increase in the number of waste incidents reported to the local authorities; however, officers were keen to point out that this may not be related to the introduction of PBU charges, stressing the role played by increased environmental awareness and altering social values.

#### **4.1.6 Charging**

- The main motivation for local authorities when selecting the amount to charge householders under their selected PBU system was to cover the costs involved in collecting and disposing of household waste.

#### **4.1.7 Ease of implementation**

- Local authorities selecting to implement tag-based charges selected to use this system primarily owing to its ease of implementation. Other factors that influenced their decision to use tag-based charges were cost factors and the equitable nature of the system.
- Local authorities selecting to implement weight-based charges selected to use this system owing to its reflection of the polluter-pays principle, its discouragement of waste compacting and its creation of clear incentives to reduce waste presentation.

#### **4.1.8 Difficulties**

- Twelve local authorities stated that they experienced difficulties such as public resistance, enforcement and limited resources when implementing PBU charges; five stated that they did not experience difficulties. Local authorities using weight-based charges experienced more difficulties than those using tag-based charges.

#### **4.1.9 Levels of satisfaction**

- Thirteen local authorities stated that they were either satisfied or very satisfied with the impact of PBU charges within their functional area. The reasons given for satisfaction were increased recycling, decreased waste to landfill and greater cost recovery.
- Seven local authorities stated that they were dissatisfied with the impact of the charges, and seven expressed mixed feelings on the charges. The main reason given for dissatisfaction was the forms of PBU charges used by private waste collectors within their functional area. Other reasons given included increased illegal waste diversion and the costs of recycling.

## **4.2 Directions for Further Research**

Owing to the complex ownership of domestic waste collection in Ireland it has not been possible to identify a pattern informing types of charges, cost of charges and associated infrastructure that work together to successfully reduce waste presentation; therefore, it was not possible to develop a best practice model of a PBU system. Furthermore, one system might be best in all places – the most appropriate system may depend on size of local authority, density of population, etc., but there might be basic principles that can be used when making a decision on a PBU system; it was not possible to identify these from research conducted so far because of non-comparable or inaccessible data. The study found that the local authority level was not the appropriate level at which to gather data for evaluation of waste systems. Waste presentation and recycling figures were gathered at local authority level, and not disaggregated into figures per collector, whereas systems are implemented on a collector, not local authority, level. In order to analyse the influence of PBU systems on waste management behaviour, further study, at the level of waste collectors rather than local authorities, is required.

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## **Appendix 1    Local Authority Analysis**

This appendix contains the county-by-county findings from nationwide PBU research conducted in 2006. The charges listed are only valid for that time period and may

be subject to changes over time. County Councils are listed first, alphabetically, followed by City Councils, which are also listed alphabetically.

# A1 Carlow County Council

**Table A1. Table of findings.**

<b>Ownership of collection</b>	Private waste collection
<b>Introduction of PBU charges</b>	Yes One collector moved to PBU in January 2005, the second moved to PBU in March 2000
<b>Collection type</b>	Mixed collection type, tag-based and volume-based systems
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	No
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Unsatisfied

## Summary

### *Collection type*

Carlow County Council uses private collection exclusively to collect domestic waste. Until recently there was only one waste collector operating within the local authority's functional area. In March 2006, a second private waste collector began operations within Carlow County Council.

### *Introduction of PBU*

PBU charges began in the local authority in January 2005, with the entire county using PBU by March 2006. The private waste collectors offer a number of different charging options: tag-a-bag, tag-a-bin and a volume-based system, all of which fall under the heading of pay-by-volume.

There is no waiver scheme in operation.

### *Recycling infrastructure*

The local authority did not increase the recycling infrastructure provision with the introduction of PBU charges, and there is currently no kerbside recycling in Carlow County Council.

### *Illegal waste monitoring*

The local authority does not feel that it has a system in place to monitor illegal waste diversion. Members of the public can report incidents of illegal waste diversion to Carlow County Council by dropping into the local authority offices or by calling the 24-h hotline. The system for recording incidents of illegal waste diversion is complicated. Litter and waste complaints are recorded separately, and Carlow Town Council records its own figures separately to Carlow County Council figures. The

local authority introduced a complaints register in 2005. Prior to this there was no formal recording of complaints and on this basis there are no figures available before 2005. All complaints reported by the public are followed up by litter wardens, though the local authority does not conduct any proactive monitoring of illegal waste diversion.

### *Expected findings*

In introducing PBU charges but not establishing recycling infrastructure or offering waivers, the waste charging system in Carlow County Council can be considered passive. In addition, a subscription-can charging system is in use in part of the county; this pay-by-volume system is known to be the least effective of the possible PBU charges and is the minimum a waste collector can do to comply with the PBU rules. Furthermore, Carlow County Council can be classed as a reactive local authority in terms of its actions to tackle illegal waste diversion. With the combination of pay-by-volume use, lack of recycling infrastructure and a reactive illegal diversion system, it was expected that Carlow County Council would not have substantially decreased its volume of waste to landfill nor increased its volume of waste to recycling, since the introduction of PBU charges. It was also expected that illegal waste diversion might have increased within the local authority's functional area.

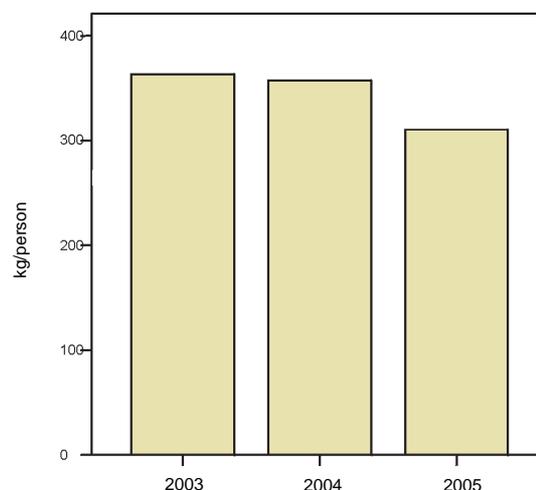
### *Actual findings*

As PBU charges were not introduced within the time period for which waste presentation figures were available to this study it has not been possible to determine the impact of PBU charges on waste management behaviour. However, there has been a slight decrease in the amount

of waste presented for collection per person over the years studied, 2003–2005 (see Fig. A1). In addition there has been a slight increase in the amount of kerbside recyclables collected within the county, with 1,028 t collected in 2005 compared to 936 t in 2004. There are no figures available for illegal waste diversion records in 2004 to enable a comparison of pre- and post-PBU illegal waste figures.

### ***Satisfaction with charges***

The local authority itself has expressed dissatisfaction with the implementation of PBU within its functional area, stating that “*the method being used by the contractors...is the basic acceptable minimum standard*”. This statement indicates that the local authority possibly feels a lack of control over the activities of the private waste collectors operating in its area, which indicates a flaw in the current



**Figure A1. Change in waste presented per person in Carlow County Council.**

legislation and permitting system in place for privately contracted waste collection.

## A2 Cavan County Council

**Table A2. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in January 2003
<b>Collection type</b>	Mixed collection, tag-based and volume-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	No details given
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Mixed feelings

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Local authority collection is undertaken by Cavan County Council and Cavan Town Council. In addition, there are three private waste collectors operating throughout the local authority's functional area.

#### *Introduction of PBU*

PBU charges were introduced in Cavan County Council in January 2003.

The local authority chose to implement a tag-a-bag system. This method was selected as it is in line with government policy on waste charging and it was considered an "equitable method of charging". Both the Town Council and the County Council charge €4.45/tag. These charges were selected based on waste collection and disposal costs.

The three private waste collectors that collect household waste within Cavan County Council use either volume-based charges or tag-based charges, with one collector using both of these systems. Under a volume-based system charges vary from €324 to €330 *per annum* for a 240-l bin. Under the tag-based system a refuse bag costs €10, with a €120 *per annum* flat-rate service charge.

There is no official waiver in place within the County Council. The Council states that "all requests for assistance (are) dealt with on an individual basis". If granted a waiver, households are provided with free PBU bags.

#### *Recycling infrastructure*

Details are not given on a kerbside recycling collection. The local authority states that there has been a small change in the provision of recycling infrastructure since the introduction of PBU charges with a second civic amenity site being opened, and a third in the design stage.

#### *Illegal waste monitoring*

Cavan County Council can be considered to have a proactive illegal waste monitoring system. It records public reports on an MS Access database. The majority of public calls are followed up by waste officers. The local authority conducts vehicle checkpoints in conjunction with Gardaí to identify unauthorised waste collectors and to enforce details of permits in licensed collectors. CCTV is used to monitor fly-tipping activity; this has led to several prosecutions. The local authority plans to survey households in the near future to identify those without a licensed waste collection service.

#### *Expected findings*

Cavan County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the use of volume-based waste charges, no known kerbside recycling collection and the absence of an official waiver scheme, Cavan County Council would have offset the positive impacts of using a tag-based system and a proactive illegal waste monitoring system and have experienced only a slight decrease in domestic waste to landfill and increase in domestic waste to recycling.

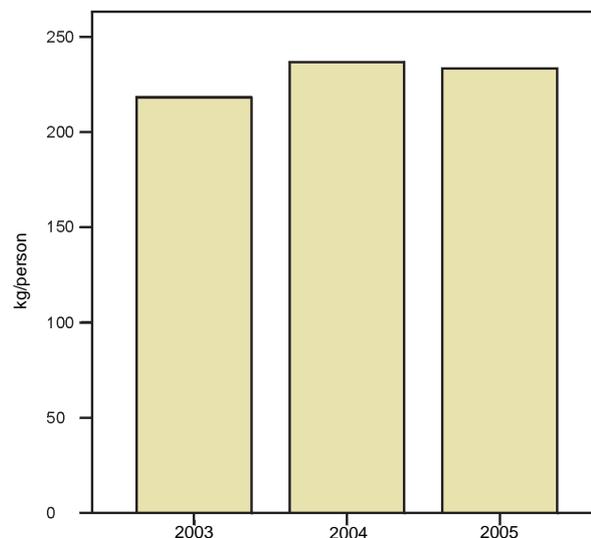
#### *Actual findings*

As PBU charges were not introduced within the time period for which waste presentation figures were available

to this study it has not been possible to determine the impact of PBU charges on waste management behaviour. However, an increase in waste collected from households was realised over the period 2003–2005, with 12,337 t collected in 2003 compared to 13,390 t in 2004 and 14,929 t in 2005. This increase cannot be explained fully by increases in population as, when linked to population, it can be seen that there has been a slight increase in waste presented per person in the years 2003–2004, with a slight decrease seen in 2005 (see Fig. A2). No figures on illegal waste incidents exist prior to 2004 and on this basis it is not possible to compare before and after figures for illegal diversion. However, in the years subsequent to PBU introduction there has been an increase in recorded incidents, with 551 in 2004 and 701 in 2005.

#### *Satisfaction with charges*

The local authority states that “*the charge is seen as positive as it promotes the polluter pays-principle. However, the charge does not facilitate those on lower incomes*”.



**Figure A2. Change in waste presentation per person in Cavan County Council, 2003–2005.**

## A3 Clare County Council

**Table A3. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection.
<b>Introduction of PBU charges</b>	Yes, December 2004
<b>Collection type</b>	Mixed, flat-rate, volume-based, tag-based and volume-based with pay-by-weight aspects
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, weekly or fortnightly collection
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Mixed feelings

### Summary

#### *Collection type*

Clare County Council uses private collection exclusively to collect domestic waste. Five waste management companies operate in the local authority's functional area.

#### *Introduction of PBU*

The use of PBU charges was implemented in the local authority in December 2004 under the waste collection permit regulations. The private waste collectors offer a number of different charging options: volume-based, volume-based with pay-by-weight aspects, and weight-based. One waste collector uses a flat-rate charge.

There is no waiver scheme in operation.

#### *Recycling infrastructure*

The local authority did not increase the recycling infrastructure provision with the introduction of PBU charges. All waste collectors in the local authority offer a kerbside recyclable collection on alternate weeks.

#### *Illegal waste monitoring*

Clare County Council can be considered to have a proactive illegal waste monitoring system. It has a dedicated hotline to receive public complaints, and records public reports on a computerised complaints database. All public calls are followed up by litter wardens. The local authority conducts vehicle checkpoints in conjunction with Gardaí to identify unauthorised waste collectors and to enforce details of permits in licensed collectors. Checkpoints were initially used frequently but more recently the local authority has reduced the use of these, as it does not feel they are of much benefit in terms

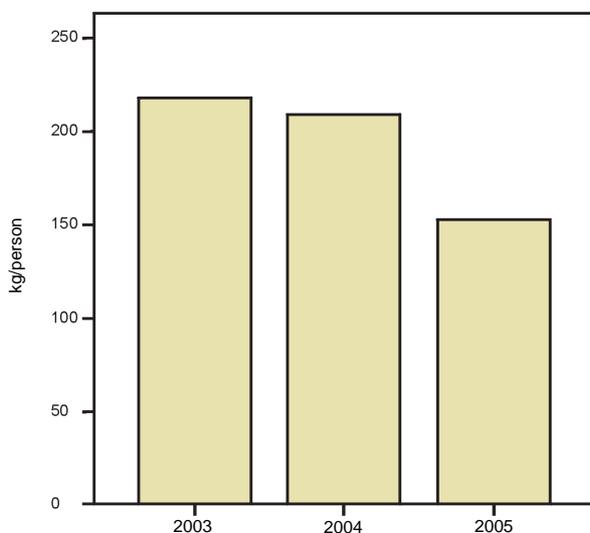
of catching persons responsible for unauthorised waste activity. CCTV mobile cameras are used to monitor fly-tipping activity in bogs; this has led to several prosecutions. The local authority plans to survey households in the near future to identify those without a licensed waste collection service. Currently 30% of households in the local authority do not use a licensed waste collection service. The local authority has experienced a decrease in the amount of evidence found in fly-tipped waste, feeling that fly-tippers are getting 'cute' and hiding personal details.

#### *Expected findings*

Clare County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that, owing to the pay-by-weight waste charge in part of the local authority, the use of a green bin collection throughout the county, and the proactive system of monitoring illegal waste diversion, Clare County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. However, since volume-based charges are used in the majority of the County Council's functional area and waivers are not available to low-income households, these aspects of the system may offset the positive aspects to some degree.

#### *Actual findings*

Clare County Council experienced a reduction of 56 kg of waste presented per person in the year subsequent to the universal introduction of PBU in December 2004 (see Fig. A3). In 2004 the waste presentation rate per person was 209 kg; this dropped to 153 kg per person in 2005. This decrease in waste presentation on the onset of PBU



**Figure A3. Waste presented per person in Clare County Council, 2003–2005.**

charges followed a decrease of 9 kg per person in the previous year. Although there was a trend of decreasing waste presentation already occurring prior to PBU charges, the introduction of the charges can be considered responsible for the large decrease experienced in the local authority the following year, as recycling infrastructure was not increased during this time period. As the second largest collection company used PBU prior to December 2004 a significant minority of the households would not have experienced any appreciable difference in how they were charged. The largest waste

collector, which services over half of the households, adopted pay-by-weight and this may account for some of the 56-kg reduction. Recycling services have not changed over the duration, further emphasising the effect of the universal undertaking of PBU within the authority. A reduction in the waste presented in the year previous to PBU charges suggests a role in greater awareness in recycling. No figures exist to compare illegal waste diversion figures prior to and subsequent to PBU charges. However, it is felt that there has been an increase in fly-tipping on the outskirts of towns and in secluded areas and an increase in backyard burning.

### *Satisfaction with charges*

Clare County Council reported mixed feelings when questioned on its satisfaction with PBU charges. From an environmental perspective it is satisfied, stating that the charges are “*succeeding in diverting waste from landfill to recycling*”. However, the County Council feels that householders are dissatisfied with the waste collection charging structures in place. Householders feel that “*the fixed element of charges is considerably higher than the variable element, and big efforts in separating waste at source is not being proportionately reflected in reduction in overall charge*”. The lack of transparency in waste charging was highlighted as a problem. As householders are not issued itemised waste bills they are denied the opportunity to appreciate the financial impact of their waste diversion.

## A4 Cork County Council

**Table A4. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, phased in between 2003 and 2005
<b>Collection type</b>	Mixed, weight-based and volume-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, to part of the county
<b>Waiver</b>	Yes, to local authority customers
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Thoroughly satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Cork County Council collects throughout the local authority except on rural routes where roads are inaccessible to waste collection vehicles. There are also seven private waste collectors operating within the county; however, details have only been provided on five of the seven waste collection companies. The private collectors operate throughout the county and are in direct competition with the local authority for customers.

#### *Introduction of PBU*

PBU charges were introduced by Cork County Council on a phased basis. The charges were introduced to West Cork in January 2003, to North Cork in February 2004 and to South Cork in 2005. Details are not provided for the private waste collectors.

The local authority chose to implement pay-by-weight. This method was selected as it *“most accurately applies the polluter-pays principle. It is clear and transparent and provides information if required on a customer-by-customer basis for future waste management planning. The compilation of the National Waste Database and other statistics are weight based; the general public can identify with weight as the goods they buy are often weight based. People would be inclined to cram bins in the case of pay-by-volume and may hold the bin for longer periods, leading to operational concerns that the bin could not empty easily and odour risks for bins stored for very long periods in excess of 4 weeks. It provides a very clear incentive to reduce waste presentation and increase*

*recycling”*. When deciding which waste charging system to use the Council piloted a pay-by-weight system in one division of the county first. The Council *“drew on its own reserves and expertise in a drive to anticipate operational issues, public perception and industrial relations issues, including changes in work practices”*. The County Council charges a €120 flat-rate service charge *per annum* and 46 cent per kilogram of residual waste. The local authority chose the charging amount at budget time by assessing the actual cost of waste management in the county.

The five private waste collectors detailed that collect household waste within Cork County Council use volume-based charges. There are no details of the charges per bin sizes outlined for four of these collectors. The fifth private collector operates a volume-based system with aspects of a weight-based system. The bins are charged at a fixed flat-rate service charge and then the average weights for the size of bin are calculated, i.e. the average weight for a 240-l bin over a 6-month period is given as 400 kg. Each household is charged the flat-rate service charge and the average weight charge. If a customer's total weight is under the average weight, he/she receives a discount on his/her next invoice; if he/she is over the average weight he/she is charged for the extra weight in his/her bin.

Waivers are offered for waste charges to customers of Cork County Council's waste collection service. The waiver criteria are based on the household's source of income, total income, number of dependants or other special circumstances. The waiver is for the annual flat-rate service charge, and householders qualifying get a set discount for the weight of waste presented for collection.

### Recycling infrastructure

A kerbside recycling collection is available to customers of Cork County Council's waste collection service, free of charge. This service is available to all customers in South Cork and 50% in North Cork. It is planned to collect recyclables from all customers in North Cork and West Cork by end 2006/2007. The local authority states that there has been a change in the provision of recycling infrastructure since the introduction of PBU charges: "*the pay-by-weight system has resulted in increased demand for recycling facilities and justified the provision of civic amenity sites and bring banks. The range of materials collected at bring banks will be scaled back in line with the provision of kerbside collection of mixed dry recyclables*".

### Illegal waste monitoring

Cork County Council can be considered to be a proactive local authority in terms of illegal waste diversion monitoring. Litter wardens target 'man-in-van' activity, calling phone numbers in waste collection adverts. Litter hotspots are monitored regularly. The local authority intends to begin monitoring household waste collection activities in the near future.

### Expected findings

Cork County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the pay-by-weight waste charges, the use of a green bin collection throughout much of the county, the presence of waivers and the proactive system of monitoring illegal waste diversion Cork County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. However, since volume-based charges are also used in the County Council's functional area, waivers are not available to householders using a private collection and details are not provided on private customers' access to a green bin collection, these aspects of the system may offset the positive aspects to some degree.

### Actual findings

As PBU charges were not introduced within the time period for which waste presentation figures were available to this study, it has not been possible to determine the impact of PBU charges on waste management behaviour. However, a large decrease in waste collected from households was realised over the time period 2003–2005, with 98,176 t collected in 2003 compared to 104,509 t in 2004 and 57,966 t in 2005. When linked to population it can be seen that following a slight increase in waste presentation per person in 2004 there was a substantial decrease in waste presented per person in 2005 (see Fig. A4). No figures on illegal waste incidents exist prior to PBU charges and on this basis it is not possible to compare before and after figures for illegal diversion.

### Satisfaction with charges

The local authority states that it is "*thoroughly satisfied*" with the effects to date of PBU charges within the county. It goes on to note that "*pay-by-weight has brought about a clear reduction in waste for disposal, going from an average of 1.3 t per annum per household to 0.45 t per annum*".

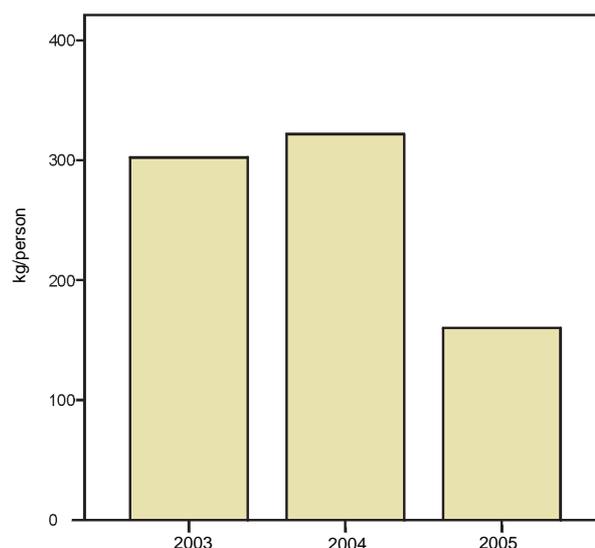


Figure A4. Change in waste presented per person in Cork County Council, 2003–2005.

## A5 Dun Laoghaire–Rathdown County Council

**Table A5. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in January 2005
<b>Collection type</b>	Mixed, tag-based and weight-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, every 4 weeks
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Reasonably satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Dun Laoghaire–Rathdown County Council collects waste throughout the county.

#### *Introduction of PBU*

PBU charges were introduced in Dun Laoghaire–Rathdown County Council in January 2005. A PBU pilot was used on one route in 2004.

The local authority chose to implement two different systems: a tag-a-bag system and a pay-by-weight system. These methods were selected by the Director of Services based on a review of existing systems used in Europe. It was felt that the chosen systems best met the local authority's needs and also met the Department of Environment guidelines. Dun Laoghaire Rathdown County Council charges a €80 annual flat-rate service charge, and in areas using a tag-a-bag system the charge is €4.50 per bin tag, and in areas using a pay-by-weight system the charge is €4 per lift, or 25 cent per kg. These charges were selected to cover costs of waste collection. The local authority used sensitivity analysis to look at the possible impacts of the charge before selecting it. Prior to PBU, householders were charged a flat rate of €300 *per annum* for waste collection services. No details were provided on private waste collectors.

Waivers do exist for waste charges within the County Council. Eligibility for the waiver scheme is based on a means test, and also is available to special cases. These

households are eligible to have the flat-rate service charge of the waste fee waived.

#### *Recycling infrastructure*

A kerbside recycling collection is available to householders every 4 weeks. The local authority opened a new 'recycling park' in late 2004 in anticipation of its introduction of PBU charges.

#### *Illegal waste monitoring*

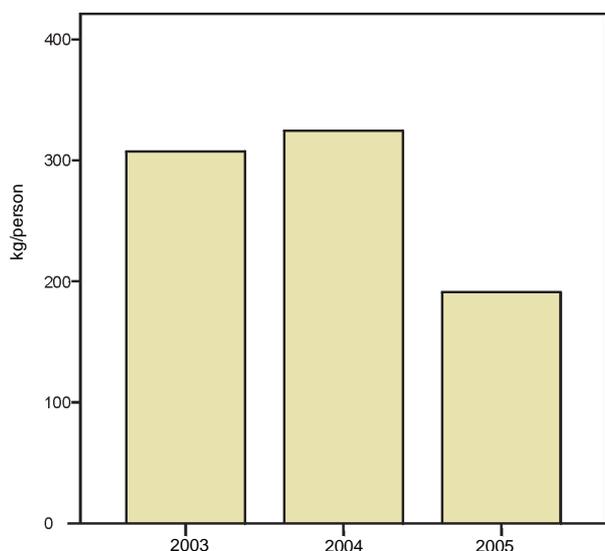
The public can report illegal waste incidents to the local authority and they are all logged into a database. The reported incidents are then distributed to litter wardens to investigate. In addition to this reactive form of illegal waste monitoring, the enforcement team in Dun Laoghaire–Rathdown County Council works with the Gardaí on illegal waste issues.

#### *Expected findings*

Dun Laoghaire–Rathdown County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the pay-by-weight and tag-a-bag waste charges, the use of a green bin collection for no additional cost and the presence of waivers Dun Laoghaire–Rathdown County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling.

#### *Actual findings*

Dun Laoghaire–Rathdown presented 133 kg less waste per person in the year subsequent to the introduction of PBU (2005) compared to the year prior to the inception of



**Figure A5. Change in waste presented per person in Dun Laoghaire–Rathdown, 2003–2005.**

these charges (2004) (see Fig. A5). The local authority adopted both pay-by-weight and tag-based systems. Added to this the provision of free recycling provides an accessible and economic incentive for householders to redirect their waste. Under the flat-rate system in the year

prior to PBU, Dun Laoghaire–Rathdown saw an increase of 17 kg per person presented for collection (see Fig. A5). This highlights the impact of the new charges on householder behaviour.

#### ***Satisfaction with charges***

The local authority states that it had some difficulty implementing the charges from a staffing point of view. It states that the “*staffing levels (were) seriously pressurised to deal with public enquiries on the new system and ongoing maintenance of data collection*”. The local authority has mixed feelings about the impact of the PBU charges to date. It feels that PBU has been a success environmentally, in terms of reducing waste to landfill, but has concerns over the financial implications of the charges on the local authority. It says “*financially, pressures arise when unit costs increase as householders present less waste for landfill*”. It is also concerned about covering the cost of providing a green bin service to householders, and a brown bin service in the future, saying that these services require a review in terms of whether or not the local authority should use direct charges for the services or not.

## A6 Fingal County Council

**Table A6. Table of findings.**

<b>Ownership of collection</b>	Local authority – households Combination of local authority and private waste collection – apartments
<b>Introduction of PBU charges</b>	Yes, in March 2002
<b>Collection type</b>	Tag-a-bin
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. The local authority collects waste from households exclusively, but collects waste from apartments in conjunction with private waste collectors.

#### *Introduction of PBU*

PBU charges were introduced in Fingal County Council in March 2002. Prior to PBU, householders were not charged for waste collection. It should be noted, however, that many householders within the local authority refused to pay the new charges and owing to the legal situation at the time Fingal County Council was required to collect the waste of householders that withheld payment. Changes to legislation in 2003 in the Protection of the Environment Act (DoEHLG, 2003) permitted local authorities to cease waste collection from households for non-payment of domestic waste charges. In this respect, although charges were introduced in Fingal County Council in early 2002, they were only actually implemented in practice after the change in legislation in 2003.

Fingal County Council uses a tag-a-bin charging system. Currently, householders pay €7.50 per tag for a 240-l bin, and €3.75 per tag for a 140-l bin. The local authority selected tag-a-bin as they believe it is a fair system that abides by the polluter-pays principle. When selecting a charge per tag the Council took into account that charges were being introduced in the area for the first time and chose a price they considered to be a fair and acceptable charge with this in mind.

Waivers are offered to households whose sole income is from social welfare, whose income is exempt from tax, and any other household under exceptional hardship circumstances. The waiver criteria are currently being amended to include households in receipt of Family Income Supplement. The number of tags allocated to a household under the waiver scheme is based on the size of the family.

#### *Recycling infrastructure*

Since the introduction of PBU charges, the local authority has expanded its provision of recycling infrastructure. Approximately 85,000 households are currently provided with a kerbside green bin service (using Oxigen); 81,000 of these households have their green bin collected monthly, and 4,000 households have their green bin collected weekly. Since 2003, the local authority has opened one new recycling centre *per annum*. In addition, in 2006, a brown bin pilot scheme was implemented, with 11,000 households getting a brown bin for organic waste.

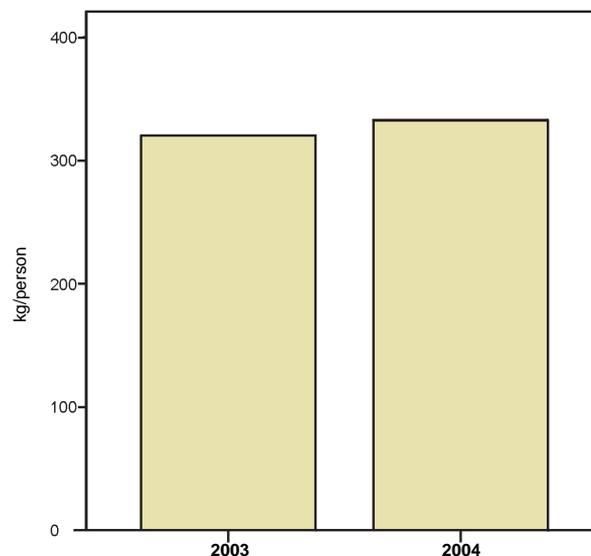
#### *Illegal waste monitoring*

Fingal County Council records all reported illegal waste diversion incidents on an MS Access database, which was established in 2004. The public can report incidents by telephone or by dropping into the local authority offices. The recording system experienced some teething problems and on this basis meaningful data only exist from 2005 on. Since its establishment the data collected on the database have evolved to include more fields of information, whereas initially only basic information on the incident was recorded, for example the location of the waste incident being reported. Waste incidents and litter incidents are recorded separately. Fly-tipping is

considered to be litter and on this basis is recorded and charged as a litter incident rather than as a waste incident. The Waste Management Act was established in 1996, prior to which all waste incidents had to be charged under the Litter Management Act. Fingal County Council found that, on the introduction of the Waste Management Act, 1996, it could not find solicitors who were willing to prosecute using the Act and so on this basis no prosecutions were taken until 2002. The waste enforcement team does not monitor households not using a waste collection service. It used to use CCTV but has now abandoned this. It found that it was of huge cost and very little benefit. Owing to a lack of clear images and use of false registration plates used by dumpers the use of CCTV did not lead to any prosecutions. The local authority is operating a campaign against unauthorised waste collectors. It regularly utilises road checkpoints in conjunction with the Gardaí to stop vans that may carry waste and to check waste collection permits. It finds unauthorised waste collectors difficult to catch and prosecute as they commonly use UK registration plates and have no fixed address. The Council has found that older people are particularly susceptible to ‘man-in-van’ activity, men in high-visibility jackets call to their door offering to take away their waste; many of the older householders consider this to be a Council service, and hand over waste without question. When the waste is reported as dumped, investigated by the waste enforcement officers and evidence is found tracing the waste back to its owner many householders are embarrassed, claiming that they did not realise that the collector was acting illegally. Currently, Fingal County Council is trying to raise public awareness of their responsibility for their own waste, to advise householders that they, the householders, will be fined for fly-tipping when they give their waste to illegal collectors that then go on to fly-tip the waste.

### ***Expected findings***

Fingal County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-a-bin waste charges, the use of a green bin collection at no additional cost, the presence of waivers and the proactive system of monitoring illegal waste diversion Fingal County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. These impacts may not be seen from the introduction of PBU charges in 2002 but



**Figure A6. Waste presented per person in Fingal County Council, 2003–2005.**

instead from 2003 on when the local authority was no longer legally required to collect waste without payment of charges.

### ***Actual findings***

Fingal County Council has found an increase in the number of incidents reported in recent years (2,185 recorded litter incidents in 2004 and 2,242 in 2005), but attributes this to factors other than PBU charges. It states that there has been a large population increase in recent years, that awareness has increased over issues of illegal waste diversion, prompting more people to report incidents, and that its recording system has improved over time possibly resulting in a greater number of incidents appearing on the system. Increased awareness of waste issues has led to greater responsibility by the public: people are sick of dumping and are more inclined to report incidents than ever before; the local authority has also found much higher rates of compliance with waste charges in the last year or two, which it feels is as a result of greater public awareness and responsibility. Fingal County Council did not provide waste collection figures for 2005. However, there was an increase in waste collected from 2003 to 2004 (62,916 t in 2003 and 65,388 t in 2004). Using 2002 census figures, this translates as a slight increase in waste presented per person (see Fig. A.6). However, Fingal County Council saw a 27% population increase between the 2002 and 2006 census; on this basis, the population figures used to calculate the 2004 waste presentation per person rate may be inaccurate.

***Satisfaction with charges***

Fingal County Council found that initially there was opposition to the introduction of PBU charges but that

there have been no problems since changes in the legislation. The local authority states that it is satisfied with the effects of the PBU charges to date.

## A7 Galway County Council

**Table A7. Table of findings.**

<b>Ownership of collection</b>	Exclusively private waste collection companies
<b>Introduction of PBU charges</b>	Yes, in 2003 on a phased basis
<b>Collection type</b>	Mixed, tag-based and volume-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, biweekly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Very satisfied

### Summary

#### *Collection type*

Exclusively private waste collection. Eight private waste collection companies operate within Galway County Council.

#### *Introduction of PBU*

PBU charges were introduced in Galway County Council in 2003 on a phased basis. The companies within Galway County Council operate either a volume-based or tag-based waste charging system, or both systems, within different areas of the county. These methods were selected by the private collectors. The price charged for a bin or bag varies between companies with the annual fee for a 240-l bin varying from €320 to €373, and the price per bag of landfill waste varying from €4 to €6.

Waivers do not exist for waste charges within Galway County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available to the majority of householders throughout the county on a biweekly basis. Seven of the eight private companies operating within the county collect recycling waste for a small charge; this varies from €1.40 to €6 a bag of recyclable waste. One private collector also collects organic waste for a minimal charge. The local authority stated that the recycling infrastructure is continuously being increased, in line with the Connacht Regional Waste Management Plan.

#### *Illegal waste monitoring*

The public can report illegal waste incidents via telephone or by post. All complaints are registered in a log book and are followed up. The Community Warden Network monitors illegal waste activity throughout the county.

#### *Expected findings*

Galway County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. The county has an extensive green bin collection service and people within the local authority's functional area may use a tag-based waste charging system; this combination may promote recycling and reduce waste to landfill. This outcome may be offset by the use of a volume-based waste charging system throughout much of the county. Although these households also have access to a green bin collection service they have little incentive to use this to reduce the residual waste they place out for collection. Furthermore, there is no waiver scheme in place for low-income households and the illegal waste monitoring system can be classed as reactive rather than proactive. Based on the above it was expected that there might be only a slight decrease in waste to landfill and increase in waste being recycled within Galway County Council.

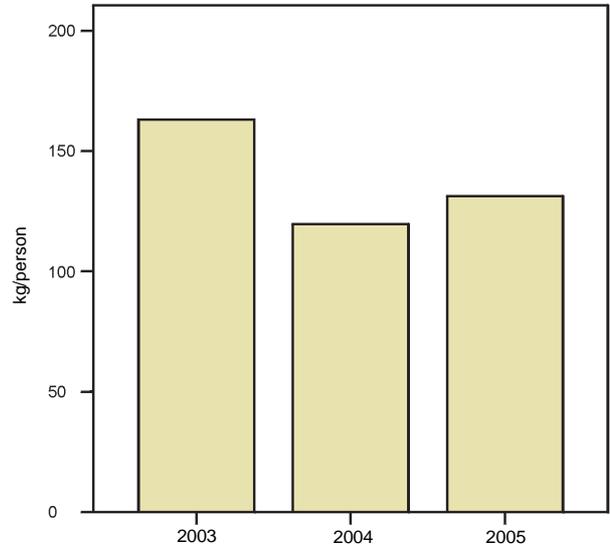
#### *Actual findings*

PBU charges were introduced on a phased basis throughout 2003. The research found that subsequent to the introduction of the charges waste presentation fell from 163 kg per person in 2003 to 120 kg per person in 2004, and rose again slightly in 2005 to 131 kg per person. However, there has been an overall decrease in the amount of waste presented for collection per person

over the years studied, 2003–2005 (see Fig. A7). Galway County Council has seen an increase in the number of illegal waste diversion incidents in recent years, with 506 illegal dumping incidents recorded in 2004 and 582 incidents recorded in 2005. The local authority states that it does not think that there is a significant rise in illegal dumping “as a result of PBU”. It states that illegal dumping is “ongoing and has been for years”. The local authority attributes the rise in recorded incidents as “a result of the public being better informed now through education and awareness”, leading to an increase in the likelihood that a person will report illegal waste activities to the local authority. No illegal waste diversion figures were available for 2003.

**Satisfaction with charges**

The local authority states that it is very satisfied with the effects to date of the PBU charges.



**Figure A7. Change in waste presentation rate in Galway County Council, 2003–2005.**

## A8 Kerry County Council

**Table A8. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in January 2005 by the local authority One private waste collector operates a flat-rate system
<b>Collection type</b>	Mixed, flat-rate, volume-based and tag-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Reasonably satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Kerry County Council collects waste throughout the county. Town Councils collect waste in Tralee, Killarney and Listowel. Two private waste collectors also operate within Tralee. A third private waste collector operates in north Kerry, and a fourth private collector operates throughout the county.

#### *Introduction of PBU*

PBU charges were introduced in Kerry County Council at the beginning of 2005. One of the private waste collectors does not use PBU charges but instead charges households a flat annual charge. This collector plans to implement PBU charges within the next 6 months (by end of 2006).

The local authority chose to implement tag-a-bin for residual waste and pay-by-bag for recycling waste. These methods were selected as technical staff within the Council considered them to be “*convenient, quick and easy to implement*”. Kerry County Council and the Town Councils charge the same amount for waste collection: a €180 annual flat-rate service charge, €8 per bin tag, and €5 for four dry recyclable bags. These charges were selected to cover costs of waste collection and to “*remain competitive with private operators*”.

The three private waste collectors that collect household waste within Kerry County Council use a variety of mechanisms. One collector charges €300 *per annum* for a 240-l bin and €225 *per annum* for a 140-l bin. Another collector charges an annual flat-rate service charge of

€100 and for an additional €200 the householder is issued with 25 bin tags (working out at €8 per tag). If all tags are not used in the year, the householder can receive a rebate for the following year or they can avail of less tags the following year. The final private waste collector within Kerry County Council charges an annual flat-rate service charge of €236 and a waste charge of €140 a year; the waste charge can be altered at the end of the year by the amount of waste a householder places out for collection.

Waivers do exist for waste charges within the County Council. Eligibility for the waiver scheme is based on a means test. The percentage reduction of waste charge is based on income level.

#### *Recycling infrastructure*

A kerbside recycling collection is available to householders fortnightly. The local authority does not state whether or not there has been an increase in the provision of recycling infrastructure since the introduction of PBU charges.

#### *Illegal waste monitoring*

The public can report illegal waste incidents using an 1800 Pollution Complaints Freephone line; householders can also use the main environmental services phone lines. Environmental Services is split between two offices in Tralee and both numbers can be used. All complaints are registered and are followed up by waste enforcement officers. In addition to this reactive form of illegal waste monitoring, Kerry County Council also uses several proactive methods. It is currently conducting a number of household surveys on collection routes and areas without

a waste collection to establish how these households dispose of their waste. The Council makes use of CCTV in five bring banks in an attempt to prevent illegal dumping. It also uses hidden cameras at known illegal dumping sites to capture images of illegal dumpers and their vehicles. In the past, the local authority has used a helicopter to identify illegal dumps in parts of the county.

**Expected findings**

Kerry County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-a-bin waste charges, the use of a green bin collection (although for an additional cost), the presence of waivers and the proactive system of monitoring illegal waste diversion Kerry County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling.

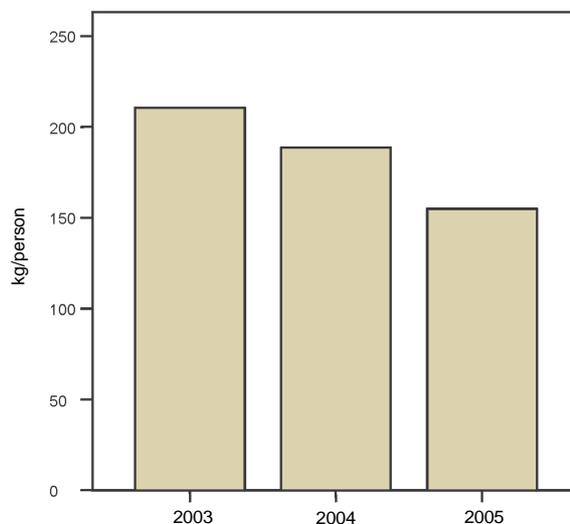
**Actual findings**

The universal inception of PBU in Kerry County Council saw a decrease in weight presented per person of 34 kg (see Fig. A8). This followed a decrease in the year previously of 22 kg waste presented per person. Kerry local authorities collect for some of the area replacing their flat-rate charge with a tag-based system. This change in charging could certainly explain a drop in household waste presented for collection. However, the presence of private companies working within the area assumes that volume-based charges existed in the area before 2005. This presence will have lessened the impact that the introduction of PBU has made in Kerry for the year 2005. The method of volume-based charges might also have negatively affected diversion from landfill as it does not support more effective waste management. Kerry County Council has seen an increase in the number of illegal waste diversion incidents in recent years. The local authority states that it does not think that there is a

significant rise in illegal dumping “as a result of PBU”. Instead it states that “the single biggest reason for the increase in figures is that we have an ongoing awareness campaign where members of the public are encouraged to report any incidence of illegal dumping they know of”. This statement is supported by the figures, although there was an increase in reported incidents from 2004 to 2005, possibly indicating an increase owing to PBU introduction; taking a look further back shows that the number of incidents recorded has been growing every year prior to the introduction of the charges. For example in 2002, 265 incidents were reported, rising to 389 incidents in 2003 and 450 incidents in 2004.

**Satisfaction with charges**

The local authority states that it felt it had some difficulty implementing the charges from a financial point of view. The local authority is “reasonably satisfied to date” with the impact of PBU charges within its functional area.



**Figure A8. Waste presentation rates in Kerry County Council, 2003–2005.**

## A9 Kildare County Council

**Table A9. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, March 2005
<b>Collection type</b>	Tag-based
<b>Recycling expansion</b>	Yes, second civic amenity centre opened
<b>Kerbside recycling collection</b>	Yes, monthly collection.
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

Kildare County Council uses a combination of both public and private collection to collect domestic waste. Five waste management companies operate in the local authority's functional area.

#### *Introduction of PBU*

The use of PBU charges was implemented in the local authority in March 2005. It is unclear whether this date applies to the local authority collection alone or to both the local authority and private waste collections. The local authority selected to use a tag-a-bin system. When selecting a PBU system to implement, the local authority sought advice from the DoEHLG guidelines, the Waste Management Act, and from other local authority experiences. The timetable for implementation influenced its decision to use a tag-based system. Under this system, the local authority charges householders a flat-rate service charge of between €140 and €185, depending on bin size, and between €5 and €7 per tag. The charges were selected for cost recovery. No details were provided by the local authority on the forms of PBU implemented by the private waste collectors.

A waiver scheme is in operation; no details of this scheme were provided.

#### *Recycling infrastructure*

The local authority has opened a second civic amenity centre since the introduction of PBU charges. A kerbside recyclable collection is available monthly; it is unclear whether or not this collection is available to householders

throughout the local authority's functional area, or whether this is available to local authority customers only.

#### *Illegal waste monitoring*

Kildare County Council can be considered to have a proactive illegal waste monitoring system. The local authority records public reports on a computerised complaints database. It has not been possible for the local authority to follow up all public reports of illegal waste diversion owing to a shortage of staff; on this basis only larger complaints are followed up. The local authority conducts vehicle checkpoints in conjunction with the Gardaí to identify unauthorised waste collectors and to enforce details of permits in licensed collectors. CCTV mobile cameras are used to monitor fly-tipping activity. The local authority has experienced a decrease in the amount of evidence found in fly-tipped waste.

#### *Expected findings*

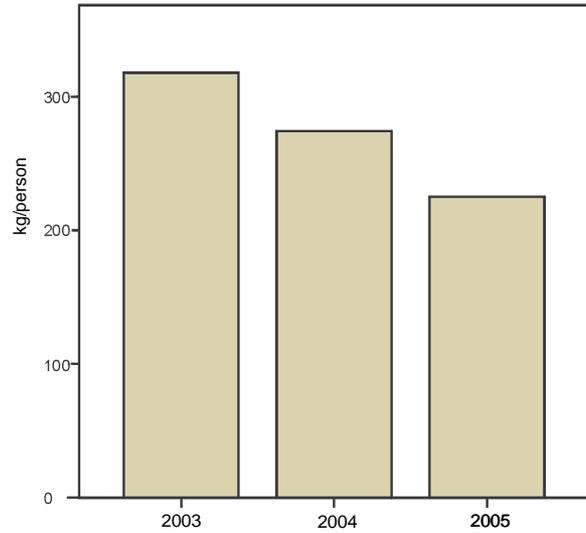
Kildare County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-based waste charge in part of the local authority, the use of a green bin collection, the presence of a waiver scheme and the proactive system of monitoring illegal waste diversion Kildare County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. However, details of the PBU charges used by private waste collectors are not available, private collectors may not operate kerbside recycling services, and the waiver scheme may not apply to private waste collection customers; these factors may influence the amount of waste presentation found in the local authority.

**Actual findings**

Kildare County Council experienced a reduction of 49 kg of waste presented per person in the year subsequent to the universal introduction of PBU in March 2005 (see Fig. A9). In 2004, the waste presentation rate per person was 274 kg; this dropped to 225 kg per person in 2005. This decrease in waste presentation on the onset of PBU charges followed a decrease of 44 kg per person in the previous year. Prior to the stated date of onset of the PBU charges, there was a trend of decreasing waste presentation; as it is unknown when private waste collectors began using PBU charges, there is a possibility that this decrease was prompted by their introduction. As dates were not provided for the introduction of kerbside recycling, there is a possibility that the introduction of a recyclables collection may have prompted the decrease in waste presentation. No figures exist to compare illegal waste diversion figures prior to and subsequent to PBU charges. However, there has been a significant increase in public complaints since the introduction of PBU charges. Fly-tipping is considered a major problem in the local authority. The local authority does not feel that backyard burning is an issue within its functional area.

**Satisfaction with charges**

The local authority stated that it was satisfied with the impact of PBU waste charges to date.



**Figure A9. Waste presentation rates in Kildare County Council, 2003–2005.**

## A10 Kilkenny County Council

**Table A10. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in February 2004 by the local authority Private collectors used PBU charges prior to this
<b>Collection type</b>	Mixed, volume-based and tag-based
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Unsatisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Kilkenny Borough Council collects waste throughout Kilkenny City; the rural areas of the county are serviced by private waste collectors. Seven private waste collectors operate throughout the county.

#### *Introduction of PBU*

PBU charges were introduced by Kilkenny Borough Council in February 2004. The private waste collectors have always used PBU charges.

The local authority chose to implement tag-a-bag for residual waste and for recycling waste. This method was selected to minimise administration and other costs owing to the low number of customers covered by the Borough Council's collecting area. The Borough Council charges €5 per refuse bag and €1.50 per recycling bag. These charges were selected to cover costs of waste collection.

The seven private waste collectors that collect household waste within Kilkenny County Council use either volume-based charges or tag-based charges, with five collectors using both of these systems. Under a volume-based system charges vary from €318 to €425 *per annum* for a 240-l bin and from €240 to €312 for a 140-l bin. Under a tag-based system a refuse bag costs between €5 and €7. One collector operates a volume-based system with aspects of a weight-based system. The bins are charged at a fixed flat-rate service charge and then the average weights for the size bin are calculated, i.e. the average weight for a 240-l bin over a 6-month period is given as 400 kg. Each household is charged the flat-rate service

charge and the average weight charge. If a customer's total weight is under the average weight he/she receives a discount on the next invoice; if he/she is over the average weight he/she is charged for the extra weight in the bin.

Waivers are not offered for waste charges within the County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available to householders throughout the county, except for customers of one small private waste collector. Under a volume-based system recyclables are collected free of charge; under a tag-based system there is a charge for kerbside recycling – this varies from €1.50 to €2.20 per bag of recyclables. The local authority states that there has been a small change in the provision of recycling infrastructure since the introduction of PBU charges: "*the number of bottle banks have decreased slightly but the tonnages of material collected at bring sites has increased*".

#### *Illegal waste monitoring*

The public can report illegal waste incidents using a Freephone number. Reports are logged into the eDirect database and every complaint is followed up. A unique identifier number is allocated to each incident reported; the case is then assigned to a case officer. This system has been in place for a year. In addition to this reactive form of illegal waste monitoring, Kilkenny County Council also uses several proactive methods. The local authority places waste audit forms through householders' letter boxes. It then calls back and looks for waste collection

receipts; if it is not satisfied the team will call back once a month to check that the household is disposing of its waste legally. The local authority also conducts surveillance on individuals suspected of illegal waste diversion.

**Expected findings**

Kilkenny County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-a-bin waste charges, the use of a green bin collection (although for an additional cost), and the proactive system of monitoring illegal waste diversion Kilkenny County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. However, volume-based charges are also widespread in the County Council, and waivers are not available to householders; these aspects of the system may offset the positive aspects and reduce the amount of waste being recycled and increase the amount of illegal waste diversion experienced within the county.

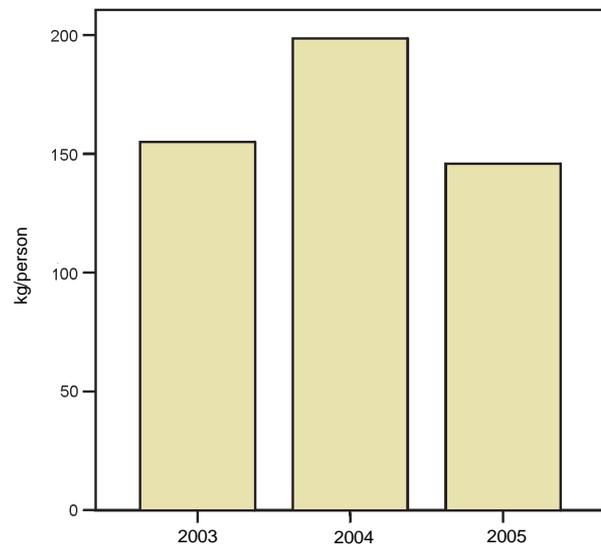
**Actual findings**

PBU charges were introduced by Kilkenny Borough Council in February 2004. The private waste collectors have always used PBU charges. Surprisingly, after introducing PBU charges across the county the local authority experienced an increase in average waste presentation of 44 kg per person. The following year, 2005, the average waste presentation dropped by 53 kg per person (see Fig. A10). Further research is required to determine the reasons for the increased waste

presentation rate directly following implementation of PBU charges, and for the presentation decrease the following year. Kilkenny County Council also found an increase in the amount of illegal waste diversion incidents registered over the years. In 1997 and 1998, there were between 100 and 120 incidents recorded, in 2001 there were 300, in 2002 there were 340 and in 2004 there were 682 incidents recorded.

**Satisfaction with charges**

The local authority states that “there has been a notable increase in illegal dumping particularly in laneways and at bring bank sites” since the introduction of PBU charges.



**Figure A10. Waste presentation rates in Kilkenny County Council, 2003–2005.**

## A11 Laois County Council

**Table A11. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, 2005
<b>Collection type</b>	Mixed, volume-based and tag-based
<b>Recycling expansion</b>	Yes, new civic amenity centre opened and new bring banks
<b>Kerbside recycling collection</b>	Yes, almost county-wide coverage
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	No, reactive
<b>Satisfaction with PBU system</b>	Not satisfied

### Summary

#### *Collection type*

Domestic waste collection is undertaken exclusively by private waste collection companies. Four waste collectors operate in the local authority.

#### *Introduction of PBU*

PBU charges were introduced in 2005. The four private waste collectors that collect household waste within Laois County Council use either volume-based charges or tag-based charges, with three collectors using volume-based and one using tag-based charges. Under a volume-based system, charges vary from €380 to €390 *per annum* for a 240-l bin and from €312 to €318 for a 140-l bin. Householders can also select to use a 360-l bin, which incurs an annual charge of between €600 and €612. Under a tag-based system a refuse bag costs €3, and customers are not charged a flat-rate service charge.

Waivers are not offered for waste charges within the County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available to householders serviced by three of the four waste collectors. The fourth, and smallest collector, does not offer a kerbside recycling service. The two largest collectors offer this service to all of their customers, and the third collector offers a kerbside recyclables collection to 94% of its customers. The local authority has increased recycling infrastructure since the introduction of PBU charges, with a new civic amenity centre and an increased number of bring banks.

#### *Illegal waste monitoring*

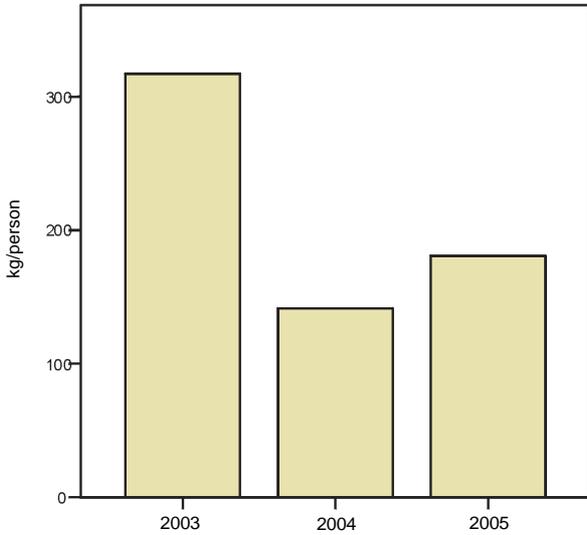
There is currently no formal system for monitoring illegal waste diversion in the local authority. Waste enforcement officers currently focus their work on the remediation of existing waste sites and on the enforcement of waste collection permits for the licensed collectors operating within the local authority. An 1800 phone line is in place to receive public complaints of illegal waste diversion. Reports are recorded on a computerised complaints database. The system for monitoring illegal waste diversion can be classed as reactive.

#### *Expected findings*

Laois County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. Volume-based systems are used throughout most of the local authority's functional area, there is no waiver scheme in place, and the system for monitoring illegal waste diversion is reactive. Based on this it is expected that waste to landfill will not have reduced on implementation of PBU charges. However, a large proportion of households within the local authority have access to kerbside recycling and this may have had a positive impact on waste presentation rates in recent years.

#### *Actual findings*

Despite the introduction of PBU charges across the local authority in 2005, Laois County Council experienced an increase in waste presentation per person of 39 kg from 2004 to 2005 (see Fig. A11). This anomaly could be explained through the use of pay-by-volume favoured by two of the collection companies and that a third company continues to use flat-rate charges. One company uses



**Figure A11. Waste presentation rates in Laois County Council, 2003–2005.**

pay-by-weight but only covers Stradbally. The company that employs volume-based charges caters for the majority of the area, about two-thirds of the households. Their deployment does not necessarily encourage a reduction of waste as the householder has to pay up front for a capacity that it will then utilise. The other issue is how

the waste collected/household ratio is calculated. Annual figures for waste are measured against population figures presented by either CSO 2002 or CSO 2006. Laois has experienced a population growth of 14% in this time frame. Population figures from 2002 were used to measure against waste presentation up to and including 2004, whereas the 2006 census was used to assess 2005. The population increase realised in 2006 will have lowered the waste to person ratio with the 2002 figures used to determine 2004 having the opposite effect. This will go some way to explaining both the 176 kg drop presented per person in 2004 as well as the rise in 2005. Regarding the 176 kg drop in waste presented in 2004, it cannot be explained through using different census figures as the 2002 census was used to assess both. An assumption of a greater awareness of the positives of recycling can be made. No figures for illegal waste diversion were available.

***Satisfaction with PBU charges***

The local authority has expressed dissatisfaction with the forms of waste charges used within its functional area, stating that pay-by-weight charges would offer householders a greater incentive to recycle than the systems currently implemented within the area.

## A12 Leitrim County Council

**Table A12. Table of findings.**

<b>Ownership of collection</b>	Exclusively private waste collection companies
<b>Introduction of PBU charges</b>	Yes, in January 2004
<b>Collection type</b>	Mixed, tag-based, volume-based and volume-based with pay-by-weight aspects
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Very satisfied

### Summary

#### *Collection type*

Exclusively private waste collection. Three private waste collection companies operate within Leitrim County Council.

#### *Introduction of PBU*

PBU charges were introduced in Leitrim County Council in January 2004. One company within Leitrim County Council operates a tag-based waste charging system, charging a flat fee of €30 and €10 per tag for a 240-l bin and €8 for a 120-l bin. Two collection companies operate volume-based systems. One of these companies charges €280 *per annum* for a 120-l bin and €480 for a 240-l bin. The other charges householders €209.74 *per annum* plus €136 for 800 kg of waste. If the household does not use the quota of 800 kg in a year, the amount unused will be credited for the following year; this system combines a volume-based charge with a weight-based charge. These methods were selected by the private collectors.

Waivers do not exist for waste charges within Leitrim County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available to 63% of householders throughout the county on a fortnightly basis. One of the three private companies operating within the county collects recycling waste for a charge, €8 per lift of a 240-l recyclables bin and €6 per lift of a 120-l recyclables bin. The local authority has opened two civic amenity sites since the introduction of the PBU charges and one privately owned transfer station has also opened.

#### *Illegal waste monitoring*

Leitrim County Council has an environmental hotline and a contact management system for dealing with all complaints. The Council investigates all environmental complaints reported by the public. A report can be compiled on the contact management system and the complainee is notified of the outcome of the investigation in person/by phone/e-mail/post. In addition to this reactive form of illegal waste monitoring, Leitrim County Council carried out approximately 700 household inspections in 2005 to determine compliance with our waste presentation bye-laws. The environmental enforcement officer is also involved in monitoring 'man-in-van' activity, fly-tipping and backyard burning.

#### *Expected findings*

Leitrim County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. Sixty-three per cent of the county have a green bin collection service and one waste collection company uses a tag-based charging system; this combination may promote recycling and reduce waste to landfill. This outcome may be offset by the use of a volume-based waste charging system throughout much of the county. One of the collection companies uses a volume-based system with aspects of pay-by-weight. The benefits of pay-by-weight may not be evident under this combined system as the financial gain of diverting waste from the black bin may not impact on householders' waste management behaviour owing to the delayed remuneration used in the billing system. Furthermore, some households are charged for the green bin collection, further reducing the incentive to recycle. In addition, there is no waiver scheme in place for low-income households.

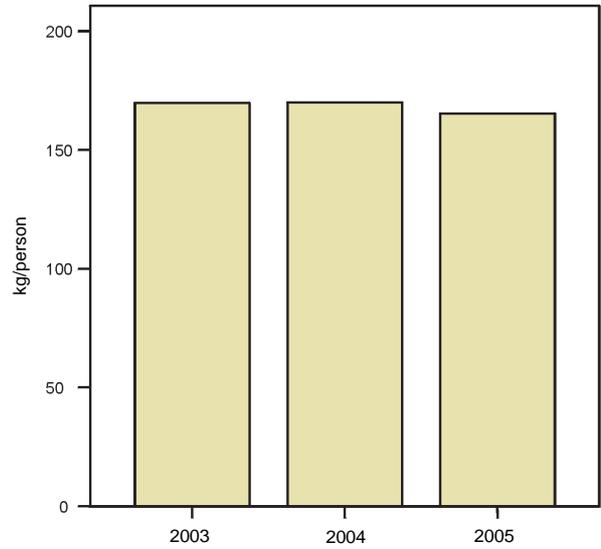
Based on the above it is expected that there may be only a slight decrease in waste to landfill and increase in waste being recycled within Leitrim County Council.

**Actual findings**

Leitrim County Council saw an increase of 1 kg of waste presented per person in the year subsequent to the introduction of PBU charges (see Fig. A12). The following year saw a decrease by 5 kg per person in waste presented. The figures suggest that the lack of a comprehensive kerbside recycling scheme, with a third of the county not having access to this, has a negative effect for the potential of PBU. All waste is collected by private companies using tag-based and volume-based systems with pay-by-weight aspects. No information was provided on recorded illegal diversion incidents.

**Satisfaction with charges**

The local authority states that it is “*very satisfied*” with the effects to date of the PBU charges and adds that



**Figure A12. Waste presentation rates to Leitrim County Council, 2003–2005.**

inspections have shown high compliance rates with the new charging system.

## A13 Limerick County Council

**Table A13. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, January 2005 One company still uses a flat-rate system
<b>Collection type</b>	Mixed, tag-based, volume-based with pay-by-weight aspects, and weight-based
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, three collectors using an alternate bin collection (residual waste/dry recyclables), one collector collects recyclables weekly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Not satisfied

### Summary

#### *Collection type*

Limerick County Council uses private collection exclusively to collect domestic waste. Four waste management companies operate in the local authority's functional area.

#### *Introduction of PBU*

The use of PBU charges was implemented in the local authority in December 2004 under the waste collection permit regulations. Two private waste collectors offer a volume-based charge with pay-by-weight aspects, one collector uses pay-by-weight, and the fourth collector offers a tag-based system.

There is no waiver scheme in operation.

#### *Recycling infrastructure*

The local authority did not increase the recycling infrastructure provision with the introduction of PBU charges. All waste collectors in the local authority offer a kerbside recyclable collection on alternate weeks.

#### *Illegal waste monitoring*

Limerick County Council can be considered to have a proactive illegal waste monitoring system. The local authority records public reports on a computerised complaints database. Owing to a lack of resources, it is not always possible to follow up all public calls. Surveillance is undertaken of waste truck movements from licensed waste collectors' premises to ensure that their destination is in keeping with their waste permit. The local authority has conducted aerial surveys to search for

illegal landfills and other illegal waste-related activities. The local authority plans to survey households in the near future to identify households without a licensed waste collection service. The survey will also incorporate an education and awareness programme.

#### *Expected findings*

Limerick County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the use of tag-based and weight-based systems in part of the local authority, a green bin collection throughout the county, and the proactive system of monitoring illegal waste diversion Limerick County Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling. However, volume-based charges with pay-by-weight aspects are used in part of its functional area, and waivers are not available to low-income households; these aspects of the system may offset the positive aspects to some degree.

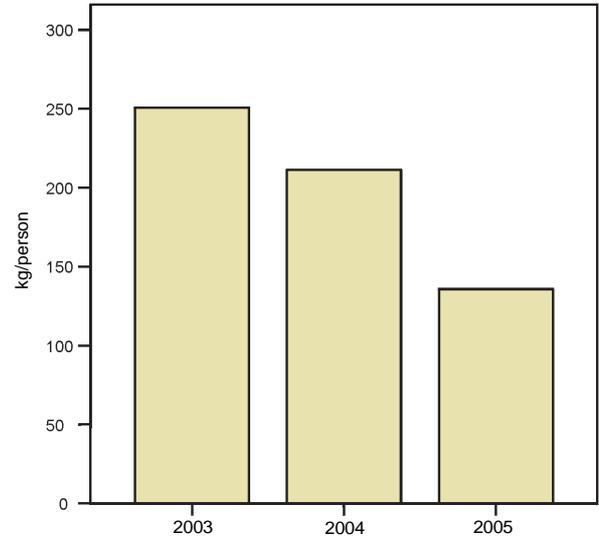
#### *Actual findings*

Limerick County Council experienced two successive decreases in waste presented (see [Fig. A13](#)). In the year ending 2004, the year prior to PBU implementation, the decrease was 39 kg per person, while 2005, the year of the introduction of PBU, saw a decrease in presented waste of 76 kg per person. This decrease in 2004 could suggest a greater awareness of recycling owing to the lack of financial incentive. With the introduction of the financial incentive realising a sustained and augmented decrease in waste presentation, a connection between user-based charges and waste management could be

inferred. The presence of kerbside recycling, as well as civic amenities, allows for a diversion from landfill and is a factor in the successive drop in presented waste. With respect to illegal diversion, there has been an increase in complaints received from 1811 complaints in 2004 to 2011 complaints in 2005. As the data detailed above rely on the number of complaints received, the local authority felt that it was difficult to say whether PBU has resulted in more recorded incidents of domestic illegal diversion or if their ongoing environmental awareness campaign has resulted in the increase in the number of complaints received from 2004 to 2005.

**Satisfaction with PBU charges**

Limerick County Council expressed mixed feelings in terms of satisfaction with PBU charges. It stated that although recycling rates have increased, the system has the disadvantage of allowing households to believe that recycling is free. In addition, the local authority is dissatisfied with the lack of transparency in the charging



**Figure A13. Waste presentation rates in Limerick County Council, 2003–2005.**

systems used by private waste collectors within its functional area.

## A14 Longford County Council

**Table A14. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, in January 2005 by two of the three service providers
<b>Collection type</b>	Mixed, tag-based and weight-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Unsatisfied

### Summary

#### *Collection type*

Exclusively private waste collection. There are two private waste collectors operating within the local authority's functional area.

#### *Introduction of PBU*

PBU charges were introduced in Longford County Council in January 2005 by the two waste collection companies. One company operates both a weight-based system and a tag-based system. The weight-based system involves a flat-rate service charge of €208 *per annum* and a fee of 17 cent per kilogram of waste lifted. The tag-based system costs householders €5 a bag. The second company operates two tag-based systems, tag-a-bin and tag-a-bag. The tag-a-bin system involves an annual flat-rate service charge of €120, householders buy two tags (one tag for the refuse bin, the second for the recyclables bin) for €10. Alternatively, the tag-a-bag system does not have a flat-rate service charge and costs €4.50 per bag of refuse. It is not clear whether these systems are in place in different areas of the county or whether householders can select which charging system they use.

Waivers do not exist for waste charges within Longford County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the county on a fortnightly basis. Under the pay-by-weight system used in the county, dry recyclables are collected for no charge, but under the two tag-a-bag systems and the tag-a-bin system householders are required to pay for their kerbside recyclable collection. The local authority

stated that there has been a change in the provision of recycling infrastructure since the introduction of PBU charges, with the introduction of a civic amenity centre by a private operator.

#### *Illegal waste monitoring*

Longford County Council can be considered to have a proactive illegal waste monitoring system. The local authority has a dedicated hotline to receive calls from the public reporting incidents of illegal waste diversion. All public reports and incidents observed by the waste enforcement staff are logged into a computerised MS Access complaints database. The local authority is currently looking at other recording systems for the future. All public calls are followed up. The local authority conducts household surveys to identify households without a licensed waste collection service. These surveys are undertaken in conjunction with private waste collection companies, the waste enforcement team follows waste collectors over a period of 4–6 weeks to determine which households do not use a waste collection service. These households are then contacted about their waste management actions. 'Man-in-van' activity is monitored by the waste enforcement team following up waste collection adverts, looking for permits, and by following up public reports. Road checkpoints with the Gardaí are used to check that waste collectors are operating under the terms of their permits and to remind collectors of their obligations. CCTV is used in bring banks and known illegal dumping spots.

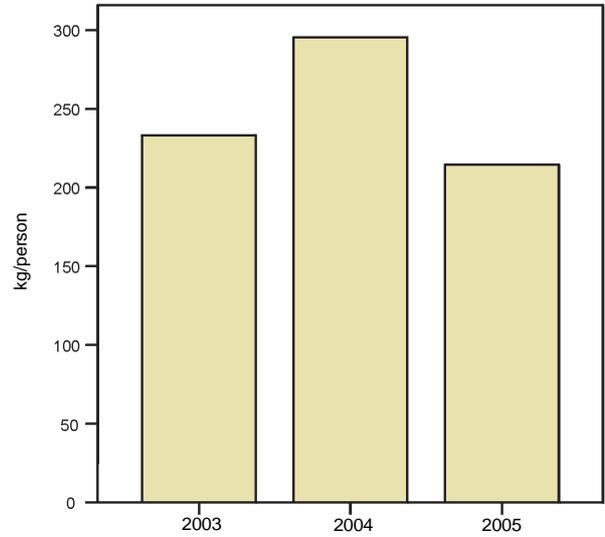
#### *Expected findings*

Longford County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges.

The use of a combination of weight-based and tag-based charges, a county-wide kerbside recycling collection and a proactive illegal waste monitoring system may promote a reduction in the amount of waste to landfill and an increase in the amount of waste being recycled in Longford County Council. On a negative point, householders in Longford are not offered the option of a waste charges waiver; this may negatively affect low-income households and may encourage illegal diversion.

**Actual findings**

Longford County Council experienced a marked difference in the amount of waste presented per person after the introduction of PBU (see Fig. A14). In the year prior to its introduction, Longford had an increase of 62 kg of waste presented per person. In 2004, the year of PBU introduction, the figure changed to a decrease of 81 kg of waste presented per person. Recycling facilities, including a weekly/fortnightly kerbside recycling collection, are available, with a further civic amenity site introduced. Longford County Council recorded 781 illegal waste incidents in 2004 and 1042 in 2005. The incidents recorded are made up of both complaints made by



**Figure A14. Waste presentation rates in Longford County Council, 2003–2005.**

members of the public and by incidents observed by litter wardens and waste enforcement officers.

**Satisfaction with charges**

The local authority is not satisfied with the effects of PBU charges to date, stating that PBU charges have led to an increase in littering and fly-tipping.

## A15 Louth County Council

**Table A15. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, in two of the three private collectors in 2002 and 2003
<b>Collection type</b>	Mixed, tag-based and flat-rate
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	"Too soon to assess at this stage, as a significant percentage of householders still pay flat-rate charge for waste collection"

### Summary

#### *Collection type*

Exclusively private waste collection. There are three private waste collectors operating within the local authority's functional area.

#### *Introduction of PBU*

PBU charges were introduced in Louth County Council in 2002 and 2003 in two of the three waste collection companies. The third company within Louth County Council operates under a flat-rate system, charging households €320 *per annum*. The other two companies operate both a flat-rate charge (€300 *per annum* and €360 *per annum*) and a tag-based charging system (no flat-rate service charge, €10 and €16 per bin tag). It is not clear whether these two systems are in place in different areas of the county or whether householders can select which charging system they use.

Waivers do not exist for waste charges within Louth County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the county on a monthly basis. Two of the three private companies operating within the county collect recycling waste for a charge under their tag-based system; both companies charge €4 per recyclable bin collection. The local authority stated that there has been no change in the provision of recycling infrastructure, in terms of civic amenity centres and bring banks, since the introduction of PBU charges.

#### *Illegal waste monitoring*

The public can report illegal waste incidents using a complaints receipt line. Complaints are followed up by litter wardens and waste enforcement staff. The litter wardens monitor illegal waste activity throughout the county and enforce waste presentation bye-laws.

#### *Expected findings*

Louth County Council can be considered a passive local authority in respect of its implementation of PBU domestic waste charges.

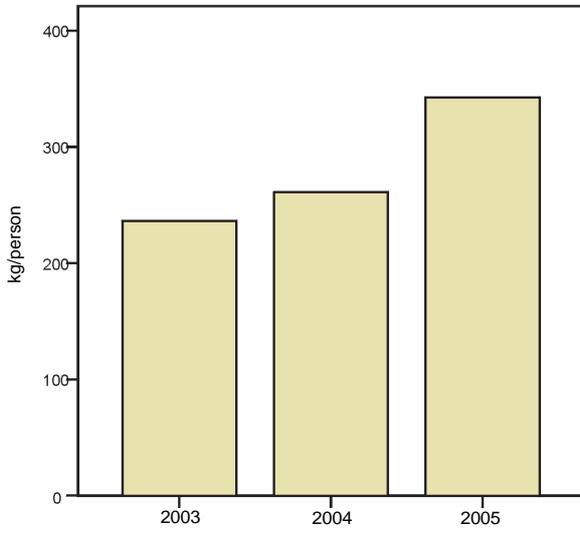
The widespread use of a flat-rate waste collection charge, combined with a charge for recycling, the absence of waivers and a reactive illegal waste monitoring system, does not promote a reduction in waste to landfill; it was expected that waste to landfill would not have decreased and recycling would not have increased significantly.

#### *Actual findings*

Louth County Council experienced an increase in waste presentation rates per person in the years following the introduction of PBU charges by two of its three waste collectors (see [Fig. A15](#)). From 2003 to 2004, average waste presentation increased by 25 kg per person. This rose again in 2005 by a further 82 kg per person. No figures exist to compare illegal waste diversion within the county prior to and subsequent to PBU charges.

#### *Satisfaction with charges*

The local authority states that it has "*not yet convinced all private waste collectors to operate a PBU system exclusively*" and that with regards to satisfaction with the



effects of the PBU system in place it is *“too soon to assess at this stage, as a significant percentage of householders still pay a flat-rate charge for waste collection”*.

**Figure A15. Waste presentation rates in Louth County Council, 2003–2005.**

## A16 Meath County Council

**Table A16. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes
<b>Collection type</b>	Mixed, volume-based, tag-based and weight-based
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, county-wide coverage varying between fortnightly and monthly collections
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Not satisfied

### Summary

#### *Collection type*

Exclusively private waste collection. There are six private waste collectors operating within the local authority's functional area.

#### *Introduction of PBU*

Information was not provided by the local authority on the date PBU was implemented within its functional area, although it does state that one waste collector moved to weight-based charges in January 2006. Five of the waste collectors operate a volume-based system, with two also offering a tag-based charge. One collector operates a weight-based system. Volume-based charges vary from €300 to €414 for a 240-l bin, €264 to €324 for a 140-l bin and €265 to €354 for a 120-l bin, depending upon collector and urban or rural location of the householder. Collectors use either a 120-l bin or a 140-l bin, not both. Tag charges per bin are €10, tag charges per bag are €3.20.

Waivers do not exist for waste charges within Meath County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the county on a fortnightly or monthly basis. Under the volume-based system used in the county dry recyclables are collected for no charge, but under the two tag-based systems householders are required to pay for their kerbside recyclable collection; this charge varies from €1.70 to €4. The local authority stated that there has been no change in the provision of recycling infrastructure since the introduction of PBU charges.

#### *Illegal waste monitoring*

Meath County Council can be considered to have a reactive illegal waste monitoring system. The local authority has a dedicated Lo-Call Litter Line to receive calls from the public reporting incidents of illegal waste diversion. All public reports are logged into an electronic call management system, they are then forwarded to the appropriate staff member. This process can be viewed by staff on the in-house intranet system within the Council. Calls not acted on or closed will generate a reminder to the appropriate person to ensure a prompt response time to all calls received. Maps have been developed by the local authority indicating areas without domestic waste collection services. The local authority plans to survey these households in the near future.

#### *Expected findings*

Meath County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. The use of volume-based charges across much of the county, a reactive illegal waste monitoring system, and absence of a waiver scheme may hinder a reduction in the amount of waste to landfill. On a positive point, all householders in Meath do have access to kerbside recycling. However, as there is no financial incentive to use the kerbside recycling service, it is expected that there will not have been a decrease in waste to landfill since the inception of PBU charges in Meath County Council.

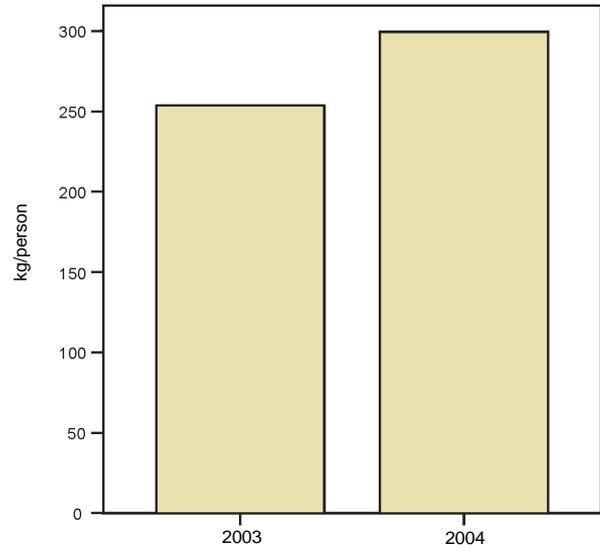
#### *Actual findings*

Meath County Council experienced an increase in waste presentation from 254 kg per person in 2003 to 299 kg per

person in 2004 (see Fig. A16). Figures for 2005 were not provided.

**Satisfaction with PBU charges**

Meath County Council is not satisfied with the impact of PBU waste charges in its functional area to date. The local authority intends to review the waste collection permits issued to private waste collectors within its functional area to include updated objectives and requirements on PBU systems under the Regional Waste Management Plan.



**Figure A16. Waste presentation rates in Meath County Council, 2003–2004.**

## A17 Monaghan County Council

**Table A17. Table of findings.**

<b>Ownership of collection</b>	Exclusively private waste collection companies
<b>Introduction of PBU charges</b>	Yes, in 2003
<b>Collection type</b>	Mixed, flat-rate, weight-based and volume-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, biweekly
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	No
<b>Satisfaction with PBU system</b>	Mixed feelings

### Summary

#### *Collection type*

Exclusively private waste collection. Five private waste collection companies operate within Monaghan County Council. One of these companies operates throughout the county and this company adopted pay-by-weight charges in January 2003; the other four companies operate within specific areas of the county and phased in their PBU charges throughout 2003 and 2004; therefore, in any given area of County Monaghan, there are two waste collectors operating.

#### *Introduction of PBU*

PBU charges were introduced in Monaghan County Council on a phased basis between 2003 and 2004. One company has not moved to a PBU system and instead uses a flat annual fee. Of the remaining four companies, two operate a weight-based system and two operate a volume-based waste charging system. These methods were selected by the private collectors. The price charged for a bin under a volume-based system varies between companies with the annual fee for a 240-l bin varying from €324 to €372, with urban areas paying less for collection than rural areas. The flat-rate service charge under the pay-by-weight systems varies from €143 *per annum* in one company to €209 *per annum* in the other company; details of the price per kilogram were not given by either waste collection company.

Waivers do exist for waste charges within Monaghan County Council. These waivers are issued by the local authority and only those in severe need qualify, for example pensioners with a medical condition.

#### *Recycling infrastructure*

A kerbside recycling collection is available to 6,802 households within the county on a monthly basis. Seven additional bring banks have been opened since PBU charges were introduced to accommodate household recycling.

#### *Illegal waste monitoring*

Monaghan County Council states that it does not have a system for monitoring illegal diversion of domestic waste.

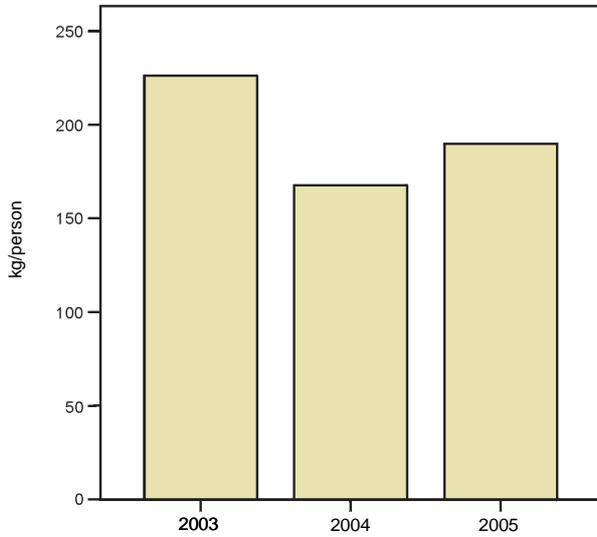
#### *Expected findings*

Monaghan County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges.

The county has a green bin collection service for part of the area and households within that part of the local authority's functional area may use a weight-based waste charging system; this combination may promote recycling and reduce waste to landfill. Furthermore, the presence of a waiver scheme may prevent illegal waste diversion. However, a kerbside recycling service is not available to all households and one collector still works under a flat-rate system; this may limit the possible decreases in waste to landfill under a PBU system.

#### *Actual findings*

Overall, from 2003 to 2005, Monaghan County Council experienced an average waste presentation rate decrease of 36 kg per person. Waste presentation dropped by 58 kg per person from 2003 to 2004, and then increased in 2005 by 22 kg (see [Fig. A17](#)). Further research is required to determine the reasons behind this



**Figure A17. Waste presentation rates in Monaghan County Council, 2003–2005.**

pattern of waste presentation. Monaghan County Council has seen an increase in the number of illegal waste diversion incidents since the introduction of PBU charges, with 308 illegal diversion incidents recorded in 2002 and 434 incidents recorded in 2003. The local authority states that it has seen an increase in backyard burning, fly-tipping and disposing of waste in other people's bins.

***Satisfaction with charges***

The local authority states that “*where pay-per-weight is introduced the effects are dramatic and easily understood by the customers. The pay-per-use (volume-based) system of the different bin sizes is not as effective and does not send out as clear a message*”.

## A18 North Tipperary County Council

**Table A18. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, phased in through 2004 and 2005
<b>Collection type</b>	Mixed, tag-based and volume-based
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, all private waste collectors obliged to collect recyclables at no extra cost, either weekly or monthly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, detailed information not provided
<b>Satisfaction with PBU system</b>	Dissatisfied

### Summary

#### *Collection type*

Exclusively private waste collection. There are three private waste collectors operating within the local authority's functional area.

#### *Introduction of PBU*

PBU charges were introduced in North Tipperary County Council throughout 2004 and 2005 by the three waste collection companies. All three companies use a tag-based system, and two of them also offer a volume-based system. Bag tags vary in price from €3 to €7. Annual volume-based charges vary from €380 to €396 for a 240-l bin, €312 for a 140-l bin and €288 for a 120-l bin. It is not clear whether these systems are in place in different areas of the county or whether householders can select which charging system they use.

Waivers do not exist for waste charges within the County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the county for no additional charge. The local authority stated that there has been no change in the provision of recycling infrastructure since the introduction of PBU charges.

#### *Illegal waste monitoring*

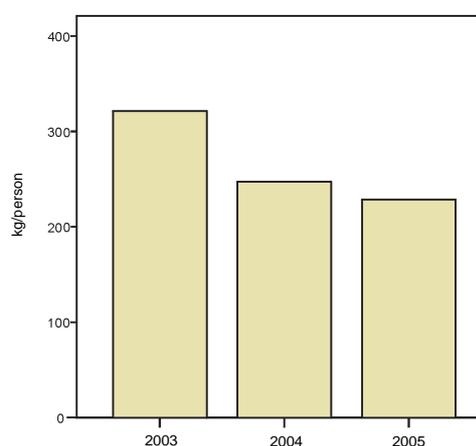
Detailed information was not provided on the system in place to monitor illegal waste diversion; on this basis it has not been possible to attribute a 'reactive' or 'proactive' label to the local authority.

### *Expected findings*

North Tipperary County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. The use of tag-based charges and a free county-wide kerbside recycling collection may promote a reduction in the amount of waste to landfill and an increase in the amount of waste being recycled. On a negative point, householders in the local authority are not offered the option of a waste charges waiver; this may negatively affect low-income households and may encourage illegal diversion.

### *Actual findings*

North Tipperary County Council experienced a decrease in waste presentation from 2003 to 2004 of 74 kg per person. The following year, 2005, waste presentation dropped a further 19 kg per person (see Fig. A18). As



**Figure A18. Waste presentation rates in North Tipperary County Council, 2003–2005.**

PBU charges were phased in throughout 2004 and 2005, and no changes were made to recycling infrastructure during this period, it can be assumed that the introduction of the charges, in conjunction with the kerbside recycling service, prompted this large decrease in waste presentation rates seen from 2003 to 2005. In terms of recorded incidents of illegal diversion, 498 incidents were recorded in 2005. This is an increase from the 2004 figure of 185 recorded incidents.

***Satisfaction with charges***

North Tipperary County Council reported dissatisfaction with the charges in place within its functional area. The Council indicated that it does not feel that the charges currently issued can be considered PBU, and it hopes that the waste collectors operating in the county would move to "a full pay-by-use system".

## A19 Offaly County Council

**Table A19. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, 2001
<b>Collection type</b>	Mixed, volume-based and tag-based
<b>Recycling expansion</b>	Yes, increase in bring banks, one new civic amenity centre
<b>Kerbside recycling collection</b>	Yes, twice a month
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Not satisfied

### Summary

#### *Collection type*

Exclusively private waste collection. There are five private waste collectors operating within the local authority's functional area, three of which are small.

#### *Introduction of PBU*

PBU charges were introduced in Offaly County Council in 2001. Details are provided on the two large waste collection companies operating within the local authority. Both of these companies offer a volume-based service and a tag-based service. It is not clear whether these systems are in place in different areas of the county or whether householders can select which charging system they use. Volume-based charges vary from €360 to €384 for a 240-l bin, and from €300 to €312 for a 140-l bin. Both companies charge €5 per bag tag.

Waivers do not exist for waste charges within Offaly County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout part of the county on a fortnightly basis. The local authority stated that there has been a change in the provision of recycling infrastructure since the introduction of PBU charges, with the introduction of civic amenity centres and bring banks. In 2004, the local authority had two civic amenity sites and 48 bring banks; this increased to three civic amenity sites and 58 bring banks in 2005.

#### *Illegal waste monitoring*

Offaly County Council has a litter phone line for public complaints of illegal waste diversion. All public reports are

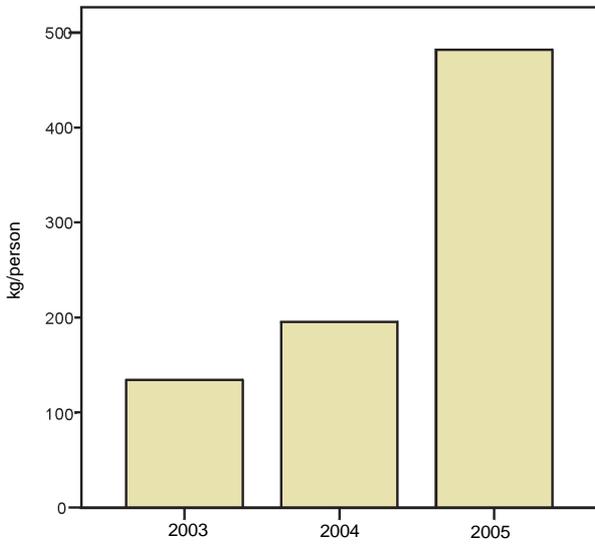
followed up. These reports are recorded on an MS Excel spreadsheet; in addition, there is a paper file for each complaint. The County Council is currently looking at other databases for use in the future. CCTV is not used in the local authority to monitor fly-tipping. The local authority researched CCTV and found it too costly. The waste enforcement team issued Section 18 Notices to two estates, requiring all householders to provide information on their waste collection; this was a one-off measure. Overall, the illegal waste monitoring system can be considered reactive.

#### *Expected findings*

Offaly County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. The widespread use of a volume-based waste collection charge, combined with kerbside recycling available in only part of the county, absence of waivers and a reactive illegal waste monitoring system, does not promote a reduction in waste to landfill. It is expected that waste to landfill will not have decreased and recycling will not have increased significantly.

#### *Actual findings*

There has been an increase in the amount of waste presented per person from 2003 to 2005 (see Fig. A19). From 2003 to 2004, waste presentation increased by 61 kg per person. In 2005, this increase jumped by 287 kg per person. As this figure far exceeds expected changes in waste presentation rate, it is assumed that an incorrect figure was provided to the study. Offaly County Council recorded 22 illegal waste incidents in 2002, 57 in 2003, 53 in 2004, 29 in 2005 and 21 for the first half of 2006. The incidents recorded are made up of both complaints made



**Figure A19. Waste presentation rates in Offaly County Council, 2003–2005.**

by members of the public via the litter hotline and by incidents observed by litter wardens and waste enforcement officers.

***Satisfaction with charges***

Offaly County Council reported dissatisfaction with the impact of PBU charges within its functional area, stating that it found an increase in fly-tipping.

## A20 Roscommon County Council

**Table A20. Table of findings.**

<b>Ownership of collection</b>	Exclusively private waste collection companies
<b>Introduction of PBU charges</b>	Yes
<b>Collection type</b>	Mixed, volume-based and tag-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	No answer

### Summary

#### *Collection type*

Exclusively private waste collection. Three private waste collection companies operate within Roscommon County Council.

#### *Introduction of PBU*

Waste collectors have used volume-based charges for some time but began offering householders the option of a bag collection in 2002 and 2003. One of the companies within Roscommon County Council operates a volume-based charging system, charging €275 *per annum* for a 120-l bin and €350 *per annum* for a 240-l bin. This collector also uses a tag-based system, with each bag of waste costing €5. The second waste collector in the local authority's functional area operates a bag-based system; there is a €30 flat-rate service charge, a tag for a 120-l bin costs €8 and a tag for a 240-l bin costs €10. The third waste collector within the local authority's functional area does not detail its charges.

Waivers do not exist for waste charges within Roscommon County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the county every second week. The two waste collectors detailing their charges both charge for a recyclable waste collection. One collector uses recyclable bags, which cost €2.50 each. The other collector also uses recyclable bags, at €5. They also collect recyclable bins, charging €6 per 120-l bin and €8 per 240-l bin. There is a €2 difference between the cost of putting out a waste bin and putting out a recyclables bin for collection. The local

authority stated that recycling infrastructure has been increased in recent years with four additional bottle banks put in place and one civic amenity site opened.

#### *Illegal waste monitoring*

There are two litter wardens in Roscommon County Council, and they can be contacted directly by the public. There is also a public complaints register. The public can phone or drop in to register a waste-related complaint. Of these complaints, 70–75% of them are followed up by the two litter wardens.

#### *Expected findings*

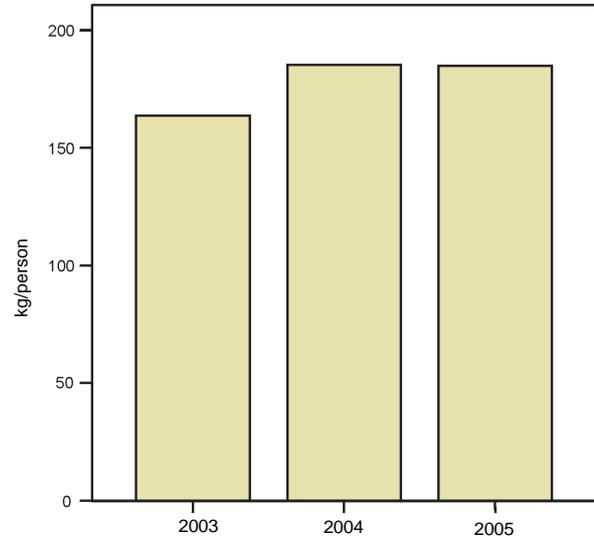
Roscommon County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. The county has a green bin collection service and householders within parts of the local authority's functional area may use a tag-based waste charging system; this combination may promote recycling and reduce waste to landfill. This outcome may be offset by the use of a volume-based waste charging system throughout much of the county. Although these households also have access to a green bin collection service they have little incentive to use this to reduce the residual waste they place out for collection. Furthermore, green bin collection is charged at a cost that is a little cheaper than waste collection, further reducing the incentive to recycle. In addition, there is no waiver scheme in place for low-income households and the illegal waste monitoring system can be classed as reactive rather than proactive. Based on the above it was expected that there might be only a slight decrease in waste to landfill and an increase in waste being recycled within Roscommon County Council.

**Actual findings**

Waste presentation rates in Roscommon County Council have increased slightly over recent years (see Fig. A20). From 2003 to 2004, the average waste presentation rate increased by 21 kg per person. This stabilised, with no change in waste presentation rate from 2004 to 2005. Roscommon County Council has seen an increase in the number of illegal waste diversion incidents in recent years, with 190 illegal dumping incidents recorded in 2004 and 250 incidents recorded in 2005. The local authority feels that there is a significant rise in illegal dumping as a result of PBU charges. Although figures are not disaggregated into types of illegal diversion, anecdotally there has been an increase in household fly-tipping, but no increase in backyard burning.

**Satisfaction with charges**

The local authority answered that the questions on difficulty of implementation and satisfaction to date with



**Figure A20. Waste presentation rates in Roscommon County Council, 2003–2005.**

the effects of the PBU charges were not applicable, as the collection service is privatised.

## A21 Sligo County Council

**Table A21. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, February 2002 One collector still uses flat-rate charges
<b>Collection type</b>	Volume-based
<b>Recycling expansion</b>	Yes, one new civic amenity centre
<b>Kerbside recycling collection</b>	Yes, every week and fortnightly depending on collector
<b>Waiver</b>	No
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

Exclusively private waste collection. There are four private waste collectors operating within the local authority's functional area.

#### *Introduction of PBU*

PBU charges were introduced in Sligo County Council in February 2002. All four collection companies offer a tag-based service. One of the collectors also offers a flat-rate service; this collector only operates over a small area of the county. It is not clear whether these systems are in place in different areas of the county or whether householders can select which charging system they use. Tag charges for a 240-l bin vary from €9 to €10, tags for a 120-l bin vary from €5 to €5.50.

Waivers do not exist for waste charges within Sligo County Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available through three of the four waste collectors. The smallest waste collector does not offer kerbside recycling. The three collectors offering this flat-rate service charge between €1.25 and €2 per bag of recyclables. The bags are collected by two companies on alternate weeks and by one company weekly. The local authority stated that there has been a change in the provision of recycling infrastructure since the introduction of PBU charges, with the opening of one new civic amenity centre.

#### *Illegal waste monitoring*

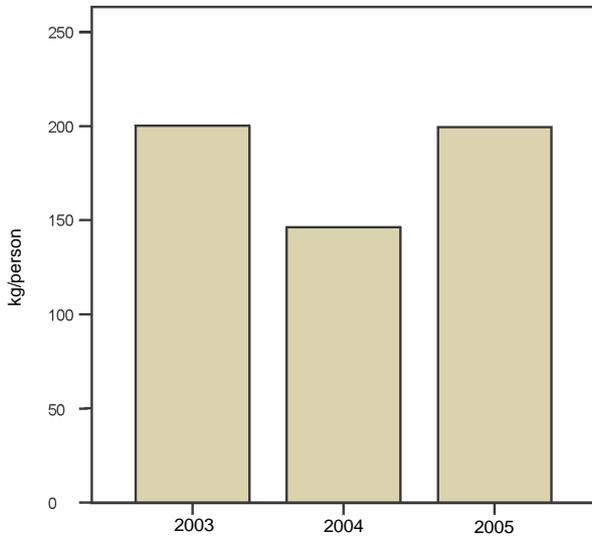
Sligo County Council currently operates a reactive system for illegal waste monitoring. However, plans are currently under way that would make for a proactive system. The local authority receives calls from the public via the environment section or via waste enforcement officers directly. All reported incidents are investigated. The reported incidents are not recorded on a database, instead they are recorded on paper. The local authority plans to implement the eDirect database shortly. It was looking into the use of CCTV at the time of the interview, and planned to put in an order for cameras shortly thereafter. The local authority does not monitor the households not availing of a waste collection service.

#### *Expected findings*

Sligo County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. Use of tag-based systems and a kerbside recycling throughout the majority of the local authority may result in a decreased amount of waste sent to landfill since the introduction of PBU charges in 2002.

#### *Actual findings*

There has been a decrease in the average amount of waste presented per person from 2003 to 2005 of only 1 kg per person (see Fig. A21). From 2003 to 2004, waste presentation decreased by 54 kg. In 2005, the presentation rate jumped by 53 kg to only 1 kg less than the 2003 figure. Further study is required to determine what factors influenced this increase in waste presentation from 2004 to 2005.



***Satisfaction with PBU charges***

The local authority stated that it is "quite satisfied" with the impact of PBU charges to date.

**Figure A21. Waste presentation rates in Sligo County Council, 2003–2005.**

## A22 South Dublin County Council

**Table A22. Table of findings.**

<b>Ownership of collection</b>	Exclusively local authority
<b>Introduction of PBU charges</b>	Yes, February 2004
<b>Collection type</b>	Tag-a-bin
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, on all collection routes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

Exclusively local authority collection within the administrative area.

#### *Introduction of PBU*

PBU charges were introduced in the South Dublin County Council on 2 February 2004.

A tag-based system was adopted as the local authority considered it most suited to their processes at the time. There is no flat-rate service charge for collection of residual waste. The cost of a bin tag is €8 for a 240-l and €4 for a 140-l bin. The cost was determined at a similar level to that of other Dublin local authorities.

Waivers are granted to householders whose income does not reach the taxation threshold.

#### *Recycling infrastructure*

There is a free kerbside recycling collection throughout the local authority's functional area, collecting every 4 weeks. Other recycling amenities in place include the presence of civic amenity centres, a waste transfer station, recycling centres and approximately 50 bring banks for glass, cans, textiles and plastic bottles. An extra ten plastic recycling banks have been introduced since the implementation of PBU.

#### *Illegal waste monitoring*

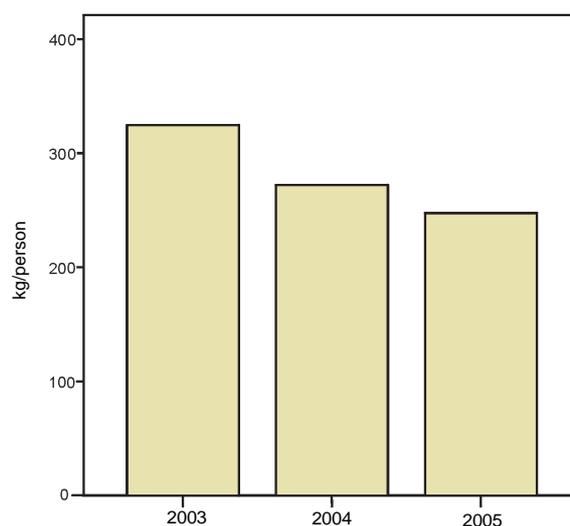
Insufficient details were provided on the local authority's illegal waste monitoring system to allow classification as either reactive or proactive.

#### *Expected findings*

South Dublin County Council can be considered a progressive local authority. The tag-a-bin waste charges coupled with a free kerbside recycling collection available throughout the functional area should decrease the amount of domestic waste going to landfill. The waivers in place will cater towards the needs of low-income households.

#### *Actual findings*

South Dublin County Council introduced tag-a-bag charges in 2004; this brought about a reduction of 52 kg of waste presented per person for that year (see Fig. A22). 2005 saw the decrease continuing, but this time at 25 kg. There is an authority-wide kerbside recycling facility, and plastic recycling banks have been introduced.



**Figure A22. Change in waste presentation rates in South Dublin County Council, 2003–2005.**

The decline in the rate of decreased waste presented could suggest a ceiling on the volumes of recyclables reached under present recycling facilities available. South Dublin uses a waiver scheme, which can also negatively affect the amount of waste presented for collection if a civic commitment is lacking. South Dublin used volume-based charges in 2003; the switch to tag-a-bag bringing about a decrease of 52 kg suggests not only differences

in responses to flat rate and PBU but also within PBU itself.

***Satisfaction with charges***

The local authority reported that there was some initial resistance to PBU. However, it is satisfied with the impacts of PBU, stating that waste is being diverted from landfill and that the cost of waste collection is now shared with the public.

## A23 South Tipperary County Council

**Table A23. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in 2004
<b>Collection type</b>	Pay-per-lift
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Mixed feelings

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. A survey by South Tipperary County Council is currently under way to establish the parts of the local authority's functional area that the different collectors operate within.

#### *Introduction of PBU*

PBU charges were introduced in South Tipperary County Council in 2004. The local authority chose to implement pay-per-lift for residual waste and recycling waste. These methods were selected as senior staff within other local authorities (particularly Waterford County Council) advised South Tipperary County Council that this system had been "*operating successfully in adjoining counties*". The local authority charges householders a €210 annual flat-rate service charge, €7 per bin lift, and 70 cent for a recyclable bag lift. These charges were selected in an attempt to avoid a drop in income. Prior to the introduction of PBU charges, householders in the local authority's functional area paid a flat rate of €300 *per annum*. No details were provided on the three private waste collectors that collect household waste within South Tipperary County Council.

Waivers do exist for waste charges within the County Council. Eligibility for the waiver scheme is based on a means test.

#### *Recycling infrastructure*

A kerbside recycling collection for local authority customers is available monthly. One of the three private collectors operates a weekly recyclables collection. The

local authority has increased provision of recycling infrastructure since the introduction of PBU charges in line with Waste Infrastructure Grants. It will be opening a new recycling centre shortly.

#### *Illegal waste monitoring*

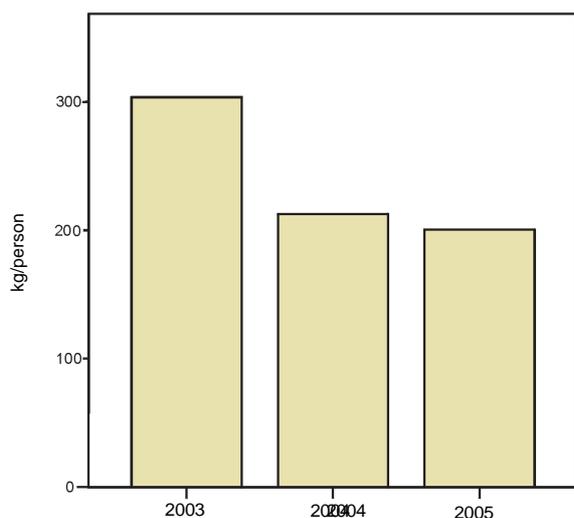
The local authority does not feel it has an adequate illegal waste monitoring system in place, but is currently implementing a system. The public can report illegal waste incidents using a telephone hotline, which opened in 2004. This phone line is well publicised and after each publicity campaign advertising the line and anonymous use, the local authority has found a large surge in the amount of calls received. All complaints are registered and are followed up. In addition, the local authority is currently gathering data on the geographical spread of waste collection using a GIS system. It intends to determine the number of households that are not using a waste collection service. There was no formal monitoring prior to the introduction of PBU charges.

#### *Expected findings*

Based on the information provided, South Tipperary County Council can be classed as a progressive local authority in terms of its implementation of PBU charges. The use of pay-by-lift, kerbside recycling, an increased recycling infrastructure and a waiver scheme may have prompted a decrease in waste to landfill. However, the reactive illegal waste monitoring system may have resulted in an increased number of illegal waste diversion incidents since the introduction of PBU charges. It should be noted that details of the PBU system implemented by private collectors were not provided.

**Actual findings**

The effect of the introduction of PBU on South Tipperary County Council was a 91 kg decrease in waste presented per person (see Fig. A23). A decrease of 13 kg followed this in 2005. Provision for weekly/fortnightly kerbside



**Figure A23. Waste presentation rates in South Tipperary County Council, 2003–2005.**

recycling is also given. The fall in the decrease for 2005 could be explained as the area reaches the potential for diverting waste from landfill as facilitated by current services. South Tipperary County Council has seen a slight increase in the number of illegal waste diversion incidents in recent years. As there are no figures recorded for 2003, figures of reported incidents only exist subsequent to PBU charges. However, the local authority does not feel that there has been a real increase in illegal diversion, but instead attributes the increase in incidents reported to increased public awareness of waste issues.

**Satisfaction with charges**

The local authority states that there were some initial problems associated with implementing the PBU charges. For example, tags were stolen off bins and were blown off bins due to high winds. The local authority appears to have mixed feelings about the impact of PBU charges within its functional area to date. It comments that the charges have resulted in a noticeable increase in tonnage at bring banks but also states that the charges have led to a “noticeable drop in bin presentation rate with a consequent drop in income”.

## A24 Waterford County Council

**Table A24. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private collection
<b>Introduction of PBU charges</b>	Yes, 1990
<b>Collection type</b>	No information provided
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, on all collection routes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes
<b>Satisfaction with PBU system</b>	Very satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Three private waste collectors operate in the local authority's functional area. These private collectors do not operate throughout the entire county; instead, their collection is focused in the Dungarvan, Tramore and Dunmore East areas.

#### *Introduction of PBU*

PBU domestic waste collection charges were introduced in Waterford County Council in 1990. Details were not provided on the systems of PBU used within the local authority's functional area, or of the charges issued under these systems.

A waiver is available to households based on a means test.

#### *Recycling infrastructure*

All collection routes are served with a weekly kerbside recycling facility. The local authority states that the recycling infrastructure has not changed since the introduction of PBU charges.

#### *Illegal waste monitoring*

Members of the public can report incidents of illegal waste diversion via a Freephone number or via e-mail. In addition, a complaint can be logged in any of the local authority's area offices. Previously illegal waste diversion complaints could only be reported to the waste division of the local authority. New software is being developed for the local authority; this software will be used to record illegal waste incidents among other uses. The software is

similar to eDirect, but eDirect came on board after the local authority began developing its own software. Waterford County Council monitors households that do not use a licensed waste collection service. The local authority calls to households with a questionnaire on waste disposal. If the local authority is not satisfied with the responses it will issue a Section 18 Notice, requiring the household to keep and submit records of waste disposal. Illegal waste collectors are monitored using road checkpoints with Gardaí. Vehicles are stopped and checked for compliance with legislation. Illegal collectors are also monitored through a good network of contacts with neighbouring local authorities. Incidents of backyard burning are followed up with a Section 55 Notice under the Air Pollution Act; this Notice is a warning letter to the household. Fly-tipping is monitored using CCTV in known areas. Waterford County Council can be classed as having a proactive illegal waste monitoring system.

#### *Expected findings*

As details were not provided on the systems of PBU used by either the local authority or the private waste collectors operating within the functional area it is not possible to categorise Waterford County Council as progressive, conservative or passive. Furthermore, this prevented predictions of the impact of the PBU charges on waste to landfill. However, the illegal waste monitoring system can be classed as proactive, kerbside recycling is available on all waste collection routes and waste charges waivers are available to households.

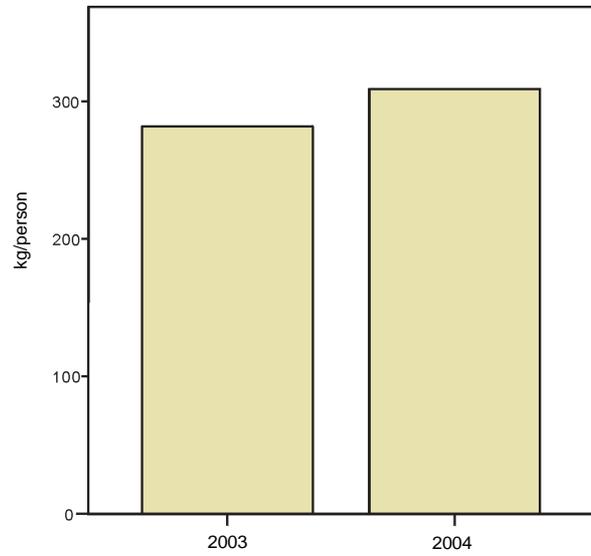
#### *Actual findings*

Figures for waste presentation in 2005 were not provided by the local authority. Figures for 2003 and 2004 reveal

that average waste presentation per person increased over this time period (see [Fig. A24](#)).

***Satisfaction with charges***

Waterford County Council stated that it is very satisfied with the effects to date of the PBU domestic waste collection charges.



**Figure A24. Change in waste presentation rates in Waterford County Council, 2003–2004.**

## A25 Westmeath County Council

**Table A25. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, in January 2001 (local authority collection)
<b>Collection type</b>	Mixed, tag-based, volume-based and weight-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Six private waste collectors operate within the local authority's functional area. Two of these collectors operate throughout the county whereas the remaining four operate within specific areas.

#### *Introduction of PBU*

PBU charges were introduced in Westmeath County Council in January 2001. The local authority chose to implement tag-a-bin. This method was selected after consultation with other local authorities to "*raise awareness of the polluter-pays maxim, to increase capacity of service and to simplify income collection*". Westmeath County Council charges €5 per bin tag for a 120-l bin, and €8 per bin tag for a 240-l bin. Householders are issued with a 240-l recyclables bin, which costs €4 per bin tag.

The six private waste collectors that collect household waste within Westmeath County Council use a variety of mechanisms. One collector uses a weight-based charging system, three collectors exclusively use tag-based systems, and two collectors use both tag-based and volume-based systems. The weight-based system uses a flat-rate service charge of €208 *per annum*, with a charge of 17 cent per kilogram. Tag-based charges vary from €5 to €10 for a 240-l bin, and from no flat-rate service charge to €120 per year. Volume-based charges vary from €348 to €375 per year for a 240-l bin.

Waivers do exist for customers of Westmeath County Council's waste collection service. A number of waste

collection tags are issued to persons over 75, a reduced number of tags are issued to households on low income.

#### *Recycling infrastructure*

All waste collectors within Westmeath County Council's functional area are required to provide a kerbside recycling collection. This service was introduced subsequent to implementation of PBU charges. In addition, civic amenity centres have been upgraded and the bring bank network extended.

#### *Illegal waste monitoring*

The waste enforcement team has a waste enforcement database that records pollution complaints. All pollution complaints are investigated by the team and followed up with a warning letter/Section 55 Notice and or a court prosecution. The waste enforcement team works in conjunction with the litter enforcement team. The litter team follows up on all complaints and issues a litter fine, Section 9 Notice and/or court prosecution. Where waste is dumped on private property the land/property owner is forced to dispose of the waste to authorised facilities. Where waste is dumped on public property and no evidence exists to identify the polluter the Area Office conduct a clean up of the site. The waste enforcement team audits waste collection permits. It also follows up any complaints made to the EPA's Illegal Dumping Hotline. In addition to these reactive forms of illegal waste monitoring, the local authority uses several proactive methods. Checkpoints are conducted with An Garda Síochána and vehicles are stopped on the public road to check for the appropriate permits for a vehicle carrying waste. In addition, the enforcement team conducts a number of surveillance operations relating to complaints about unauthorised collectors. The litter wardens visit

known black spots on a frequent basis to check if any dumping has occurred. Any evidence found on the site to clearly link a polluter to the discarded waste results in a fine. Currently, the environmental section is developing a new complaints system, which will combine a number of internal databases and link teams in the waste and litter section. This is due to be completed in December 2006. The waste enforcement and litter teams also use eDirect in conjunction with the waste enforcement database.

**Expected findings**

Westmeath County Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It is expected that owing to the tag-a-bin waste charges, the use of a green bin collection, the presence of waivers and the proactive system of monitoring illegal waste diversion Westmeath County Council will have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling.

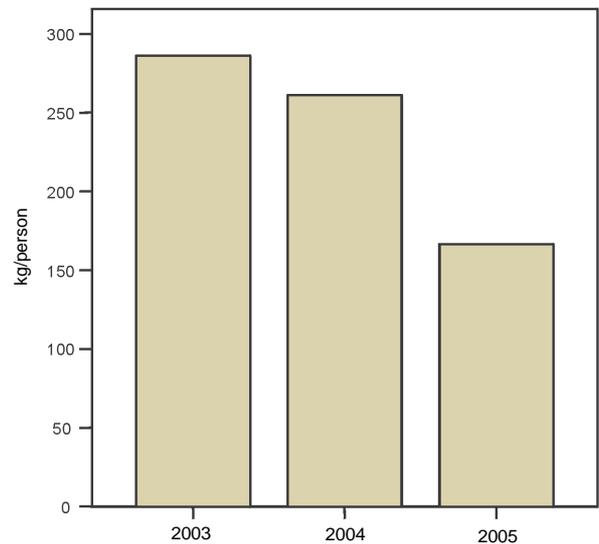
**Actual findings**

Westmeath County Council has experienced a significant decrease in waste presentation rates in recent years (see Fig. A25). From 2003 to 2005, average presentation rates fell by 120 kg per person. This decrease was mainly experienced from 2004 to 2005. Further research would be required to investigate why the local authority experienced such a large decrease during this period in particular. Westmeath County Council does not have records for the number of illegal waste diversion complaints in recent years owing to the database it

currently uses. As noted above a new database is being developed with a more powerful search engine. This will allow specific data to be obtained without the need to access each file.

**Satisfaction with charges**

The local authority states that it had some initial difficulty when implementing the charges, with people stealing bin tags. Otherwise it did not experience any significant problems. The local authority is satisfied with the effects of the charges to date, stating that PBU charges have been effective in improving recycling rates.



**Figure A25. Waste presentation rates in Westmeath County Council, 2003–2005.**

## A26 Wexford County Council

**Table A26. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private waste collection
<b>Introduction of PBU charges</b>	Yes, both 1985 and 1994 were provided as dates
<b>Collection type</b>	Mixed, tag-based, volume-based and flat-rate
<b>Recycling expansion</b>	Not in recent years
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Wexford County Council, Borough Council and Town Council collect waste throughout the towns, villages and intervening routes throughout the county. Three private waste collectors collect waste from all apartments within urban areas, from certain urban routes and also in many rural areas where the local authority does not collect.

#### *Introduction of PBU*

PBU charges were introduced in Wexford County Council in 1985. Use of different sized and priced wheelie bins began in 1994. A tag-based system was introduced by private collectors at a later unspecified date. Wexford Borough Council uses a flat rate.

The local authority chose to implement pay-by-volume for residual waste. In 2005, the local authority tried a 6-month pay-by-weight pilot. They fitted one waste truck and 2,600 bins with chips for refuse weight recordings. Following the trial pay-by-weight collection the local authority stated that the introduction of these charges would “*result in the system becoming less cost-efficient, introduce a costly/unnecessary over-dependence on technology and ultimately would be less favourable for the majority of (our) customers*”. The local authority feels that there is a customer satisfaction rate with the current, pay-by-volume system in place, highlighting that there is a 3% growth rate *per annum*. It feels that the current system has “*demonstrated a fair and equitable system, decreased tonnage to landfill, (is) customer friendly, encourages waste prevention and recycling*”.

Wexford County Council and New Ross Town Council both use a pay-by-volume system, but charge different amounts for waste collection. The County Council charges an annual fee of €260.30 for an 80-l bin, €369.20 for a 140-l bin and €516 for a 240-l bin, with a €25 discount to households if the bill is paid in full by a set date. New Ross Town Council charges an annual fee of €80 for an 80-l bin, €215 for a 140-l bin and €370 for a 240-l bin. These charges were selected based on estimates prepared by the Council to include the full cost of the collection, transport, disposal and levies, plus dry-recycling costs. The three private waste collectors that collect household waste within Wexford County Council use a combination of volume-based and tag-based charges.

Waivers do exist for waste charges within the County Council. Eligibility for the waiver scheme is based on a means test, and the standard reduction of waste charge is €40 *per annum*. A separate waiver scheme exists for Wexford Borough Council and New Ross Town Council.

#### *Recycling infrastructure*

A kerbside recycling collection is available to the majority of householders in the local authority’s functional area on a fortnightly basis. One small waste collector, with 700 customers, does not offer a recyclable waste collection. The local authority states that there has not been any recent increase in recycling infrastructure. The existing bring banks are improved on an ongoing basis and a new civic amenity centre opened in 2001.

#### *Illegal waste monitoring*

The public can report illegal waste incidents using an 1800 Freephone line. The complaints are logged into a

computer database and the majority (approximately 90%) of complaints are followed up by the Community Warden Network. In addition to this reactive form of illegal waste monitoring, Wexford County Council also uses several proactive methods, although it is not very optimistic about the effects of these methods. The local authority took advice from the Gardaí over methods of tackling the 'man-in-van' issue. It found that if it called up a suspected illegal 'man in van' and asked him to pick some waste up for the Council it would be guilty of entrapment. It is illegal and so the Council does not use this method. It has tried setting up surveillance to catch them fly-tipping the waste but has not had much success. It placed CCTV around bottle banks but people just park away from the cameras so that their car registration number is not seen and then dump items with their backs turned to the cameras, so there is no way of identifying the people. The local authority conducted a pilot study by knocking on doors and asking how people got rid of their waste. It found that it was not very productive as people would never say "no I don't use a licensed collection service" and it has no way of proving that people are disposing of waste illegally as people would commonly say that they share a bin with a family member and there is no way of verifying or disproving this.

**Expected findings**

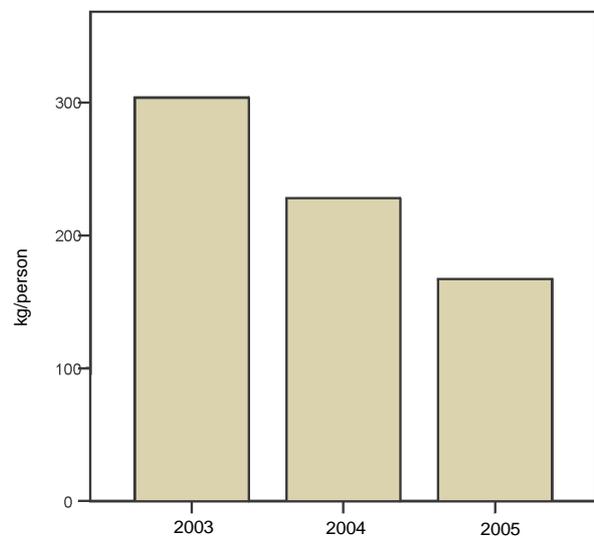
Wexford County Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. It was expected that although a green bin collection is in place along with the presence of waivers and a proactive system of monitoring illegal waste diversion, the use of volume-based charges throughout most of the local authority's functional area might reduce the impact of these progressive aspects of waste management.

**Actual findings**

Wexford County Council experienced a significant decrease in waste presentation from 2003 to 2005, of 137 kg per person (see Fig. A26). The local authority has also experienced an increase in recorded illegal waste diversion incidents over this time period: 1,605 incidents in 2005, 1,449 in 2004, and 1,131 in 2003.

**Satisfaction with charges**

The local authority is satisfied with the PBU charges in place. The volume-based system has an additional 500 to 1,000 new customers joining each year. Approximately 27% of customers use the 240-l bin. Most householders are satisfied with "the high-quality collection service and recycling provisions". The local authority report on pay-by-weight vindicates use of the current pay-by-volume system accepted by the local authority and by the general public.



**Figure A26. Waste presentation rates in Wexford County Council, 2003–2005.**

## A27 Wicklow County Council

**Table A27. Table of findings.**

<b>Ownership of collection</b>	Exclusively private collection
<b>Introduction of PBU charges</b>	Yes, no year provided
<b>Collection type</b>	Mixed
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, 60% of the county covered once or twice a month
<b>Waiver</b>	Yes, one company offers a waiver
<b>Illegal monitoring system</b>	Yes
<b>Satisfaction with PBU system</b>	Unclear response

### Summary

#### *Collection type*

Private companies collect exclusively in Wicklow County Council's functional area. Eight collectors have permits to collect household waste in the entire county.

#### *Introduction of PBU*

PBU was introduced in 2003. Pay-by-weight was supposed to be introduced in 2005. Currently, a variety of methods and charges exist within the area. Tag-based charges with various flat-rate service charges and tag charges are in place. One operator charges a flat-rate service charge of €240 *per annum* for a 140-l bin, whereas another charges €318. Of the four companies that use volume-based charges, all four offer a 120-l and a 240-l bin option, one company also offers a 360-l bin.

Bray Town Council provides ten waste bags per year to 'qualifying persons'.

#### *Recycling infrastructure*

Reflecting the multiplicity of PBU charges, kerbside recycling facilities vary in cost and frequency. Currently, approximately 60% of households have access to a kerbside collection. This kerbside collection varies in frequency from once to twice a month. Householders in part of the county receive a free kerbside recyclables collection. Where charges do apply for recycling, the cost

per bag varies from €2 to €2.50. No information was provided on changes in recycling infrastructure since the introduction of PBU.

#### *Illegal waste monitoring*

Wicklow County Council has a reactive illegal waste diversion system. The local authority receives calls from the public via a litter hotline. These calls are logged on a complaints register.

#### *Expected findings*

Wicklow County Council can be defined as conservative in respect of its implementation of PBU. Several of the waste collectors use a tag-based charge, which is considered progressive; however, many use a volume-based charge. Kerbside recycling is partial and many operators charge for the service. A very limited waiver is available. These concerns, as well as a reactive illegal waste approach, may negatively affect the potential of PBU charges in the area.

#### *Actual findings*

As figures were not supplied for Wicklow County Council a summary of actual findings cannot be developed.

#### *Satisfaction with charges*

Wicklow County Council felt that it lacked the power to enforce PBU within its functional area.

## A28 Cork City Council

**Table A28. Table of findings**

<b>Ownership of collection</b>	Local authority
<b>Introduction of PBU charges</b>	Yes, beginning of 2005
<b>Collection type</b>	Tag-a-bin
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes, fortnightly
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Cork City Council collects waste throughout the county.

#### *Introduction of PBU*

PBU charges were introduced across Cork City Council at the beginning of 2005.

The local authority chose to implement tag-a-bin for residual waste. This method was selected based on the findings of an in-house report into PBU research and the experiences of other local authorities. The tag-a-bin system was considered to be the best option for Cork City Council in terms of cost and time factors. The Council charges a €290 annual flat-rate service charge, €5 per bin tag for a 240-l bin, and €3 per bin tag for a 140-l bin. These charges were selected to cover costs of waste collection. No information was provided on private waste collectors.

Waivers do exist for waste charges within the City Council. Eligibility for the waiver scheme is based on income and taken on a case-by-case basis. Old age pensioners solely on Social Welfare can get a full waiver of the fixed charge and the charge per use. Low-income households can get a full or partial waiver of the fixed charge.

#### *Recycling infrastructure*

A kerbside recycling collection by Cork City Council is available to householders fortnightly. The local authority has increased the number of bring sites in its functional area since the introduction of PBU charges. Paper and

cardboard banks have been removed from bring sites since the introduction of the kerbside recycling collection.

#### *Illegal waste monitoring*

The public can report illegal waste incidents using a dedicated litter hotline; householders can also ring the main environmental services phone lines. All complaints are registered and every effort is made to follow up all complaints by the waste enforcement team. In addition to this reactive form of illegal waste monitoring, Cork City Council also monitors known black spots and has a team within waste enforcement with the specific agenda of trying to ascertain addresses for prosecutions; a private security firm is working with Cork City Council on this.

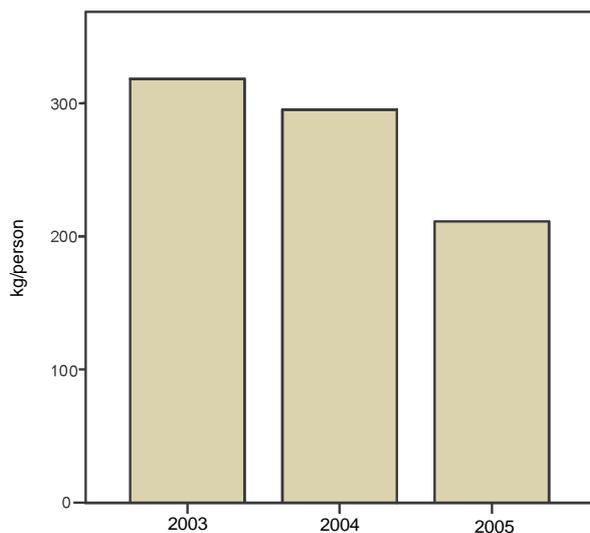
#### *Expected findings*

Cork City Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-a-bin waste charges, the use of a green bin collection at no additional cost, and the presence of waivers, Cork City Council would have experienced a decrease in domestic waste to landfill and an increase in domestic waste to recycling.

#### *Actual findings*

Cork City Council realised a decrease of 84 kg of presented waste per person in 2005, the year of PBU introduction (see Fig. A28). This decrease followed the decrease of 84 kg in 2004. This consistent decrease could reveal a greater awareness of the impact of waste, as the flat-rate charge existing in 2004 does not encourage waste reduction. The presence of a variety of recycling facilities (kerbside recycling, civic amenity centres, bring banks) cater for this. The decrease in 2005 could be partly

attributed to the introduction of PBU with the financial incentive encouraging a continued effort in diverting waste from landfill. More bring sites, brought about in 2005, facilitate this diversion further. Cork City Council



**Figure A28. Waste presentation rates in Cork City Council, 2003–2005.**

has seen a decrease in the number of illegal waste diversion incidents reported to the litter hotline since the introduction of PBU charges. In 2004, 688 incidents were reported, dropping to 471 incidents reported in 2005. In contrast, the number of litter fines has risen steeply since the charges were introduced, from 508 litter fines in 2004 to 1,236 litter fines in 2005. This may be down to a greater number of on-the-spot fines being issued by litter wardens, as there has been a large increase in the level of enforcement staffing since the introduction of the charges.

#### *Satisfaction with charges*

The local authority states that the system had settled in within 4–6 weeks of its introduction. It is satisfied with the impact of PBU charges within its functional area. It goes on to outline the positive and negative points it has experienced to date. The positive points are a decrease in waste presentation rates and an increase in recycling rates and a reduction in the amount of waste to landfill. The negative points are that the wheelie bins are very heavy and that there has been an increase in illegal dumping, although this does not seem to be supported by the figures available.

## A29 Dublin City Council

**Table A29. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private collectors Dublin City Council collects waste from 93% of householders, private operators collect from the remaining 7% of households
<b>Introduction of PBU charges</b>	Yes, 1 January 2005
<b>Collection type</b>	Mixed (93% pay-by-lift)
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, 128,000 households have a 4-weekly collection
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, reactive
<b>Satisfaction with PBU system</b>	Very satisfied

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Dublin City Council serves its entire functional area. Fifteen private waste collectors operated within the area in 2005 but collected only 7% of domestic waste.

#### *Introduction of PBU*

PBU charges were introduced on 1 January 2005 by Dublin City Council. Details concerning the private waste collectors have not been supplied. The local authority chose to use pay-by-lift charges. This system was selected as the local authority felt that it was the most practical and cost-effective system to introduce. In 2005, the flat-rate service charge for a 140-l bin was €65 with each lift charged at €3. The 240-l bin had a flat-rate service charge of €80, with each lift costing €5. The flat-rate service charge in 2006 rose by €3.25 and €4, respectively, with the lift price increasing by 15 cent and 25 cent for the 140-l and 240-l bins, respectively. The collection charges were selected based on the cost of providing the service.

Low-income households can avail of a waiver. Householders with an income that is exempt from taxation or reliant on social welfare/pension are eligible for a waiver. A partial waiver can be offered in hardship cases.

#### *Recycling infrastructure*

The local authority offers a free kerbside recycling collection to households within its entire functional area.

There has been no extra recycling infrastructure provided since PBU inception.

#### *Illegal waste monitoring*

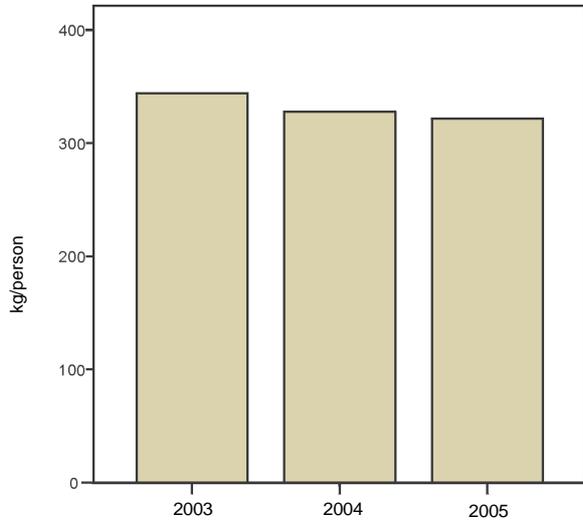
Dublin City Council receives information on incidents of illegal waste diversion from the public via telephone and e-mail. All reported incidents are followed up. Checkpoints are used to check waste permits but this largely concerns itself with construction and commercial waste. The local authority does not intend to monitor household waste activity further, but plans to continue to respond to all complaints received. Dublin City Council can be considered a reactive local authority in terms of illegal waste monitoring.

#### *Expected findings*

Dublin City Council's use of tag-based charges, a free kerbside recycling collection and a waiver scheme can be considered progressive. Based on this it is expected that Dublin City Council will have experienced a decrease in waste to landfill and an increase in recycled waste. However, the reactive illegal waste monitoring system may encourage an increase in unauthorised waste activity subsequent to introduction of PBU charges.

#### *Actual findings*

Dublin City Council combines private and local authority collectors to collect its waste, although 93% of households are serviced by the local authority. PBU charges were brought in for 2005, and realised a reduction in waste presented for collection by 7 kg per person (see Fig. A29). The year previous saw a reduction of 16 kg per person of waste presented. The trend for



**Figure A29. Waste presentation rates in Dublin City Council, 2003–2005.**

decreasing waste presented per person in the years prior to PBU may point to the influence of other factors in reducing waste for landfill, such as improved recycling facilities and greater public awareness of waste management issues. No figures exist for illegal waste diversion.

***Satisfaction with charges***

Dublin City Council found no significant difficulty in implementing PBU charges. It states that it is very satisfied with the impacts of PBU to date.

## A30 Galway City Council

**Table A30. Table of findings.**

<b>Ownership of collection</b>	Combination of local authority and private collectors
<b>Introduction of PBU charges</b>	No, PBU due to be introduced on 1 January 2007
<b>Collection type</b>	Flat-rate
<b>Recycling expansion</b>	No
<b>Kerbside recycling collection</b>	Yes, all households have a weekly collection
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Not applicable

### Summary

#### *Collection type*

A combination of local authority collection and private waste collection. Two private waste collectors operate within the area, serving approximately 10% of households.

#### *Introduction of PBU*

Galway City Council has not implemented a PBU domestic waste charging system. It plans to introduce PBU in January 2007. Currently households are charged a flat rate of €357 *per annum*. Two-person households can avail of a smaller bin for an annual fee of €280. Details regarding the charging systems used by the two private waste collectors were not provided.

#### *Recycling infrastructure*

Galway City Council provides a weekly kerbside recycling collection service as part of the annual waste charge. In addition, civic amenity centres, 14 bottle banks and one transfer station are also in place. The City Council also provides a weekly organic waste collection.

#### *Illegal waste monitoring*

Galway City Council has a proactive illegal waste monitoring system. An environment department helpline receives calls from the public. Previously, a dedicated litter line was in place; however, this line was closed owing to misuse. All incidents reported by the public are followed up. Incidents are recorded on a computerised database, IServe, which was developed for the local authority. The local authority monitors fly-tipping activity using CCTV on housing estates. It does not use cameras at bottle banks as it has found that it is unable to see the vehicle

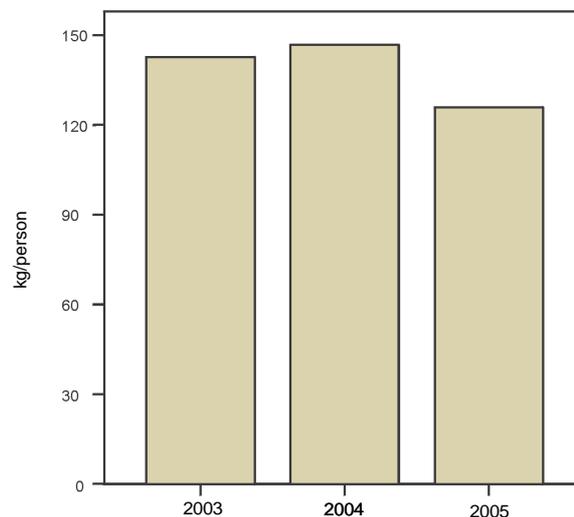
registration numbers of cars. 'Man-in-van' activity is monitored using checkpoints in conjunction with the Gardaí.

#### *Expected findings*

Galway City Council has not adopted PBU charges, which must be considered passive. However, the presence of a city-wide kerbside recyclables and organic waste collection, a proactive illegal waste monitoring system and the presence of a waiver scheme could offset the absence of PBU. Taking all areas into account, and considering Galway City's experience of waste reduction, the local authority can be defined as progressive.

#### *Actual findings*

Despite the use of a flat domestic waste collection charge, waste presentation has decreased over the period studied by 17 kg per person (see Fig. A30). Incidents of illegal



**Figure A30. Waste presentation rates in Galway City Council, 2003–2005.**

waste diversion have increased however. Galway City Council's experience highlights the role other areas can play in waste management.

***Satisfaction with charges***

This is not applicable to the local authority.

## A31 Limerick City Council

**Table A31. Table of findings.**

<b>Ownership of collection</b>	Exclusively private waste collection companies
<b>Introduction of PBU charges</b>	Yes, in December 2004
<b>Collection type</b>	Mixed, flat-rate, volume-based and tag-based
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Mixed feelings

### Summary

#### *Collection type*

Exclusively private waste collection. Three private waste collection companies operate within Limerick City Council.

#### *Introduction of PBU*

PBU charges were introduced in Limerick City Council in December 2004 under the waste collection permit regulations; however, one collector was operating PBU charges prior to this.

The companies within Limerick City Council operate a volume-based, or a tag-based, or a flat-rate waste charging system. Two collectors use a volume-based charge with pay-by-weight aspects. The bins are charged at a fixed flat-rate service charge and then the average weights for the size bin are calculated, i.e. the average weight for a 240-l bin over a 6-month period is given as 400 kg. Each household is charged the flat-rate service charge and the average weight charge. If the total weight is under the average weight the customer receives a discount on the next invoice; if the weight is over the average the customer is charged for the extra weight. This system is the most prevalent within Limerick City Council with 17,992 customers. The third collector, with only 250 customers, operates a flat-rate charge and a tag-based charge; the flat charge is €360 *per annum*, the tag-based charge is €7 per refuse bag.

Waivers are available for waste charges within Limerick City Council. The waiver is based on household income; pensioners receiving the state pension only can also qualify for a waiver. The low-income waiver allows

households 18 free bin lifts per year. The pensioner waiver allows households 26 free bin lifts a year.

#### *Recycling infrastructure*

A kerbside recycling collection is available throughout the City Council. The two main private waste collectors do not charge for a recyclables collection. The small private contractor acting within Limerick City Council does charge €2 per recycling bag under its tag-based system. The local authority stated that recycling infrastructure has been expanded since the introduction of PBU charges, with the introduction of cardboard recycling in a civic amenity site within the local authority's functional area.

#### *Illegal waste monitoring*

The public can report illegal waste incidents via telephone. All complaints are recorded on a computer database and are followed up. As well as this reactive form of illegal waste monitoring, Limerick City Council uses several proactive methods to reduce illegal waste diversion. The litter wardens routinely survey litter hotspots, the waste team uses road checkpoints to check waste permits for vehicles carrying refuse, the team conducts household surveys and issues Section 18 Notices where necessary. The local authority plans to increase the amount of CCTV it uses, placing eight new cameras in litter black spots.

#### *Expected findings*

Limerick City Council can be considered a conservative local authority in respect of its implementation of PBU domestic waste charges. The presence of kerbside recycling, a waiver scheme and a proactive illegal waste monitoring system can be offset by the use of volume-based and flat-rate waste collection charges. Based on

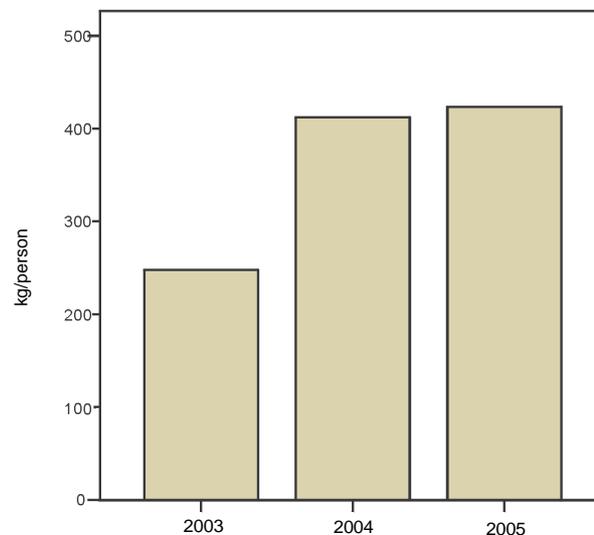
this it is not expected that the introduction of PBU charges would have significantly reduced the amount of waste going to landfill.

### **Actual findings**

Limerick City Council experienced an increase in waste presented in the year subsequent to the introduction of PBU charges at 11 kg per person (see Fig. A31). Private waste companies exclusively serve the area, with the largest waste collector using PBU before 2004. As the introduction only partially affected the local authority, a small increase in waste presented should not be considered as contrary to expectations. The increase experienced the year previously measured 164 kg per person, showing a significant slowing down in the rate of waste increase since the introduction of the charges.

### **Satisfaction with charges**

The local authority expressed mixed feelings on the impacts of PBU charges to date. It states that the local authority recycling rates have increased but that the systems in place are not transparent stating that “it is difficult to see the true benefits, i.e. cost savings, for increased recycling rates because the proportion of the



**Figure A31. Waste presentation rates in Limerick City Council, 2003–2005.**

*flat-rate service charge attributable to weight is relatively low compared to the overall charge. It is also difficult for householders to compare services of different operators*". In addition, the local authority is concerned that householders believe that recycling is free.

## A32 Waterford City Council

**Table A32. Table of findings.**

<b>Ownership of collection</b>	Local authority
<b>Introduction of PBU charges</b>	Yes, in 2000
<b>Collection type</b>	Tag-a-bin
<b>Recycling expansion</b>	Yes
<b>Kerbside recycling collection</b>	Yes
<b>Waiver</b>	Yes
<b>Illegal monitoring system</b>	Yes, proactive
<b>Satisfaction with PBU system</b>	Satisfied

### Summary

#### *Collection type*

Domestic waste collection is undertaken exclusively by Waterford City Council.

#### *Introduction of PBU*

In 2000, the local authority began introducing PBU charges on a phased basis. The local authority chose to use pay-by-volume charges in the form of a flat-rate service charge combined with a charge each time the householder's bin is presented for collection. Prior to PBU charging, the local authority did not charge householders for their waste collection. On this basis, Waterford City Council chose to introduce charges sensitively to reduce negative public reaction to the charges. To "*gain public acceptance*", the charges were kept low initially and a three-bin collection service was put in place throughout the entire functional area of the local authority to enable householders to recycle and compost part of their waste and therefore reduce their waste disposal costs. The local authority also charges householders to dispose of recyclables and brown waste, but at a substantially lower bin presentation cost than for presentation of the black bin, maintaining the incentive to reduce waste to the black bin.

The local authority chose to implement the above collection system based on the reasoning that it would guarantee revenue collection and would be easy to implement from an administration perspective. When considering which system to introduce, Waterford City Council consulted other local authorities on their own experiences with PBU systems. The amount householders are charged under the PBU system was

selected based on charges used by other local authorities and was also selected to help gain public acceptance as mentioned above.

Furthermore, the local authority offers full waivers to householders on long-term social welfare and non-contributory pensions.

#### *Illegal waste monitoring*

Waterford City Council uses the computer database eDirect. It was the first local authority to implement eDirect. This database is used within the waste management section to record all illegal waste diversion incidents. Members of the public can report an incident by telephone, mail or by calling into the local authority offices and all reports are logged on to the database. Every reported incident is assigned to a litter warden and each case is followed up. A report and incident conclusion is written up by the litter warden assigned to the case and entered into the database. eDirect was established in October 2004. There were no formal illegal waste diversion records kept prior to 2004, when eDirect was established. The local authority is proactive in respect of monitoring illegal waste diversion; it recently conducted a survey to identify households that do not use the local authority waste collection service.

#### *Expected findings*

Waterford City Council can be considered a progressive local authority in respect of its implementation of PBU domestic waste charges. It was expected that owing to the tag-a-bin waste charges, the use of a three-bin collection system, the presence of waivers and the proactive system of monitoring illegal waste diversion, Waterford City Council would have experienced a decrease in domestic

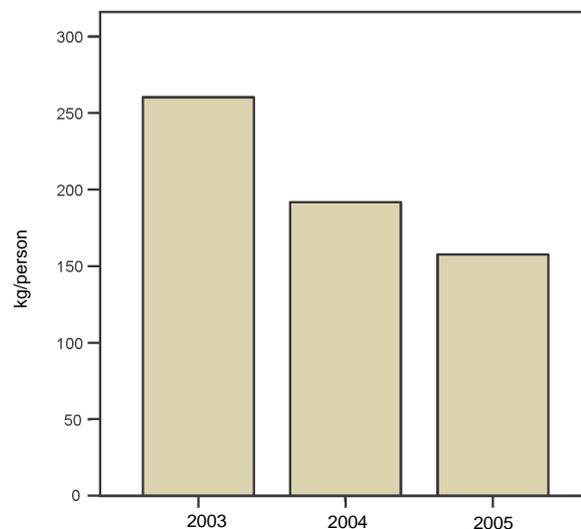
waste to landfill and an increase in domestic waste to recycling, since the introduction of PBU charges.

### **Actual findings**

As PBU charges were not introduced within the time period for which waste presentation figures were available to this study it has not been possible to determine the impact of PBU charges on waste management behaviour. However, Waterford City Council experienced a decrease in average waste presentation rates over the period 2003 to 2005 of 102 kg per person (see Fig. A32). Figures for illegal diversion were not gathered prior to 2004; on this basis, no figures exist for a comparison of numbers of incidents prior to and subsequent to PBU charges.

### **Satisfaction with charges**

Waterford City Council expressed satisfaction with the introduction of and the effects to date of the PBU charges. The local authority notes that it implemented the charges prior to any obligation to do so. It states that although there was some initial public resistance to the charges, by aligning introduction of charges to improvements in the waste collection service the public were “*won over*”.



**Figure A32. Waste presentation rates in Waterford City Council, 2003–2005.**

Waterford City Council feels that use of PBU charges is “*fundamental to the management of (the) system and promoting recycling*”.