

Summary of Regulatory Impact Analysis	
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What Policy Options have been considered? A. No policy change - the retention of the current market structure and regulatory regime. B. The introduction of franchise bidding. C. The retention of the current market structure accompanied by a suite of measures to strengthen the regulation of household waste collection. Preferred option: Option C.	
Costs	Benefits
Option A Poor environmental outcomes. Market stability and industry sustainability challenges.	Option A No transaction or implementation costs.
Option B High transaction costs and chance of market instability / disruption. Some associated risks.	Option B Potentially lower costs than Options A and C. Strong environmental outcomes.
Option C Higher costs than Option B. Some transaction costs, some associated risks.	Option C Transaction costs and likelihood of market instability / disruption lower than Option B. Strong environmental outcomes.

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Executive Summary

Waste management, including household waste collection and associated activities, should be understood as an industry of strategic importance to society's welfare, not dissimilar to other strategic industries such as food and water supply or emergency services, in that a failure to properly manage waste could result in extremely damaging and immediate effects on public health and safety.

In European terms, the evolution of the structure of household waste collection markets in Ireland has been somewhat unique, in that a system of side by side competition, primarily among private sector waste collection firms, has developed. This system has strengths and weaknesses from the perspectives of the State, the consumer, and the waste management industry, however it is certainly the case that society's waste management expectations and market developments have overtaken the capacity of the current regulatory regime to deliver.

The Department has overseen a public consultation on the issue of the regulation of household waste collection, and has considered all of the responses received. The Department has also undertaken extensive research concerning the relevant economic and environmental literature, and has considered the broad policy making context, including the status of, and recent developments in, the industry and the economic concepts and issues which arise.

Government's goals are to maximise collective wellbeing by establishing and maintaining a system of regulation of household waste collection which provides the optimal mix of economic, environmental and social outcomes. Specifically, those which:

- Support the attainment of our environmental objectives, adhere to the waste hierarchy and the principle that the polluter pays, minimise the disposal of waste in landfill, and maximise recoverable resources;
- Are consistent with the legal cornerstones of National and European policy, including the Landfill Directive and the Waste Framework Directive;
- Provide for the segregation of household waste, as required by EU and national law;
- Maximise the number of households with access to a waste collection service and maximise householder participation;
- Minimise the price paid by householders, commensurate with the achievement of environmental objectives;
- Ensure a high quality service to the householder;
- Sustain a competitive and progressive waste management industry which works in partnership with the State to meet its responsibilities;
- Provide the market stability and regulatory certainty necessary to underpin investment in the suite of infrastructure we require and supports the development of associated markets; and,
- Meet our other social preferences, such as minimising community disamenity and maximising health and safety.

A number of areas of poor or problematic performance of the current regulatory system have been identified, which render the system incapable of meeting the Government's objectives,

including: low rates of householder participation; insufficient levels of segregation of household waste; pricing issues, including pricing structures which do not incentivise sustainable behaviours; concerns in relation to meeting the State's legal obligations under EU law; potential competition issues; and, other social failures. Notwithstanding the need for change, the inherent transaction costs, and the potential economic disruption and other risks of an alteration in market structure particularly during this difficult phase of the economy's development are noted.

To address the failures of the current regulatory model, it is recommended that the Government preserves the current market structure and strengthens the regulatory regime which applies to household waste collection. Specifically, it is recommended that the Government introduces the following regulatory mechanisms:

- An obligation on all households to demonstrate that they manage their waste in compliance with legal requirements;
- Mandatory pricing structures to incentivise sustainable behaviours;
- Mandated service levels;
- The collection permitting system will be strengthened also so that robust controls are in place to ensure that only "fit and proper" individuals and companies are allowed to hold such permits, and waste collection permit fee structures reflect the value of the permission to collect waste conferred by a permit, the need to contribute to the costs of essential enforcement of the permitting system and the potential liabilities for the State which may arise from poor collection practices;
- Measures to manage the nuisance, emissions and health and safety risks of overlapping household waste collection networks; and,
- The Competition Authority will be requested by Government to assume an overwatch stance in respect of household waste collection markets. The Authority will also be required to report to the Minister for the Environment, Community and Local Government on the functioning and outcomes of the side by side market structure by 2016, or before should the Minister so decide.

Inspection and enforcement resourcing should be increased, funded by the compulsory annual contribution made by household waste collection firms.

Taking account of the Government's decision in relation to household waste collection market structures, the relevant Programme for Government commitment and the requirements of the Waste Framework Directive, including the polluter pays principle, it is recommended that an inter-departmental working group be established to consider supports to minimise the impact of waste charges on low income households in the context of the proposed new regulatory regime, to be concluded by October. The working group should be comprised of representatives of the relevant Departments and should report to Government with recommendations on measures to minimise the impact of waste charges on low income households.

With a view to improving the degree of information made available to consumers, it is also recommended that the Minister writes to the Irish Waste Management Association and household waste collection firms which are not members of the Association, to require that the industry adopts a standard Customer Service Charter, within 3 months, which will be adopted by

all household waste collection firms and which will address matters such as the provision of information to consumers regarding charging structures, payment options, service complaints, service cancellation and the treatment of households which have fallen into arrears.

The policy of retention of the current market structure, combined with a strengthened regulatory regime, should be reviewed in 2016. Should it be deemed necessary, Government may then opt to alter the regulatory regime, including by introducing franchise bidding or by otherwise monopolising household waste collection services. In the event of a failure to meet obligations under the 2013 Landfill Directive, or the emergence of other market or regulatory failures, the review may be brought forward.

Chapter One - Introduction

Programme Commitment and Public Consultation

The Programme for Government states that the Government “will introduce competitive tendering for local waste collection services” whereby local authority and private sector collection firms will bid to provide waste collection services in an entire local authority area, for a given period of time and to a guaranteed level of service, including a public service obligation in respect of a waiver scheme for low income households. Such a system of organisation is known as ‘franchise bidding’. The Programme states that bids will be judged and awarded by a new utilities regulator.

This commitment may be viewed as an element of a wider set of policies, economic and environmental. The Government’s Programme also commits to enhancing competition in the legal professions and postal services. Markets which are competitive, in which rivalry between firms is intense and which are open to new entrants, are likely to provide a quality service and a fair price. In respect of waste policy, the Programme also includes a commitment to develop a coherent national waste policy, adhering to the waste hierarchy, which will aim to minimise waste disposal in landfill and maximise recovery.

In accordance with best practice and Article 4 of The Waste Framework Directive,¹ which require that the development of waste legislation and policy be a fully transparent process, a 10-week public consultation on the issues involved, designed to inform the policy development process, concluded in September 2011. A discussion document was prepared, circulated and hosted on the Department’s website. Over 750 responses were received. Responses came from a range of sources; individual citizens, waste management companies, other companies, local authorities and waste management regions, economic think tanks, community and voluntary organisations and State agencies. A consensus is not apparent. On almost all issues, a considerable breadth of opinion was expressed by the collective response. On no issue were respondents in unanimous agreement. Each individual response and a summary of the responses received are available on the Department’s website, as is the discussion document.

This Regulatory Impact Analysis

The *Revised Regulatory Impact Analysis Guidelines*, issued in 2009, require that all proposals for primary legislation involving changes to the regulatory framework undergo a regulatory impact analysis.

A regulatory impact analysis is a tool used for the structured exploration of different options to address particular policy issues, used where one or more of these options is new regulation or a regulatory change and facilitates the consideration of alternatives to regulation or lighter forms of regulation. A goal of regulatory impact analyses is “to present solid factual evidence base about the costs, benefits and other impacts of a range of feasible policy options relating specifically to the identified issue or problem.”²

¹ Directive 2008/98/EC.

² Department of the Taoiseach (2009), page 13.

The introduction of franchise bidding would be a major change to the system of regulation which currently applies to the household waste collection industry. As the level of analysis involved should be proportionate to the significance of the proposal in question, i.e. the introduction of franchise bidding, robust analysis of the Programme commitment is required. Such a major regulatory change would impact on households, businesses, industries of importance, and the State. Such a change would also impact on the environment, national competitiveness, socially excluded and vulnerable groups, and economic markets. There could also be compliance, administrative and other costs on business and the State.

Waste management should be understood as an industry of strategic importance to society's welfare, not dissimilar to other strategic industries such as food and water supply or emergency services, in that a failure to properly manage waste could result in extremely damaging and immediate effects on public health and safety. In the longer term, such a failure could substantially degrade the environment, cause harm in other areas of economic activity, such as tourism, and could have severe reputational and legal and/or financial consequences for the State. No less than in relation to any other strategic industry, considerations of changes to the regulation of the waste management sector should be informed by an understanding of the potential risks of unforeseen or unintended consequences. The corollary is the clear imperative for regulatory change which results in the improved functioning of the waste management industry.

A Balanced Assessment

The issue of predetermination has arisen during the public consultation process, given that the Government's Programme unequivocally commits to the introduction of franchise bidding.

A goal of the regulatory impact analysis process is to reduce the unnecessary use of regulation through an examination of the possible use of alternatives; where possible, no particular measure should be regarded as a *fait accompli*. Notwithstanding the Programme commitment, Government has yet to make a decision on the structure of household waste collection markets. This regulatory impact analysis has been undertaken by the Department on the firm basis that all appropriate options, including the introduction of franchise bidding, alternative policy measures, and a 'no policy change' approach should be considered on their merits and demerits.

It is noted that the *Revised Regulatory Impact Analysis Guidelines* state that, in respect of measures to which a Government has made a Programme commitment or another policy document, "the focus of the RIA might... be on different options relating to issues within the scope of the legislation (e.g. how a particular scheme might be funded or administered), rather than on the broader question of whether or not to regulate."³ However, this regulatory impact analysis has not been restricted to a narrow consideration of the best implementation of franchise bidding; the focus has been on the broader issue of how best to regulate household waste collection. As such, franchise bidding is one among several options.

³ Ibid, page 5.

Chapter Two - The Policy Context I: Current Market Structure, the Recent Evolution of the Industry and Calls for Change

This chapter will seek to describe the general context surrounding household waste collection policy, including an overview of the current system of regulation, the approaches taken elsewhere, and the comments of notable economic institutions and other bodies in relation to the potential role of franchise bidding in Ireland.

An Overview of the Current Market Structure

In the past, local authorities collected almost all household waste.⁴ However, in recent years the role of the private sector has increased markedly. Private sector firms, which are permitted to collect waste by local authorities under waste management legislation, have gained almost the entire national household waste collection market. In most areas, local authorities no longer provide a service and several private sector waste collectors compete for business. In other areas, no service is offered by the public or private sector. However, in all areas local authorities are responsible for the issuing and oversight of waste collection permits, which are required if a private sector firm is to collect waste.

Household waste collection by private sector firms is now predominant in almost all local authority areas. It is understood that 32 of the 34 local authorities have exited the relevant local markets and no longer provide direct services. Many local authorities have transferred clients to a private sector firm, effectively selling lists of households which were local authority clients. Most recently, Dublin City Council has transferred its client base to Greyhound. Waterford County Council and Galway City Council are exceptions in that they continue to operate in competition with private sector waste collectors.⁵

Local authorities have reported that private sector entry into a market was often initially focused on dense, affluent urban areas.⁶ Such areas are unlikely to have a high proportion of waiver-dependent households⁷ and households in such areas tend to have relatively low credit risk. As such, the most attractive areas were prioritised by private sector entrants, and the proportion of waiver dependent, and therefore more costly, households on the local authority's client list grew, thereby challenging the financial sustainability of direct service provision by the local authority. Notwithstanding any such efforts to segment markets, local authorities have certainly demonstrated difficulties competing with private sector competition. It is understood that labour costs and flexibility have been important factors in inhibiting local authority competitiveness in household waste collection. Side by side competition between the public and private sectors in household waste collection markets has resulted in declining local authority market shares, the erosion of local authority scale economies and growing local authority costs per households served. As such, the withdrawal of many local authorities from waste collection markets has been principally motivated by issues of cost and declining customer numbers.

⁴ As sanitary authorities under the Public Health (Ireland) Act 1878.

⁵ A small number of town councils also offer household waste collection services.

⁶ This practice is known to economists as “cream skimming”, in which a company provides a service to only the high-value or low-cost customers, i.e. the customers which are most profitable to serve.

⁷ That is, households which satisfy the relevant local authority's scheme and therefore pay reduced waste collection charges. The value of waiver schemes vary markedly from local authority to local authority.

The position of local authorities as regulators and competitors has also been undermined somewhat by a combination of factors, including interpretations of the Services Directive and recent case law.⁸ Local authority withdrawal from direct service provision removes the basis for perceptions of conflicts of interest, as local authorities have been accused of seeking to exploit their waste management regulatory roles, as waste facility permitting and waste collection permitting authorities, in order to buttress in-house waste management activities.

Concentration⁹ has occurred, as larger firms have expanded, in part by acquiring smaller firms, and as local authorities have withdrawn from the national market. In the last year the degree of concentration of the industry has dramatically increased, as the remaining three Dublin Region local authorities exited the market and have transferred their clients to large private sector service providers.¹⁰

Private sector firms are diverse in terms of their size, service offerings, price structures and degree of vertical integration. A number of waste collection firms have invested in waste disposal and treatment infrastructure, such as landfills and mechanical and biological treatment facilities, which have been built and operate on a merchant basis. Such private sector facilities are, in many cases, in competition with local authority owned waste disposal and treatment infrastructure. Vertically integrated private sector companies collect from households, and often also collect commercial waste; this waste is then used as feedstock for waste disposal or treatment facilities owned and operated by the same companies. Vertical integration has efficiency benefits, however the OECD observed that those waste collectors “that control their own waste therefore have an incentive to direct it to their own waste disposal sites in order to maximise revenue, regardless of national efficiency concerns or environmental targets.”¹¹

The expansion of the role of the private sector in household waste collection could be characterised as a process of incomplete regulation. Waste collection firms are required to apply for and comply with waste collection permits and are subject to a range of legal requirements under waste management legislation, seeking to ensure that certain environmental outcomes are achieved. Waste collection firms are also subject to competition law. However, an observer might conclude that the near wholesale withdrawal of local authorities and the corresponding growth in the role of the private sector was not a policy goal and was not fully anticipated. As a consequence, policy has not addressed the impacts of the evolution of the market, such as the shift of control of waste volumes from public to private bodies. In short, the role of the private sector has not been planned and managed as has happened in other countries, and market structures have not been regulated. The current system of regulation could fairly be described as incomplete in a number of respects.

⁸ See High Court Judicial Review 2008/42/JR, *Nurendale V Dublin City Council and others*, [2009] IEHC 588, i.e. the Panda judgement. See also Andrews, P. & Gorecki P. (2010).

⁹ I.e. the degree to which production in an industry is dominated by a small number of firms. The degree of concentration of an industry can have implications for competition, although factors such as scale economies and the threat of new entry also have a strong bearing.

¹⁰ South Dublin County Council in April 2011 (Greyhound), Fingal County Council in November 2011 (Panda) and Dublin City Council in January 2012 (Greyhound).

¹¹ Organisation for Economic Cooperation and Development (2008), page 319.

The Household Waste Collection Industry

Data in relation to the nature of the household waste collection industry, such as the exact number of firms currently operating and their respective market shares has not been available to the Department. However, despite these data gaps it is possible to make a number of observations concerning the nature of the industry.

Value and Ownership

The household waste management industry is notable, in annual value terms. The Department estimates that the annual revenue of the household waste collection element of the overall waste management industry is in excess of €250m; the management of commercial waste is of a similar scale. In all likelihood, the entire waste management industry, household, commercial and industrial, has a total annual turnover exceeding €5bn. By any measure, the waste management industry is a substantial component of the national economy; the household waste collection element of the overall industry is sizable.

The waste management industry is almost exclusively composed of Irish firms.¹² The market penetration of international firms is low, which is likely due, in part or otherwise, to the unique structure of waste collection markets in Ireland. Elsewhere in Europe, international waste management firms, such as Veolia and Suez Environment, often have a presence in several countries.¹³ In this regard Ireland is unusual, particularly among Atlantic-seaboard European countries, as a number of international firms provide waste collection and other waste management services in many or all of France, Belgium, the Netherlands, UK, Portugal, Spain and Germany.

Diversity

The Irish household waste collection industry is diverse. Approximately 45 household waste collection organisations are providing services,¹⁴ the majority being private sector firms, the remainder being local authorities, with the exception of one service provider which is owned by a State body.¹⁵ The majority of service providers are small firms, several with 20 employees or less and active in a limited number of local markets. The smaller firms tend to be clustered in the South and West. A number of medium and large firms exist, which in the main are clustered in the East and around major urban centres. Unlike the smaller firms, the larger firms tend to be vertically integrated, in that they tend to have operations throughout the chain of waste management, from collection through to disposal or treatment. Medium and larger firms also tend to offer other waste services, including the collection of commercial waste, business-to-business waste management consultancy services, skip hire etc.

¹² Indaver is the sole significant exception, and it should be noted that Indaver does not provide waste collection services.

¹³ Veolia does not offer non-hazardous waste collections services in Ireland, despite having a commercial presence. Veolia does operate the Luas concession and offers hazardous waste management services in Ireland, having sold its non-hazardous commercial waste collection arm to Greenstar in 2009.

¹⁴ In 2010 76 waste collection firms were in operation, however 20 of these were extremely small operations, serving less than 500 households. The industry can be expected to have declined in terms of the numbers of waste collection firms, from 2010 to 2012.

¹⁵ AES Waste Management, a subsidiary of Bord na Móna.

No national household waste collection service provider exists, in that no waste collector offers a service in every market. Three broad categories of private sector waste collector exist. The six largest firms, that is Greyhound, Panda, Country Clean, AES, Greenstar and Oxigen, have a regional presence. For example, Greyhound and Panda operate in the Greater Dublin Area, AES operates in Leinster and North Munster. Greyhound, the largest company in terms of the numbers of households served, has approximately 220,000 client households, i.e. approximately 18% of all serviced households.

Table 2.0: The Six Largest Household Waste Collection Companies

Company	Households
Greyhound	220,000
Panda	135,000
AES	95,000
Country Clean	80,000
Greenstar	75,000
Oxigen	70,000

The second category of waste collector are the 10-15 medium sized firms, such as Thorntons, Clean Ireland, Access Bins, Wastepal, City Bin and Ozo waste, which have approximately 10-40,000 customers. Many of these companies operate in several local authorities. Some medium sized firms operate in geographically diverse markets, such as City Bin which is present in Galway and Dublin. Many medium sized firms provide commercial waste collection and other waste management services, and some own and operate waste infrastructure.

The third category of private sector waste collector are the 35 or so smaller firms, which range from extremely small, with a few hundred customers to those with approximately 10,000 household clients. These firms are often family owned and managed. They may negotiate access to waste infrastructure by operating in partnerships or as consortia.

An industry's concentration ratio can be an indicator of the strength of competition found within that industry. The C4 concentration ratio, i.e. the national market share of the four largest household waste collection firms, is approximately 44%,¹⁶ which is not a particularly concentrated industry. Striking, however, has been the recent pace of concentration in the last 12-18 months, as Greyhound and Panda have considerably increased their respective sizes by purchasing client lists from Dublin local authorities. It should be noted that, in and of itself, a moderate concentration ratio does not indicate the presence or absence of competition issues; decisive factors are the degree of rivalry and contestability within local markets, as opposed to the proportionate share of national markets. However, the degree of concentration in the industry, and the extent to which it has concentrated in recent months, does indicate the potential for larger firms to continue to grow, both in terms of geographic coverage and market share.

Fragmentation

The household waste collection industry is also fragmented. This fragmentation exists particularly in terms of:

¹⁶ As measured by numbers of households served.

- The pricing structures offered by firms, which vary considerable from market to market, from flat rate annual charging, to variable pricing by volume or weight;
- The payment mechanisms and payment terms used, which range from online credit card payments to bin tags, from pay in advance to pay in arrears;
- The services offered. Some service providers operate a single bin collection service, the majority offer a fortnightly two-bin collection, a smaller number of service providers offer three bin fortnightly collections. In certain areas, other collections are offered, such as glass or textiles;
- The use of technology varies considerably, such as electronic bin tagging, online customer service facilities, split compartment collection vehicles etc.
- Consumer behaviour and service expectations are reported to be very different from market to market, perhaps conditioned by the price structure and service operated by the local authority before private sector entry into the market. Such consumer behaviour and expectations have proven to be persistent in some cases, despite local authority withdrawal and the passage of time. Waste presentation patterns also vary from market to market. For example, private sector service providers report considerable variations in the usage, measured by average weight per household, of recyclates and organics bins by households in different markets.

In a non-fragmented industry, customers across the country would be offered similar, or at least less diverse, levels of service, payment structures and payment mechanisms. It should be noted that a range of highly differentiated product offerings can make it difficult for householders to compare prospective providers and to predict how much they would pay should they switch provider. However, it should also be noted that absolute uniformity of service levels, payment structures and mechanisms is not desirable - market offerings should be differentiated, thereby facilitating each household when choosing a service based on its particular preferences and circumstances, provided that such diversity supports positive environmental and economic outcomes. Electricity provision to households is an example of an industry which is not fragmented; the service offered, pricing structures etc. are somewhat homogenous and three firms with a national presence are in competition for householder business.

A Maturing Industry

The household waste collection industry may best be understood as a maturing industry.

Following the introduction of pay-by-use charging for household waste collection, the respective roles of local government and the private sector evolved considerably. Private sector firms, permitted to collect waste by local authorities under waste management legislation, have gained a considerable share in the majority of the national household waste collection markets and continue to increase that share.

Household waste collection by private sector firms is now predominant in almost all local authority areas. Most local authorities have exited the market and no longer provide direct services, such as Fingal County Council which ceased offering a service in October 2011, having contracted with, and transferred its clients to Panda, a private sector firm. South Dublin County Council withdrew from the market and transferred its waste collection activities to Greyhound Recycling and Recovery Ltd in March 2011. Dublin City Council withdrew from the market in

January 2012, also having transferred its activities to Greyhound. Similar withdrawals have occurred throughout the country, motivated by issues of cost and declining customer numbers.

Local authority and private sector involvement in household waste collection currently conforms to two principal categories of situation:

- Mixed Public and Private Provision: Competition between a local authority and one or more private sector firms, which is the case in Waterford County Council and Galway City Council.¹⁷
- Public Withdrawal and Private Provision: Local authority withdrawal from the market, in many cases having sold its client list to a private sector firm, for example Dublin City Council, South Tipperary, Fingal and Kerry County Councils, which have all withdrawn in recent months or are about to withdraw.

As such, the private sector¹⁸ share of the national household waste collection market is currently estimated as being 98% or more.

The Future of the Household Waste Collection Industry

To date, the private sector waste collection industry as a whole has largely grown, in terms of the numbers of households served, by:

- (i) Competing for, and winning, business from local authorities;
- (ii) Purchasing client portfolios or lists from local authorities and assuming responsibility for the provision of services to those households; and,
- (iii) Providing services in areas, chiefly rural, in which local authorities did not previously offer a service.

As one may expect, the private sector served proportion of the market has grown as the local authorities' proportion has diminished.

It is important to note that the industry will continue to change, regardless of the regulation of market structure. Should the Government decline to introduce franchise bidding, and retain side by side competition, the status quo, in terms of the numbers and average size of firms, is very likely to alter. The development of the industry in recent years is likely to be indicative.

In order to grow, given that local authorities have largely withdrawn, service providers will compete with one another in the markets in which they are currently operating, and many will likely enter new markets. The better-managed, resourced and more efficient waste collection firms will thrive at the expense of the less efficient. It is highly likely that the industry will consolidate from its current fragmented state. The role of many smaller service providers will diminish as they are acquired by agreement or are out-competed by larger rivals. Some of the larger regional waste collection will continue to grow and perhaps offer national coverage. As service providers grow and invest, service standards may become standardised and the use of

¹⁷ A small number of town councils also provide household waste collections services, such as Kilkenny Borough Council, and Killarney Town Council.

¹⁸ Including AES Waste Management, a subsidiary of Bord na Móna.

technology such as electronic bin tagging, highly specified refuse collection vehicles and sophisticated customer service oriented websites will grow, which may further lessen the market shares of the smaller service providers, for which access to finance is likely to be more expensive.

In all likelihood, should a system of side by side competition persist, in 10 to 15 years the industry will be quite different from that which exists today, with a much higher degree of concentration, i.e. fewer and larger firms. Treatment and disposal capacity will become concentrated in a smaller number of large scale facilities, and therefore in a smaller number of vertically integrated waste management companies. Currently, a large proportion of municipal landfill capacity is shared among four private sector landfills; the total number of landfills will decline considerably in coming years.¹⁹ A highly concentrated national industry could have implications for the strength of competition and could be a challenging environment for future regulation.

Household Waste Collection and the Wider Waste Management Industry

Household waste collection is an industry nestled within the wider waste management sector. The household waste collection activity is an initial part of a longer waste management process, involving waste disposal and treatment and the production and economic use of waste by-products.²⁰ The entire waste management industry can be understood as a set of markets, of which household waste collection markets form a part.

The national household waste collection market is composed of a large number of local markets. These local markets overlap, in both the geographic and structural senses, and are connected with many other markets, including:

- Commercial waste collection markets;
- Regional, national and international waste treatment and disposal markets;
- National and international markets for refuse derived fuel, solid recoverable fuel etc; and,
- National and international markets for recyclates.

Markets are linked and fluctuations in certain markets will have a pronounced impact on others. For example, a change in the price charged to householders and businesses for the collection of recyclates will, *ceteris paribus*, have an impact on the national recyclates markets, as the supply of recyclates will likely fluctuate. Similarly, demand changes in Far Eastern recyclates markets will have an impact on the national recyclates markets, and household waste collection markets in Ireland. These interconnected markets can be understood as a cluster. It is notable that household waste accounted for almost 60% of all municipal waste generated in 2010.²¹

Several private sector household waste collection service providers, such as Greyhound, Panda, AES and Greenstar are both vertically-integrated along the chain of management of household waste, and are active in complementary waste industries, such as the collection and management of commercial waste. As such, they have a presence in several of the cluster of waste markets.

¹⁹ Environmental Protection Agency (2012), page 60.

²⁰ Such as the production of Refuse Derived Fuels or recycled plastics.

²¹ In 2010, 1,686,387 of 2,846,115 tonnes. See Environmental Protection Agency (2012), page 9.

All four firms are present in the collection and treatment industries, with AES and Greenstar also in the disposal business.

Structural and other regulatory changes to household waste collection markets will have an impact on the wider cluster of waste markets. The introduction of franchise bidding, particularly if introduced in a non-staggered manner with inadequate forewarning could act as a shock to the wider cluster. However, franchise bidding, if introduced in a well designed, phased manner could act to improve the dynamics of other markets in the waste sector, by, for example, increasing certainty and predictability²² in relation to waste flows.

The management of waste can be regarded as an overhead cost for the entire economy. A well functioning, efficient cluster of waste markets, in which prices are low and the desired environmental outcomes are being achieved, will have benefits for the economy as a whole. The reverse situation, in which one or more of the markets within the waste cluster are operating inefficiently, will result in a degree of contagion to other waste markets and a corresponding impact on the cost of waste management for all households and all businesses, thereby impacting on the competitiveness of the entire economy.

International Experiences

In considering current and possible policy approaches it can be instructive to examine those taken elsewhere, particularly in other developed economies.

Very few countries organise household waste collection in a similar fashion to the Irish system. Ireland is alone among European Union Member States in operating a system of near privatised, side by side competition. In Europe, the regulation of household waste collection markets is in alignment with the assertion that local markets are, or are very close to being, natural monopolies (see page 28 for a discussion of natural monopolies). Almost universal are market structures which are regulated to ensure a monopoly supplier, whether private, public or mixed.

Poland

Recent changes in Poland are of relevance to Ireland. Until 2012, waste management in Poland was in the hands of private companies. From the Polish State's perspective, this situation was less than ideal as an unsustainably high proportion of waste was disposed of in landfill, 73% in 2010, a diversity of waste collection systems were in operation, many of which did not offer adequate recycling services, little incentive existed for the private sector to invest in modern waste treatment infrastructure, and the State was unable to plan waste management in the context of an almost fully privatised system. A further incentive for the change in arrangements was Poland's desire to increase the numbers of households participating in waste collection services as it was estimated that nearly 10% of households did not have a signed contract for refuse collection and that large volumes of household waste were being dumped. In view of the estimated participation rate in Ireland, some 71%, this is a notable concern.

In July 2011 Poland enacted legislation to switch from a system of side by side competition for household waste collection to a monopolised system in which municipalities are responsible for

²² I.e. increasing the information available to market participants - markets tend to work more effectively the greater the availability of information.

waste collection and management. The Polish municipalities will operate tendering processes to select a company to collect and treat waste from a given area. From 1st of January 2012 waste will no longer be owned by householders, as ownership will transfer to the relevant municipality. All households will be required to pay the municipality for waste management services.

Finland

Finland is of particular interest as it is the one EU Member State which operates a mixed system of market structures. Also, Finland is the only available example of changes in market structures from side by side competition to franchise bidding. Under the Waste Management Law of 1993 municipalities are responsible for organising the transport and treatment of all waste produced within their boundaries. Municipalities may collect waste in-house or contract out with a 'transporter', i.e. a private sector waste collector, except in areas which have poor transport connections. The municipality may opt to monopolise waste collection, and operate a regime of franchise bidding, or to permit side by side competition. 99% of Finnish household waste collection is performed by the private sector. Franchise bidding is the most common form of market structure, however side by side competition is also prevalent.

Regardless of the type of market structure the municipality puts in place, the municipality is liable for its responsibilities set out in the Act. An important element of the Finnish regulations is that the waste holder, i.e. the householder, is obliged to create a contract with a transporter in situations in which the municipality chooses not to provide collection. In both the franchise bidding and side by side competition scenarios, the municipality may direct the transporter to manage waste at local or regional facilities. In this way, the competitive situation in Finland, is not directly comparable to that in Ireland as the Finnish householder is obliged to participate in the household waste collection market and a Finnish municipality enjoys the power to direct waste.

According to a Jätelaitosyhdistys²³ presentation, the average cost of household waste collection was €159 per annum, as of 2009. The average cost of collection of a 240L bin was €6.

According to a 2010 report of the Finnish Government Institute for Economic Research, the introduction of franchise bidding for household waste collection has led to a reduction in the number of firms bidding for contracts by 0.39 per tender.²⁴ However, introducing franchise bidding has also led to an estimated price reduction of 40% on average for householders, a very considerable saving.²⁵

United Kingdom

Compulsory competitive tendering, or franchise bidding, for household waste collection was introduced in the United Kingdom in 1988. In England and Wales, in approximately 50% of local authorities, waste collection services are provided by the private sector, operating under a local authority contract. Joint ventures, between local authorities and private sector partners are

²³ The Finnish Solid Waste Association, which represents 30 regional and municipal waste management companies.

²⁴ I.e. fewer firms bidding for any given contract.

²⁵ Tukiainen, J. & Mälkönen, V. (2010), page 6.

also used to deliver services. The remaining local authorities provide household waste collections services directly.

In Northern Ireland, however, household waste collection services in almost all cases continue to be the preserve of the local authorities. Side by side competition for household waste collection does not exist in the UK.

UK local authorities fund household waste collection and disposal and treatment services using a general council tax charged to all households for all local authority services.

Germany

In Germany, the Länder determine waste policy for the municipalities within their borders. Responsibility for collecting and transporting household waste, promoting waste prevention and recovery, and planning, constructing and operating waste disposal facilities rests with the local public waste management disposal authorities. However, Germany operates the *Duales* system of household waste collection, which requires industry to fund the collection of household packaging waste, an activity performed by private sector collectors. The *Duales* system is intended to encourage producers of packaging waste to reduce the amounts of packaging produced and to make them responsible for its collection and treatment.

Operating in parallel with the industry funded packaging waste collections are local authority collections of other recyclables, such as non-packaging paper waste, and general waste from households. This system should not be confused with side by side competition, as neither element of the *Duales* system are in competition; rather, these are complementary parallel collection systems. The flow of waste is very clearly defined in the *Duales* system. Waste is collected and transported by private operators; the municipality's portion is usually directed to MBT and/or incineration, while household packaging waste is processed and returned to recyclates markets.

Charging mechanisms vary, and can reflect the volumes presented for collection, the number of residents of the household and the size of the property.

France

The French waste market is perhaps the most complex system in the EU; municipalities may choose from a range of institutional and financial structures for arranging waste collection services in their territories. While this allows for municipalities to make the most appropriate local arrangements the French system is the least comparable to others in the EU in particular in terms of its various financial structures. This brief description of the position of the municipalities and their right to control waste flows does not do justice to the complexity of the situation.

The legal framework underpinning the structure of the market is the *Code Generale des collectivites territoriales*, which gives the local authorities the power to collect, dispose of and treat or process waste, and also outlines the financing of schemes which the municipalities may use to cover the costs of the service. The majority of municipalities have formed inter-municipal

associations for the provision of collection contracts and/or the creation of waste disposal/treatment facilities.

With few exceptions, the private sector has a role in the collection and treatment of waste through a tender contract or a joint venture between municipalities/inter-municipal associations and private sector partners.²⁶ Decisions on the type of waste collection service, such as number of collections per week, the number of bins/level of separation, and the levels of waste recovery or disposal are dictated by the municipality or inter-municipal authority.

Local authorities may choose among a complex range of financing instruments. The municipalities' diversity explains the heterogeneity of the financing instruments, with smaller local authorities tending to opt for incentivising charging structures whereas the larger urban areas tend to choose a flat rate household tax.²⁷ Municipalities may choose to charge householders a portion of the cost of waste collection and treatment as a tax with the balance paid from other revenue, or a full cost recovery service fee.

Sweden

In Sweden, individuals and commercial operators are responsible for the correct disposal or treatment of waste they produce. Households are legally obliged to separate waste. Household waste streams are directed by the municipality, with the exception of that waste which is covered by producer responsibility initiatives. Sweden's municipalities are responsible for collecting and disposing of household waste. Since Sweden's landfill ban in 1997, municipalities have directed greater amounts of waste to material recovery and incineration plants. Recycling rates are high by EU standards. Aside from the producer responsibility initiative schemes, municipalities direct household waste to facilities as they see fit. Some waste infrastructure is privately owned but these facilities act on the municipalities' behalf. Municipalities charge a waste management fee on a household basis.

Austria

In Austria the Federal Government is responsible for making national provisions on waste policy while the Länder make more immediate decisions on waste policy in respect of their Regions. The Länder are also responsible for all non-hazardous waste collection and disposal, however as in other EU Member States, this does not mean that the municipality has to directly provide such services, simply that the municipality has the responsibility to ensure that these services are provided. In 2002 it was estimated that approximately half of all waste collection services and 80% of recycling processing were performed by the private sector. A 2009 analysis of the Austrian waste market suggest that 78% of all waste collection and transport is now performed by the private sector.²⁸ Waste collection is performed on the basis of monopoly provision.

As in Germany, Austria also operates a system by which packaging waste producers must either take back their packaging or participate in a collection and recycling system. Packaging waste producers may contract a licensed collection and recycling provider to collect packaging waste.

²⁶ Such joint ventures are also commonly used to perform household waste collection services in Spain and Portugal.

²⁷ Djemac, B. (2009), page 16.

²⁸ Klein M. & Loser P. (2009).

In Austria households are usually obliged to make use of a kerbside collection service. Exceptions for properties are possible only by means of an ordinance or notice. If a household does not wish to use a bin, the household may apply for an exemption but must demonstrate how it will otherwise deal with its waste. Household waste collection fees are volume based and are determined by each municipality.

Canada

In Canada waste collection is provided on a monopoly provision basis. Central government's role is to develop national waste policy targets and gather waste statistics from the ten Provinces and Territories. The provincial governments monitor municipalities and where necessary or efficient coordinate infrastructural development. Different provinces have slightly different local government structures, regional, municipal or county levels, and where considered efficient higher levels of local government retain responsibility for waste services. The cost of waste collection is usually funded by local taxes, however a number of municipalities are now adopting a pay-by-use aspect to their funding model. Due to the breadth of statistics collated and published by StatCan, the contracting out of waste collection has been much-examined by economists. Initial studies found that private provision was no cheaper than public provision.²⁹ Since then, possibly due to the increasing complexity of waste collection or increased professionalism in the private sector, other studies have shown a considerable cost saving associated with the contracting out of waste collection services. In a recent analysis of waste collection cost-savings seen in areas that contract out, studies show savings of 31% from public provision.³⁰

In Canada, the average cost of waste management (collection, treatment and disposal) is \$79 CAN (approximately €60) per capita. Canada's waste production per capita is high at approximately 770kg per annum and diversion from landfill rates vary due to differing patterns of consumption among regions. Canada's waste diversion performance is well below Irish diversion rates, but this is based on a national average of 24.7%. Some of Canada's provinces perform comparatively well, with diversion rates of 45.3% and 35.8% in Nova Scotia and New Brunswick respectively.

United States

In the United States, local authorities in managing waste are operating in a very different legal environment to EU Member States, which are subject to the Waste Framework and Landfill Directives, for example.

In the United States, the private sector does have a role in household waste collection, but less so than in some EU Member States; "private production of solid waste collection is the form [of delivery] used in most municipalities (between 60 per cent and 80 per cent) in countries like Sweden, Norway, Finland, Denmark and Spain, but by less than half the municipalities in the US."³¹ In the United States "direct public delivery continues to be the most common form."³² A

²⁹ McDavie J.C. (2001).

³⁰ Dachis. B. (2010).

³¹ Warner M. & Bel G. (2008), page 723.

³² Ibid, page 727.

growing form of service provision in the US was mixed delivery, i.e. “using both private contracts and public production for the same service.”³³ The advantages of doing so are cited as:

- Local authorities may benchmark costs and production processes against the private sector.
- To maintain competition through competitive bidding between private and public crews;
- Reduces transaction costs as the local authority has complete information on the nature and costs of service delivery;
- Ensures Government capacity to assume responsibility for the service in the event of contract failure; and,
- Associated with increased attention to customer satisfaction.

In general, the respective roles of the market and public provision are being re-examined in the US as services which had been contracted out are being provided directly, that is, contracting out arrangements are being discontinued and replaced by in-house service provision in many municipalities; “reverse contracting is becoming more common in the US... as problems with the instability of contracting are more widely recognized.”³⁴ However, as in Europe, while competition in the market is not unheard of, in general waste collection services are performed on a monopoly basis.

Summary of International Approaches

Table 2.1 offers an overview of some broad waste management outcomes from three sets of waste management systems in the European Union.

*Table 2.1: Municipal Waste, Volumes and Treatment in Eight EU Member States*³⁵

	<i>% Households Served</i> ³⁶	<i>Kgs Municipal Waste Generated per Person</i>	<i>% Municipal Waste Landfilled</i>	<i>% Municipal Waste Incinerated</i>	<i>% Municipal Waste Recycled</i>	<i>% Municipal Waste Composted</i>
<i>Side by side</i>						
<i>Ireland</i>	71	636	57	4	35	4
<i>Poland</i>	90	315	73	1	18	8
<i>Mixed</i>						
<i>Finland</i>	100	470	45	22	20	13
<i>Monopolised</i>						
<i>UK</i>	100	521	49	12	25	14
<i>Germany</i>	100	583	0	38	45	17
<i>France</i>	100	532	31	34	18	17
<i>Austria</i>	100	591	1	30	30	40
<i>Sweden</i>	100	465	1	49	36	14

³³ Ibid, page 728.

³⁴ Ibid.

³⁵ Eurostat (2012), page 2.

³⁶ Organisation for Economic Cooperation and Development (2008), page 323.

Poland, until January 2012, and Ireland operate a system of side by side competition for household waste collection services. The performance of both countries is poor in certain respects, in that rates of landfill are excessive and household participation rates are low, compared to those countries which have monopoly provision. The municipal waste generated per person is particularly high in Ireland; less so in Poland, which may reflect a lower level of household consumption than in many other EU Member States, as opposed to a particularly successful system of waste prevention or management. The outcomes in those countries which have monopolised the provision of household waste collection services are almost uniformly superior, although it is noted that Ireland's performance in respect of the recycling of municipal waste is strong.

Finland, the only country which operates a mixed system of side by side and monopolised waste collection has strong outcomes, as compared to Ireland.

It is not possible to state that a causal relationship exists between the monopolisation of service provision and superior outcomes, and one must be cautious as even within each category of market structure, i.e. side by side competition and monopoly provision, there are wide variations, however the correlation is noted. It is important to also note that under systems of monopoly provision, a municipality may require that waste collection practices maximise diversion from landfill.

The Finnish figure of a reduction of 40% in household waste collection prices cannot be readily dismissed and may indicate that similar savings are possible in Ireland should franchise bidding be introduced.

Calls for the Introduction of Franchise Bidding

The Programme for Government commitment to introduce franchise bidding for household waste collection is aligned with calls made by a number of institutions, organisations and individuals in recent years to restructure household waste collection markets, or, at the least, to examine the potential benefits. This issue has been an element of waste regulation discourse for some time.

Some of these calls are presented below.

The Organisation for Economic Cooperation and Development

The 2008 Organisation for Economic Cooperation and Development Review of the Irish public service includes a case study of local waste management in the local government sector, which reviews the regulation and provision of services in the sector. The case study was critical of the current system of regulation, stating that "In the case of the Waste Management case study, looking to international experience would have revealed that outsourcing waste collection was the best way to manage competition and to ensure public goods such as universal waste collection

and low income waivers. However, in the absence of clear policy guidance and direction, the majority of local authorities have taken the path of least resistance, which is to cede responsibility for waste collection directly to private service providers.”³⁷

The OECD has also stated that “despite improvement, municipal waste collection is fragmented and not adequately regulated”³⁸ and noted that “the shift to private waste collection has introduced inequalities that have yet to be addressed”³⁹

The OECD has recommended that contracting-out by local authorities, i.e. the introduction of franchise bidding, be examined “taking into account the wider financial context and approaches at national level to waste management” having previously noted that “contracting tools... are under-utilised.”⁴⁰

The Economic and Social Research Institute

“There are good reasons why there should only be one supplier of household waste collection in any geographic area; in particular the ability to realise economies of scale, scope and density.”⁴¹ (2010)

Forfás

Forfás called for policy certainty and for immediate policies which: “promote competition for, rather than competition in, the market. Proposed changes... which aim to do so are supported by Forfás. International experience suggests that competition for the market delivers increased efficiencies with businesses and households benefiting through lower collection prices.”⁴² (2011)

Eunomia et al

“We recommend that the Waste Management Act is amended such that

³⁷ Organisation for Economic Cooperation and Development (2008), page 254.

³⁸ Organisation for Economic Cooperation and Development (2010), page 13.

³⁹ Organisation for Economic Cooperation and Development (2008), page 326.

⁴⁰ Ibid, page 335-6.

⁴¹ Gorecki P.K., Acheson J. & Lyons S. (2010), page 97.

⁴² Forfás (2010), page 24.

household waste collection is made the responsibility of local authorities. Household waste may be collected only by the local authority itself, or by an enterprise acting on its behalf... This has the potential to:

- Enable collectors to benefit from economies of density, so reducing the cost of service delivery to the users;
- As a result, increase the take-up of services across a given geographical area;
- Enable the quality and scope of the collection service to be specified through the tendering mechanism;
- Squeeze out monopoly rents where service operators are operating as a local monopoly; and
- Enable a stronger link to be made between the collection and treatment of waste, improving the prospects for development of the desired infrastructure.

In short, it should allow for similar or greater environmental quality to be attained at lower cost.”⁴³ (2009)⁴⁴

The national and international reputations of many of these commentators speak for themselves, and, as such, their contributions cannot be easily dismissed. Taken together, these contributions reflect a strong endorsement of the potential benefits of franchise bidding. A notable characteristic shared by each of these commentators is that none are active in the waste industry; as such, they do not represent vested interests with a financial motive to shape attitudes to the potential benefits of altered market structures.

It is noted that the Competition Authority’s position on household waste collection market structures has changed in recent years. In 2005 the Authority recommended that “the Department introduce competition for the market, i.e., the procurement of services by local authorities from service providers following competitive tendering processes.”⁴⁵ However, the Authority subsequently modified its position, in view of the considerable changes to household waste collection markets since 2005, in particular the absence of public monopolies left and the entry of many new private sector firms. The Authority’s position is that it is “no longer appropriate to completely dismiss the side-by-side competition option without further consideration, especially in areas where it had clearly brought benefits to the Irish consumer.”⁴⁶ The Authority has also stated that “it is not clear that the benefits of competitive tendering over side-by-side competition are always substantial or easy to achieve.”⁴⁷

⁴³ Eunomia et al (2009), page 58.

⁴⁴ Eunomia has made similar recommendations in documents prepared for other Irish clients, including in a report prepared for Greenstar in 2008.

⁴⁵ The Competition Authority (2005), page 47.

⁴⁶ The Competition Authority (2011a), page 8.

⁴⁷ Ibid, page 12.

Chapter Three - The Policy Context II: An Economic Understanding of Household Waste Collection, Market Structures and a Brief Review of the Relevant Economic Literature

A consideration of the regulation of household waste collection cannot be undertaken without an understanding of the basic economics of waste collection or reference to the substantial body of relevant economic theory, case studies and other publications. The policy approach to the structure of household waste collection markets is primarily a question of economics, as considerations such as market dynamics, competition, behavioural incentives, costs, pricing, price externalities, and economies of scale and of density are all very relevant. It should be noted that an economic assessment does not exclude the environmental and social impacts of a given policy approach; these are also elements of an economic analysis.

The Economics of Household Waste Collection

In discussing household waste collection markets, it may be useful to establish some fundamentals, as presented below.

- 1) Household waste collection is a relatively simple transport service. Waste is collected from each household in accordance with a fixed schedule, transported to a transfer station or directly to a disposal or recovery facility location. To provide a waste collection service, a firm needs to have loaders and drivers, collection vehicles, waste receptacles, a vehicle depot and back office sales, administrative and managerial support. While a range of laws, regulations and permit conditions govern this activity, it is not an intrinsically complex exercise when compared with elaborate industrial processes, such as the manufacture of advanced electronics, or the provision of certain services such as health insurance.

Household waste collection, being a transport industry, is a network industry. A network industry, such as power grids or communication networks, connects individuals or households to each other or to service providers through a system, or systems, of physical infrastructure. Households and waste collection service providers are connected through the routes the service provider operates. In effect the service provider's fleet of refuse collection vehicles constitute the network.

In most network industries, network externalities arise for the consumer. A network externality is the additional benefit a consumer gains as other consumers join the network. For example, a telephone service is of limited benefit to a consumer if he or she may only call ten other users. However, if he or she may call millions of other users, access to the network is far more beneficial for that consumer. Note that the concept of network externality is distinct from that of an economy of scale, which is discussed on page 26. It is notable that household waste collection networks are not associated with network externalities, as the network links households to service providers, as opposed to households to households. Issues such as interoperability and interconnection do not, therefore, arise, from the householder's perspective.

- 2) Many diverse local geographic markets for household waste collection exist across the country. A householder in Cork City, for example, is not participating in the same household waste collection market as a householder in County Westmeath. Local markets may overlap and are mutable, however they are to a considerable degree defined by the following factors:

- Geographical features and road networks;
- Waste infrastructure, i.e. the presence of transfer stations and treatment and disposal infrastructure such as recycling facilities and landfills; and,
- The operating range of a refuse collection vehicle.

One may speak of a national household waste collection market as an agglomeration of all local markets, however from the perspective of the householder, the individual household waste collection service provider, and the policy maker, it is more accurate to think in terms of discrete local markets.

For example, consider two hypothetical towns. Town A and its hinterland are in a rural area of Leinster, somewhat remote from the national transport network and with a weak local road network. The nearest waste infrastructure, a transfer station, is 40 km from Town A. Town B and its hinterland are in Munster, close to a motorway, a major urban centre and within 10 km of several transfer stations and a recycling centre. It is clear that towns A and B are in very different household waste collection markets. The degree of competition may vary from market to market, strong in one market and weak in another. For example, in Town A, due to the recent entry of a new firm determined to build market share at the expense of a number of incumbent firms, each aggressively seeking to defend their respective market shares, competition is vibrant and strong. However, in Town B, a smaller number of competitors are present and competition is not as strong. One would expect that the prices paid by householder in each of the two markets would be quite different.

It should also be noted that there are areas of the country in which a household waste collection service is not offered. Therefore, no local market exists in certain areas.

- 3) Households produce solid waste as a by-product of consumption. The demand for household waste collection services derives from the demand by consumers to have this waste removed and managed in a legal manner. Waste, as presented by the householder for collection, is not a good or commodity, notwithstanding that waste should be treated as a resource from which maximum value should be recovered. EU and national policy is to reduce and, insofar as possible, eliminate the generation of waste. However, it should be noted that waste can become a good, as in certain circumstances waste may assume a positive economic value as it moves through the chains of commerce.
- 4) Household waste collection can be regarded as a basic and necessary amenity for many households. Demand substitution is considered largely unworkable from a consumer perspective, i.e. there is no substitute product which is an alternative to household waste collection for many households. This is an important point in any consideration of

household waste collection markets. All households generate waste, which must be disposed of. A household which does not wish to break the law must make arrangements for waste collection, transport the waste to one of the small numbers of landfills which accept waste directly from householders, or dispose of the waste at a civic amenity site or in a pay-to-use portable compactor, which can be found in garage forecourts and similar locations in some areas of the country.⁴⁸ For most households, a household waste collection service is the sole feasible legally compliant option.

Given the absence of substitutes, and the necessity of the service, it is very reasonable to assume that the price elasticity of demand of household waste collection is relatively inelastic, i.e. the responsiveness of the quantity demanded of the service to a change in its price will be low.⁴⁹ Householders are, to a degree, captured within the market due to the lack of substitutes and the fact that many households would have to radically alter their consumption patterns in order to sizably impact the volumes of waste they produce. As such, prices may climb considerably, but due to the price inelasticity of demand, householders will continue to purchase a service. As a consequence, householders are particularly exposed to potential risks such as weak competition in any given local market, or inefficiencies caused by inappropriate market structures.

The issue of consumer inertia is also relevant. Consumer inertia, in which consumers demonstrate a propensity to not switch to alternative service providers despite that doing so would be economically advantageous, is a phenomenon long associated with utility and insurance markets. Customer churning, in which customers switch from household waste collection service provider to an alternative service provider, certainly occurs. However, research performed on behalf of the National Consumer Agency suggests that levels of consumer switching for household waste collections services are extremely low. A November 2011 survey of 1,000 households revealed that just 3% of households had switched household waste collection service provider within the most recent 12 months, as compared to 9% in respect of electricity provision and 7% in respect of fixed line telephone services.⁵⁰

- 5) Understanding certain categories of costs are important when considering issues such as the existence of natural monopolies, specifically marginal and fixed costs. Fixed costs are expenses which are not dependent on the level of goods or services produced by the

⁴⁸ The *National Waste Report 2010* estimates that 18,610 tonnes of household waste was delivered directly to landfill by householder. This constitutes just over 1.3% of total collected and brought household waste. The proportion of household waste disposed of in pay-to-use compactors is estimated to be marginal in terms of national volumes; it is understood that the total number of such compactors is approximately 50 units.

⁴⁹ Primary research focussed on the price elasticity of household waste collection services would seem to be extremely sparse, and non-existent in terms of Irish household waste collection markets. Research has indicated that “if the [household waste collection] user fee increases by 1%, the model estimates a 0.24% decrease in biodegradable waste and a 0.08% increase in recycling” (AP EnvEcon (2008), page 59), although the model was not based on Irish data. Given the lack of substitutes for household waste collection and the necessity of the service, it is safe to assume that the price elasticity of demand for the service is relatively inelastic.

⁵⁰ National Consumer Agency (2012), page 6.

firm.⁵¹ A marginal cost is the cost to a firm of serving one additional customer or household.⁵² In most industries, marginal costs decrease with economies of scale, then increase as a firm approaches its production threshold, and diseconomies of scale become apparent; at a certain point the firm will need a new factory to accommodate new workers, will need to recruit more management, sales and other back office staff etc. Average costs in a normal industry decrease and increase as production levels change. A natural monopoly tends to be distinct from most industries as the cost structure is different. A natural monopoly usually has high fixed costs which are not output dependent, but the marginal cost of producing an additional good is usually constant and minimal.⁵³

6) The cost categories of household waste collection are well understood. They are:

- Labour costs, including pensions;
- Vehicle purchases, leasing and maintenance, including depot costs;
- Waste disposal and/or recovery expenses;
- Vehicle fuel;
- Other operating expenses, including the provision and replacement of bins;
- Return on capital invested;
- Overhead costs, including back office, company websites and other IT infrastructure, sales and advertising, managerial expertise, billing expenses, human resources, insurance etc.; and,
- Depreciation.

The exact costs of servicing any given householder will, however, vary considerably due to a number of variables, including the demographic and geographic nature of the local market, shift patterns, the frequency of the service and the degree of segregated collection, and, in many cases, the degree to which a collection route serves both household and commercial waste.

However, it is notable that “collection is the most expensive element of waste management, accounting for between 50 and 70 percent of the costs of operations.”⁵⁴ As such, waste collection markets which are inefficiently structured, and therefore more

⁵¹ For example, a shoe manufacturing firm will require a factory to manufacture shoes. Regardless of whether that firm manufactures 100 or 1,000 pairs of shoes over a given time period, a factory will be required. The costs of renting, heating, and lighting the factory can be regarded as fixed costs.

⁵² Using the same example, the marginal costs to the shoe manufacturer firm include the costs of the additional leather and labour of producing an additional pair of shoes.

⁵³ For example, a cable television firm has high fixed costs; those of putting in place a network of cables to serve every potential customer. That network must be in place and operational before the cable company can do business. Whether the cable company secures one customer or 10,000, the network must be in place. However, once in place, the cost of serving an additional customer is minimal – the network is already in place and all that is required is to ‘turn on’ the cable feed. Hence, a low marginal cost.

⁵⁴ Vaugh J. (2009), page 10. A recent German best practice document has stated that waste collection accounts “for 60 - 80% of the total cost of waste disposal and thus any improvement in its organization and implementation would result in considerable savings,” Federal Ministry for Environment, Nature Conservation and Nuclear Strategy (2012).

costly for society, will have a large impact on the cost to society of its overall efforts to manage waste.

- 7) An economy of scale exists when a firm's output increases and its costs per unit produced are lowered, i.e. the average cost falls. When a firm grows its costs of production decrease, as its fixed costs are spread among a larger number of clients. From industry to industry, scale economies emerge at different output points, to different extents, and also reverse to become diseconomies of scale at varying levels of production.

In the case of household waste collection, economies of scale are dependent on the elasticity of cost with respect to the numbers of households from which waste is collected, i.e. the percentage reduction of average cost per household to a percentage change in the numbers of household served. As more households are served by a firm, variable costs, such as labour, will increase, however fixed costs will not as they are inelastic to sales. The proportion of fixed to variable costs is an important factor as the higher the proportion of fixed costs the greater the potential for economies of scale. The elasticity of variable costs will also have an impact, i.e. the extent to which variable costs increase as the number of households increase. As household waste collection is largely a transport activity, one may expect that economies of scale do exist, however they are achieved reasonably early, compared to other industries with a higher proportion of fixed costs.

OECD research states that the average costs of municipal waste collection will fall as the quantity of waste collected increases, but only up to the size of the collection vehicle, i.e. further economies of scale are minimal once those associated with the collection vehicle are gained. Population thresholds range from 20,000 to 50,000 inhabitants; "cost studies from the US suggest that economies of scale are exhausted with a geographic region which comprises 50,000 inhabitants."⁵⁵ Therefore, "small firms are likely to be able to deliver waste collection contracts as efficiently as larger firms... the collection of municipal waste is relatively easy for many firms to provide."⁵⁶

A related concept is that of minimum efficient scale, the minimum amount of output required to produce a product at a cost that is close to the competitors' cost for that product. An Italian study, on behalf of Italy's Competition Authority, has estimated that a minimum efficient scale is reached at 16,000 inhabitants.⁵⁷ A firm with a client list which is considerably less than 16,000 people may find it difficult to compete with rival firms which have achieved a minimum efficient scale.

Economies of scale have a bearing on the issue of local markets for household waste collection, in that a local market cannot be considered to be smaller, in terms of numbers of households, than the minimum efficient scale. In this instance, "the OECD concluded that the geographic scope of waste collection contracts should be no larger than is necessary for economies of scale to be realised in order to encourage bids from smaller

⁵⁵ Organisation for Economic Cooperation and Development (2000), page 9.

⁵⁶ Office of Fair Trading (2006), page iv.

⁵⁷ The Competition Authority (2005), page 26.

suppliers”.⁵⁸ Therefore, if franchise bidding were to be introduced, tender sizes should be informed by the scale economies of household waste collection.

- 8) Waste collection exhibits a similar cost tendency to other public utility or network industries, such as the delivery of post, electricity distribution or the provision of broadband services; that is, the marginal cost of collecting waste from an additional household is extremely small when the house is already on, or proximate to, a waste-collection route; “there are significant economies of density, provided the collection frequency is at sufficiently spaced intervals that waste is collected from virtually every house on each collection round.”⁵⁹ As waste is collected from households which are in close proximity to one another, the average costs of the service falls significantly.⁶⁰

Household waste collection firms tend to operate in an area focused on the firm’s local base, usually a landfill, transfer or recycling facility, to maximise the number of households a collection truck may serve. A 45-50 mile radius has been tentatively identified by the Competition Authority as “an economical distance for collectors to travel from their relevant transfer/disposal facility.”⁶¹ The Competition Authority, in its 2005 enforcement decision in respect of Greenstar, found that Greenstar in the Northeast Wicklow household waste collection market held a dominant position due to a combination of economies of scale and density, in addition to regulatory delays in establishing sorting/recycling facilities, which constituted barriers to new entry and expansion. Access to or ownership of a sorting or recycling facility is essential. Should landfill levies and gate fees increase further in the coming years, as anticipated, and should quantities and materials restrictions of disposal in landfill be introduced, this factor may increase in prominence. The Competition Authority’s Decision also reflects the fact that control of economy of density in a given market can represent a barrier to entry.

Economies of density have a bearing on whether a natural monopoly exists, i.e. if a product, such as household waste collection, can be produced more cheaply by a single firm than two or more firms. However, density obviously falls in rural areas and “the scope for competition in the market in waste collection depends on the economies of density. As in many other network industries, the economies of density appear to be strong in the regular collection of household waste in urban areas.”⁶² Settlement patterns are of relevance, as in many rural areas isolated pools of household density occur, such as a small number of houses in close proximity to one another in an otherwise rural area.

⁵⁸ Organisation for Economic Cooperation and Development research cited in Office of Fair Trading (2006), page 25.

⁵⁹ Organisation for Economic Cooperation and Development (2000), page 25.

⁶⁰ Presentation rates have a minimal bearing on this issue as the refuse collection vehicle and crew must pass each household on its route, to determine whether waste has been presented for collection.

⁶¹ The Competition Authority (2005), page 22.

⁶² Organisation for Economic Cooperation and Development (2000), page 7.

Waste collection firm respondents to the summer 2011 public consultation have acknowledged the importance of maximising collection densities.⁶³ The tendency of many waste collection firms to combine household and commercial waste collection routes outside Dublin illustrates the operational importance of economies of density.

- 9) To enter a market and compete with those firms already present in that market a firm must overcome any barriers to entry which may exist. Barriers to entry are the difficulties or costs experienced by a firm in entering a new market. Barriers to entry could be the assets necessary to operate in a market, meeting the terms of Government regulation or the achievement of a minimum efficient scale. For example, a household waste collection firm, when entering a market, will need to ensure that it has a valid waste collection permit, that it has the refuse collection vehicles and infrastructure necessary to perform the service, and that it can achieve an operational scale such that it can deliver the service at a cost similar to its competitors.

As discussed on page 22 network externalities are not associated with household waste collection networks; network externalities are often regarded as a barrier to entry, however this issue does not arise in the context of household waste collection networks.

Notwithstanding the existence of some barriers to entry to household waste collection markets, they are considered to be low compared to those found in other product markets; “barriers to entry into household waste collection in general appear low.”⁶⁴ A supporting observation is the rapidity with which waste collection firms have absorbed very sizable local authority client lists in recent months, although not without some transitional difficulties in certain areas. The waste collection permit procedure is not considered to be unduly costly, lengthy or particularly onerous.

- 10) “A market is said to be a natural monopoly if its total output can be produced more cheaply by a single firm than two or more firms.”⁶⁵ When a firm’s long-run average costs are lowest at an output level that is large relative to total market demand,⁶⁶ production can be most cheaply carried out by a single firm. In such cases a monopoly of one firm is the most efficient market structure as the converse also applies; it is always more expensive to have multiple firms produce total market demand. The literature in relation to the concept of natural monopoly is extensive, as is the literature concerning how best to regulate a natural monopoly.

A natural monopoly can be understood for the purposes of this exercise as a situation in which the total cost of producing a specific good at a socially optimal level of demand is minimised by having a single firm produce. In economics, this is known as the

⁶³ For example, Bord na Móna (2011), page 3; “these benefits extend beyond the household sphere and on to commercial customers, whose wheelie bin collections are combined with household collections in order to maximise collection densities” or Greenstar (2011), page 21, “private collectors use sophisticated route planning methods to optimise route density.”

⁶⁴ The Competition Authority (2005), page 24.

⁶⁵ Turley G., Maloney M. & O’Toole F. (2006), page 282.

⁶⁶ In the case of household waste collection, one must understand this reference to the market as being to the local market for household waste collection, as opposed to the combined national market.

subadditivity of the cost function; in other words the firm's cost function in a particular market is the crucial arbiter of whether a market is a natural monopoly. In natural monopoly circumstances, it is cheaper for Firm A to produce 100% of society's requirement for a specific good than for Firm A and Firm B to each produce 50% of society's requirement. It logically flows that in those markets which have natural monopoly characteristics and in which competition between two or more firms is present, costs and therefore prices are higher as a result of that competition. As a consequence, society as a whole must bear the costs of such inefficiency.

Returning to the issue of the nature of household waste collection markets, as discussed on page 23, it has not been suggested that the national market is a natural monopoly, rather that each local market for household waste collection is a natural monopoly.

At first glance, the concept of a natural monopoly may seem counter-intuitive when considered alongside most descriptions of markets and their functioning, in which ongoing competition between several rival firms is considered to be healthy and a monopoly is considered to be unhealthy. However, certain industries, particularly network and utility industries, are widely considered to have natural monopoly characteristics and the systems of regulation in respect of those industries have been designed and deployed on the basis that they are natural monopolies. An electrical transmission and distribution grid is a typical example of a natural monopoly, as is a cable television network. The presence of natural monopoly conditions in respect of a particular industry is not, however, an argument for State monopolisation and public service provision; the cable television network in the United States is an example of a natural monopoly which is owned and operated by the private sector, albeit subject to regulation.

Certain contributions to the current policy development process in relation to the regulation of household waste collection have been weakened somewhat by what may be a fundamental misunderstanding of what a natural monopoly is. For example, the fact that in many local markets for household waste collection several competitors are present, and have co-existed for some time, has been pointed to as evidence that household waste collection is not a natural monopoly. In other words, a natural monopoly has been depicted as a market condition in which all firms, save for the surviving monopolist, are incapable of surviving, and therefore in which the market necessarily and naturally evolves toward a position of monopoly. This definition of a natural monopoly is atypical and is at odds with the general economic definition, that is a market or industry in which it is least costly to have a single firm produce all required output. Such contributions have presented economic evidence in relation to the minimum efficient scale of household waste collection, seeking to demonstrate that as the minimum efficient scale of the industry is relatively low, household waste collection is not a natural monopoly.⁶⁷ While the concept of minimum efficient scale is of relevance to considerations of how to understand local markets and how to organise a franchise bidding system of regulation, the concept is not necessarily relevant to the definition of a natural monopoly; in fact, "scale economies are neither necessary nor sufficient for

⁶⁷ See point 7 on page 26 for a discussion of minimum efficient scale and household waste collection.

monopoly to be the least costly form of productive organisation.”⁶⁸ Further, the economics literature tells us that diseconomies of scale may co-exist with natural monopoly conditions; again, the important point is that the costs of one firm are less than the total costs of multiple firms.⁶⁹

It should be firmly understood that the presence or otherwise of a natural monopoly in a given industry or market is conceptually dependent on an understanding of the nature of the costs of a firm operating in that industry or market. The costs experienced by a firm in delivering its service or manufacturing a good define whether that industry is a natural monopoly or not. Costs vary from market to market and from time to time; input prices will change, technology develops. Therefore, it follows that a market or industry may evolve to, or from, a condition of natural monopoly as the costs of a firm operating in that market change. Costs also vary as output levels change. If society’s desired output of a particular good changes, the production costs for a firm may also change such that conditions of natural monopoly retreat or advance. For example, if society were to form a preference for more sophisticated, and therefore costly, refuse collection vehicles,⁷⁰ and such vehicles were to replace the current fleet of vehicles, the costs of the household waste collection industry would change and there would be a change in the extent to which, if at all, natural monopoly conditions exist.

Given that natural monopoly conditions are conditional on the firm’s costs at a given output level and are a matter of degree, one must ask whether there is reason to believe that the industry or markets are changing sufficiently to alter the overall position. It is unlikely, however, that current developments or future unanticipated innovations in the industry will radically alter the costs to a firm of delivering household waste collections services; a crew and vehicle will be needed to visit each household to collect its waste, that crew and vehicle will require back office support and depot facilities, and the waste collected will need to be treated. Notwithstanding any changes to input prices, such as fuel or labour costs, the industry’s cost profile would appear to be relatively stable over the medium to long term. As such, if natural monopoly conditions are currently present, they are unlikely to retreat by any great distance; if they are not, they seem unlikely to advance substantially. An observation in relation to recent developments in household waste collection service is that, if anything, the fixed costs of delivering the service may be increasing as a proportion of total costs, as refuse collection vehicles have become more sophisticated. However, such increases may be offset by IT related back office efficiencies, such as web based customer services.

It has been stated that “it is clear that the household waste collection product market constitutes a natural (local) monopoly”⁷¹ although commentators are not unanimous on this point.⁷² The Competition Authority has found that “although there is considerable

⁶⁸ Baumol W.J. (1977), page 809.

⁶⁹ Viscusi J., Harrington J.E. & Vernon J. (2005), pages 401 to 408. This point is even more pronounced when considering multiproduct industries, such as waste management.

⁷⁰ Such as multi-compartment vehicles.

⁷¹ O’Toole F. (2007), page 7.

⁷² For an opposing view, see, for example, DKM Economic Consultants (2012).

debate about the relative importance of economies of scale and density in household waste collection there is a general consensus that taken together these economies are sufficient to lead to something close to natural monopolies in local geographic areas. Once established in a geographical area the marginal cost of an extra household collection is frequently close to zero.”⁷³

In the European Union, the regulation of household waste collection markets is in alignment with the assertion that local markets are, or are very close to being, natural monopolies. With the exception of some areas of Finland, no other countries organise household waste collection in a similar fashion to the Irish system. Predominant are market structures which are regulated to ensure a monopoly supplier, whether private, public or a combination of both. The predominance of monopolised household waste collection services also reflects the consideration of such services as a form of public good, i.e. that issues of public health, urban neatness and amenity, the achievement of environmental policy objectives, enforcement costs and the potential for free riding by individual households all argue for monopoly provision.⁷⁴

It is perhaps worthwhile considering the potential impact of a system of side by side competition operating in natural monopoly market conditions. Should such a situation apply to household waste collection markets, the result will be the higher costs for each waste collection firm, due to duplicated collection networks. These costs will be passed to the consumer. The consumer will pay more for the service. To do so, it is necessary to briefly discuss the concept of long term average cost.

Average cost is an economic concept meaning the total cost of production, at a given level of production, divided by the number of units produced. Over the long run, it is possible for firms to vary all factors of production, i.e. the resources used to produce a product including capital equipment, management resources, employees etc.

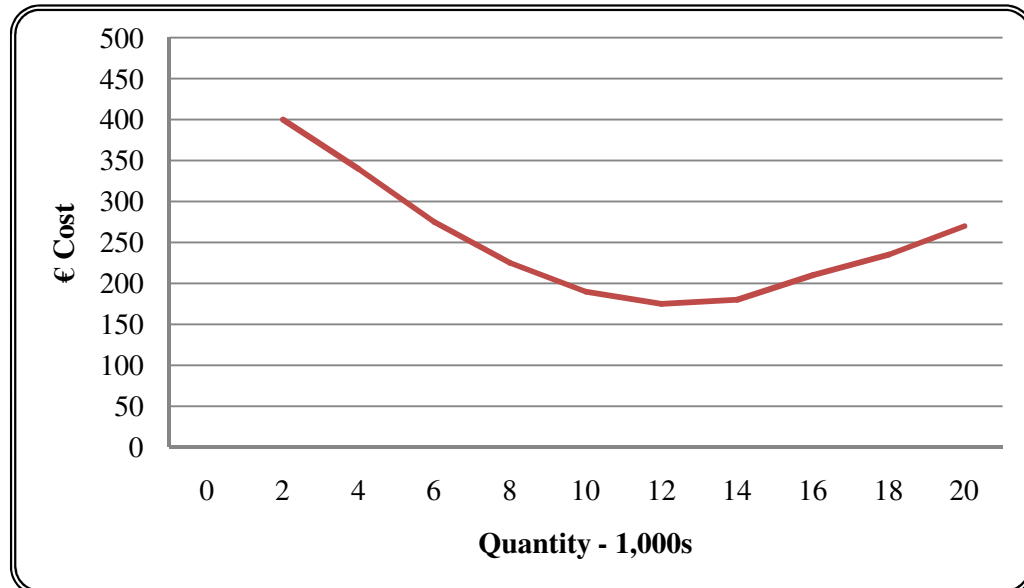
The long term average cost curve of a firm is a graphical depiction of the relationship between output and the lowest attainable cost per unit. A downward sloping long term average cost curve reflects declining unit costs as production increases, indicating the presence of economies of scale. Typically, in many industries and markets long run average cost curves tend to be U-shaped; as production levels increase economies of scale result in reduced average costs, however at higher production levels diseconomies of scale increase average costs. Such a long run average cost curve is illustrated in Chart 3.0.

It should be noted that the precise values depicted in Charts 3.0, 3.1, 3.2 and 3.3 are hypothetical. The purpose of the charts is to graphically depict the economic thinking underpinning the assertion that household waste collection markets constitute a natural monopoly.

⁷³ The Competition Authority (2005), page 27.

⁷⁴ Massarutto A. (2007) page 10.

Chart 3.0: A Typical Long Run Average Cost Curve

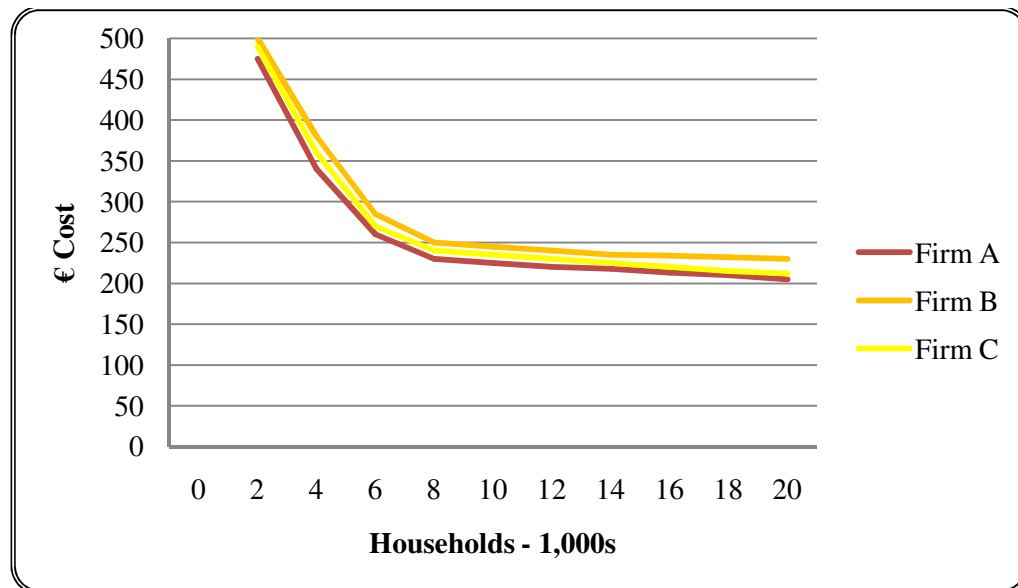


As the firm's production increases beyond 2,000 units, the average cost per unit falls. Costs per unit are at their lowest as 12,000 units. Beyond this level of production, diseconomies of scale cause inefficiency, resulting in increases to the average cost per unit.

Costs differ from industry to industry and market to market. For the purposes of illustrating how waste collection costs may be impacted in natural monopoly conditions, a hypothetical market is necessary. Let us suppose that Dublin 30 is a suburb of Dublin composed of approximately 20,000 households and that Dublin 30 constitutes a distinct household waste collection market. Three waste collection firms are competing in the hypothetical Dublin 30 market, Firms A, B and C, and market shares are divided equally among the three firms.

In line with economic theory and our understanding of the costs of household waste collection, the long run average cost curve for Firms A, B and C are not u-shaped, as in Chart 3.0, but slope downward, steeply at first and then at a relatively shallow incline. The slopes of the three curves reflect the relatively high proportion of fixed costs necessary to provide a service throughout a given market, and the low marginal cost of servicing each additional household once networks have been fully established and economies of scale have been achieved.

Chart 3.1: Long Run Average Cost Curves of Three Household Waste Collection Firms Operating in a Hypothetical Market



Firms A, B and C have similar long run average cost curves, as all are competing within the same industry and, broadly speaking, have similar business models and operating practices. Firm A has the lowest costs at all production levels. Firm B has the highest costs at all production levels. Note that the different costs for each firm may not necessarily be due to inefficiency. For example, Firm B's higher costs could be due to a product differentiation strategy based on superior service levels or environmental commitments to its customers.

Such a market structure is an oligopoly, in that a small number of firms are present. In all observed cases in Ireland, household waste collection markets are oligopolies.

As each firm enjoys an equal share of the market of 20,000 households, each Firm's production is currently set at approximately 6,600 households. At this level of production, economies of scale have largely been achieved, although there is some scope for further scale economies. The cost of providing the service is approximately €250 per annum per household. It is notable that a hypothetical new entrant, Firm D, assuming its cost profile were similar to those of Firms A, B and C, would need to capture a substantial portion of the market in order to achieve minimum efficient scale; its average costs per household at an output level of, say, 2,000 households, would be unsustainable.

The long run average costs of Firms A, B and C reflect that the firms are operating in a system of side by side competition and therefore all three firms are operating independent waste collection networks. Economies of density are not being realised.

Should one accept that household waste collection markets are, or approach, a natural monopoly, it follows that economies of density are substantial, or in other words, the savings achieved by having a single, non-duplicated network will be sizable.

Chart 3.2: Long Run Average Cost Curve of a Monopolist Household Waste Collection Firm Operating in a Hypothetical Market



Chart 3.2 depicts the long run average cost curve of Firm A operating as a monopolist in the hypothetical Dublin 30 market. Firm A is serving 100% of the market, that is, all 20,000 households. Firm A's long run average cost curve is lower than its counterpart in a side by side market structure at all sustainable production levels.

Chart 3.3: Comparison of Long Run Average Cost Curves of Firm A operating under Monopoly and Oligopoly Conditions

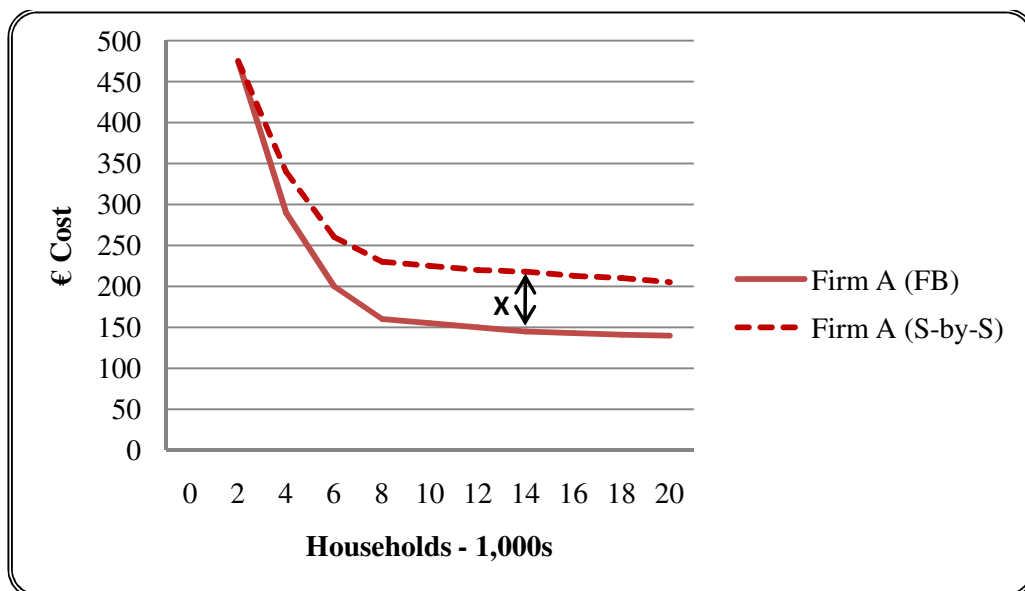


Chart 3.3 illustrates the effect of market structure on the long run average costs of Firm A. In a side by side competition market structure, Firm A's average costs are represented

by the dotted line. In a monopolist market structure, such as a system of franchise bidding, the Firm's costs are represented by the solid line. X represents the wedge between the two average cost curves, that is, the cost of operating a market structure ill suited to natural monopoly conditions.

Of course, it should be noted that cost per household and the price each household may actually pay are distinct. The extent to which price and cost differ would reflect factors such as the strength of competition for the monopoly franchise.

A Brief Literature Review

A considerable body of research has been published in relation to franchise bidding and the related topic of local authorities and other public bodies 'contracting out' services. This review of the literature and key concepts relating to franchise bidding and the contracting out of waste collection services focuses on the economic realm; it does not examine the considerable literature on the impact of different collection systems on environmental performance, or on the environmental merits or demerits of competition in or for the market.

The concept of natural monopolies was first developed by Edwin Chadwick⁷⁵ in 1859 when he proposed that the competition "for a field" of service can often be more effective than competition "within a field" of service. Chadwick observed that in certain English towns, multiple sets of water pipes were in existence, each operated by a different water company, which resulted in "wasted capital", high prices and deficient services.⁷⁶ Chadwick argued that rather than unregulated competition between concerns, in certain markets regulated monopoly provision would be preferable for the economy and the consumer. In effect, Chadwick defined the problem of utility provision and the case for natural monopoly. Harold Demsetz an economist associated with the Chicago School,⁷⁷ is perhaps the modern economist most associated with the promotion of the concept of franchise bidding.⁷⁸

Natural Monopoly and Household Waste Collection

In EU Member States the regulation of household waste collection is in general alignment with the assertion that local household waste collection markets are natural monopolies. Ireland is almost alone in how household waste collection markets are structured and regulated. The predominant market structure in the EU, OECD and developed economies of the world is that of a regulated local monopoly supplier, whether private, public or mixed. As such, the extant literature is not focussed on the question of whether household waste collection is a natural monopoly; this question seems to be considered to be largely settled. The waste collection economics literature instead has two principal themes; (i) the identification of economies of scale and density, and (ii) assessments of the impact of contracting out.

⁷⁵ A Victorian Social Reformer.

⁷⁶ Although Chadwick was the first to write about the concept of a natural monopoly, it should be noted that the practice of State monopolisation of certain services to overcome market failures preceded Chadwick's work by some centuries. For example, in 17th Century Paris, a franchise bidding system was used to raise bread quality.

⁷⁷ See, for example, Demsetz H. (1968) and (1973).

⁷⁸ Dnes A. (1995) provides a strong and accessible summary of the main points concerning natural monopoly and privatisation via franchise bidding.

The initial question in the waste collection economics field was identifying whether economies of scale and density exist in refuse collection, the output levels at which they are most pronounced, and the output levels at which those economies plateau or diminish.⁷⁹ As will be seen in more detail below, Stevens demonstrates that waste collection occurs most cheaply per household when servicing between 20,000 and 50,000 inhabitants, or approximately 16,000 households.⁸⁰ This finding has been used internationally by states, local governments and international organisations as a basis for recommendations on the size of waste collection tenders.

The policy of compulsory competitive tendering in the UK, introduced during the 1980's, shifted the attention of waste scholars to the impact of compulsory competitive tendering on waste collection costs, often focussing on the thesis that private sector provision is more efficient than state provision. Scholars such as Bel, Domberger, Dijkgraf and Syzymanski have attempted to identify the most robust methodologies for comparing the impact of tendering on costs and prices in different markets to assess which was more efficient, public monopoly or private monopoly. In only a small number of older North American studies is competition in the market considered as an option, and in only one Canadian study from 1981 is it considered the cheapest option for householders.⁸¹ Many of these studies have been listed in the Appendix on page 109. Generally, the studies are a before and after cost comparison between contracting out and monopoly provision by municipality.

In practice and in theory, household waste collection services are organised based on the assumption that they are natural monopolies. Due to the near total dominance of forms of monopoly provision, there is no recent work on the Irish waste market and tendering save the two case studies by Reeves⁸² and Reeves and Barrow.⁸³ A number of other articles have examined elements of the Irish waste market, such as pricing and the impact of the landfill levy, but market structures have not been a focus.⁸⁴

Economies of Scale and Density

Considerable attention has been given in the academic literature to the number of inhabitants or households best served by a single tender lot. Waste collection literature cites figures from 20,000 to 50,000 most often. This figure originates in Stevens' 'Market structure and the cost of refuse collection', published in 1978.⁸⁵ Stevens' research was based on a sample of 340 American cities. In all market sizes and service levels analysed by Stevens, the total cost per household served is greater when the market structure is competition in the market, than when

⁷⁹ Stevens B. (1978) and Dubin J.A. & Navarro P. (1988).

⁸⁰ Stevens B. (1978).

⁸¹ McDavie J.C. (1985).

⁸² Reeves E. (1995).

⁸³ Reeves E. & Barrow M. (2000).

⁸⁴ Curtis J., Lyons S. & O'Callaghan-Platt A. (2011) examined the impact of increases in the landfill levy to household behaviour and found that without a roll-out of pay-by-weight pricing structures, such increases will have little impact. They also suggest, in line with international experience, that increasing the number of bins to segregate into will increase recycling levels and that this will be most effective in urban areas. Dunne L., Convery F.G. & Gallagher L. (2008) examined the public acceptance of pay-by-use systems and the impact of these on waste production. While adding to the understanding of the Irish waste sector, they did not greatly impact on the analysis of cost to the household which is the primary focus of this literature review.

⁸⁵ Stevens B. (1978),

the market structure is one of competitively tendered private local monopolies. “In all samples, the competitive arrangement [i.e. competition in the market] is from 26% to 48% more costly than the private monopoly arrangement. These findings can be attributed to billing expenses and extra costs due to non-exclusivity within a market area borne by the firm in a competitive arrangement.”⁸⁶ *Ceteris paribus*, in an area of approximately 50,000 inhabitants the public monopoly or competition in the market arrangement is from 27% to 37% more expensive than a competitively tendered private monopoly.⁸⁷

Stevens offered three policy guidelines:

- “1. It is desirable to ensure an exclusive market area to a single producer, provided, if the producer is a private firm that either rate regulation is of average effectiveness or that contract letting procedures ensure reasonable competition.
2. Costs to the household decrease under any market structure as the market served increases to about 20,000 individuals. Small cost savings may be achieved for further increases in scale up to about 50,000 individuals.
3. Total cost to households served is on average less when the collector is a private monopolist [i.e. the winner of a monopoly franchise] than when the collector is a public monopolist; this difference increases with city size, becoming statistically significant (at the 95% confidence level) for cities with populations over 50,000.”⁸⁸

These guidelines are followed in many international contexts, although for administrative reasons tender lots are often smaller or bigger than the recommended size. The transaction costs of running two tenders for a region of say 70,000 inhabitants may outweigh potential savings; therefore many tender lots match municipal boundaries, rather than strictly adhering to Stevens’ guidelines.

Contracting Out and Transaction Cost Economics

An important part of assessing whether a specific service should be contracted out is transaction cost economics.⁸⁹ Transaction cost economics state that there are always costs to transactions other than the specific price paid. Transaction costs could include the time spent looking for the seller with the best price, or queuing to complete a purchase. In complex contracts which stretch over a long period of time the cost of the transaction could be delays, supplier hold-ups or loss of competition for future tenders. These transaction costs should be balanced with the benefits brought by the financial savings or improved economic efficiency associated with the arrangement provided for in the contract. Within government institutions, consideration of transaction costs are not restricted to financial or budgetary costs, as cognisance must be taken of society’s wider welfare, institutional and market integrity and a great many other factors which

⁸⁶ Ibid, page 445.

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Williamson O.E (1979) & (1999).

may arise, not least because any major disruption associated with transaction costs may ultimately be borne by some arm of the state.

The underlying basis of transaction cost economics is that transactions never occur at their most efficient level, are never without cost and that the uncertainty of the successful implementation of a contract leads to costs in and of itself. Transactions lead to some disruption, loss of useful resources or hold up as a result of contract makers not being capable of designing a perfect contract that is capable of responding to any and all eventuality.⁹⁰ A limitation on contract design is known as ‘bounded rationality’; the likelihood that there will be problems and additional costs, financial and non-financial, which the contract designer cannot foresee. When assessing whether to proceed with contracting out, it is considered important to consider some of the broader consequences and costs of doing so, and not to focus solely on potential savings or efficiency gains. Such issues, in the context of the regulation of household waste collection, are discussed further in Chapters Five and Six

Household Waste Collection: A Utility or a Consumer Service?

Domberger and Jensen have outlined how, in the developed world, the majority of utilities were publicly provided until the 1980’s when economic and political pressures moved these services into the private sector.⁹¹ In instances in which the State’s assets were not sold *en bloc* to the private sector, other forms of privatisation occurred, such as the sale, or granting, of a right to provide a service. The justification for this move away from public provision of services was based on the tripartite argument of (i) the efficiency of private firms over public provision; (ii) the need to reduce government spending as a result of international economic stagnation; and, (iii) the democratic justification of market choice.⁹² The contracting out of waste collection and other local services was not as politically emotive as other forms of privatisation, but was nonetheless a dramatic shift in the political economy in the 1980’s, in particular in the United Kingdom which was in many respects the test-bed of innovative, albeit divisive, measures to reduce the state’s role in the economy.

In EU Member States, with the exception of Ireland, there is a general requirement on local government to have the waste that is generated within its borders collected and managed. For local governments, waste collection is a core mission and an unavoidable expense. In Ireland there is no absolute responsibility on the local authority to collect and manage waste. Therefore, household waste collection services in Ireland can currently be understood as a consumer service with utility characteristics. Before examining at the operation of contracting out of waste collection in other jurisdictions, it is important to distinguish between the consideration of waste collection as a local utility based on the concept of universal service provision.

Universal service provision is a service which is provided to all citizens in a state. In most EU Member States waste collection is seen as a vital service for human health and well-being and

⁹⁰ Another key aspect of transaction cost economics is opportunism whereby either party will attempt to maximise their welfare at the loss of the other. Opportunism, whether manifested in legal wrangling, hold ups or other forms of delay or quality-shading (marginally reducing the quality of the service in order to increase profits) are all part of the transaction cost of a contract.

⁹¹ Domberger, S. & Jensen P. (1997).

⁹² Hayek F.A. (1945) & (1948) and also Buchanan J.M. (1954).

therefore, is subject to universal service provision; it is the responsibility of local authorities to collect and dispose of all waste produced within their borders.⁹³ Under normal competitive market conditions, a universal service provision cannot develop as there will be geographic areas which will not be served by the private sector; the cost of collecting waste at one extremely remote household would be too high for a private firm.⁹⁴ In order for such premises to be served, a universal service obligation must be in place with profitable, low-cost premises subsidising the high-cost ones.

Antonioli and Massarutto have outlined four stages in the development of waste services, which can be applied to all states in Western Europe with the exception of Ireland.⁹⁵ Prior to the 1950's, waste was not considered to be a public health issue. Waste was collected and disposed of in the most cost effective manner with little or no environmental consideration. In the early 1970's, there was a move towards environmental protection and minimising the impact of waste management on communities. Waste management shifted from being solely a municipal concern to a policy area of national importance. The responsibility for the process of collection and disposal remained with municipalities however, but under new regulatory regimes. A similar awareness is seen in the United States with the passing of the Resource Conservation and Recovery Act in 1976.⁹⁶ In the 1980's the dominant issues across Europe were the availability of disposal capacity and the creation of regional organisations to increase capacity. The 1990's witnessed a preference for waste minimisation and an emphasis on producer responsibility initiatives. In this fourth stage, the market is at a stage of relative maturity and capable of coping with open competition in parts of the waste process.⁹⁷ The stages identified by Antonioli and Massarutto can be witnessed in Western Europe and the United States, however Ireland's development in this regard has been atypical.

The fact that Ireland has not followed the general waste management development process means that it has faced the last three developmental stages identified by Antonioli and Massarutto concurrently, in large part as a consequence of the requirements of European environmental legislation. Perhaps the most striking aspect of Ireland's atypical waste management development has been local authority withdrawal from the provision of household waste collection services.

Contracting Out

While some literature existed on the costs of waste management prior to the 1980's, it was not until the introduction of compulsory competitive tendering in the United Kingdom that the study of the costs and benefits of contracting waste collection out became a prominent field of study.

Under the Local Government Planning and Land Act 1980, local authorities in the United Kingdom were obliged to follow a public procurement process for work related to the

⁹³ Antonioli B. & Massarutto A. (2011) and Eunomia-Ecotec (2003).

⁹⁴ Cremer H., Gasmi F., Grimaud A. & Laffont J.J. (2000), page 18.

⁹⁵ Antonioli B. & Massarutto A. (2011), pages 26-7.

⁹⁶ Louis G.E. (2004), page 306.

⁹⁷ Massarutto A. (2007). It is significant that in the only dedicated academic treatise examining competition within waste collection, disposal and treatment markets, Massarutto does not advocate competition in the market for household waste collection services, and specifically warns against the potential market power of vertically integrated waste disposal firms.

maintenance and construction of motorways. In 1985, the United Kingdom government announced plans to compel local authorities to open all services to the public procurement process. The Local Government Act 1988 required local authorities to increase the role of competitive tendering, at fixed intervals and subject to national guidelines. Under the Act, all activities or services with a gross cost of more than £100,000 were subject to competition. To maintain direct provision of a service, a local authority was required to demonstrate evidence of a return of 5% on investment.⁹⁸ Due to a change of government in 1997 a new policy direction for public service provision was published under the title of 'Best Value', however the tendering of waste collection services has remained in many local authorities.

The Appendix, on page 109, references the principal academic articles concerning the costs of waste collection and the impact of contracting out. A number of conclusions can be drawn from these analyses. Firstly, international experience suggests that contracting out provides best value for money and is generally less costly than in-house provision. Secondly, where competition in the market is compared, it is more expensive than either public or private provision on a monopoly basis. Lastly, municipalities which contract out waste collection have control over the environmental impact of the waste collection provision, a factor which is noted in many of the articles referenced.

⁹⁸ Painter J. (1991).

Chapter Four - Policy Goals and Market and Regulatory Failures

Policy Objectives

A policy is an instrument designed to provide a solution. To determine the most appropriate policy instrument to deploy in relation to the regulation of household waste collection, we must begin from first principles, by determining the objectives of policy. Having done so, we may identify the challenges and difficulties associated with the current regulatory regime.

The Programme for Government commitment in respect of household waste collection is silent concerning the objectives of any change to market structures. As such, it is necessary to declare Government's waste collection policy goals.

Household Waste Collection Policy Goals

Government's goals are to maximise collective wellbeing by establishing and maintaining a system of regulation of household waste collection which provides the optimal mix of economic, environmental and social outcomes. Specifically, those which:

- Support the attainment of our environmental objectives, adhere to the waste hierarchy and the principle that the polluter pays, minimise the disposal of waste in landfill, and maximise recoverable resources;
- Are consistent with the legal cornerstones of National and European policy, including the Landfill Directive and the Waste Framework Directive;
- Provide for the segregation of household waste, as required by EU and national law;
- Maximise the number of households with access to a waste collection service and maximise householder participation;
- Minimise the price paid by householders, commensurate with the achievement of environmental objectives;
- Ensure a high quality service to the householder;
- Sustain a competitive and progressive waste management industry which works in partnership with the State to meet its responsibilities;
- Provide the market stability and regulatory certainty necessary to underpin investment in the suite of infrastructure we require and supports the development of associated markets; and,
- Meet other social preferences, such as minimising community disamenity and maximising health and safety.

The question is, to what extent is the current regulatory regime achieving Government's ambitions?

Household waste collection policy has been the subject of considerable discussion in recent years; for example, the OECD has stated that "despite improvement, municipal waste collection

is fragmented and not adequately regulated.”⁹⁹ This discussion has not been limited to the confines of academia or economic think-tanks. The issues are real and tangible, and impact on almost every household. Recent market developments, particularly the withdrawal of the local authorities from waste collection in Dublin and elsewhere, have drawn considerable media and public interest in household waste collection.

It is natural that a service such as household waste collection attracts a degree of political interest. Household waste collection is a topic which is frequently raised in the Oireachtas. A range of issues have been raised in the Dáil in recent months by both Government and Opposition Deputies in relation to household waste collection, including concerns about:

- Service standards;
- The degree to which segregated waste is mixed subsequent to collection from the kerbside;
- Pricing structures, including issues such as changes to pricing structures for household waste collection services imposed by some waste collection companies in the wake of the September 2011 increase to the landfill levy, and pre-payments made by householders;
- The withdrawal of almost all local authorities from household waste collection markets;
- The future of the household waste collection industry, particularly the financial position of certain firms;
- The degree of regulatory control in respect of waste collection;
- Breaches of environmental law by waste management firms;
- Waivers for low income households;
- Competition issues; and,
- The role of elected members in formulating waste policy.

Market and Regulatory Failures

The current regulatory regime is incomplete and imperfect, resulting in a set of outcomes which do not meet the Government’s objectives. These failures, or potential failures, as set out in the subsequent pages, can be classified as environmental, economic and social.

It should be noted that these failings cannot be laid at the door of any particular group, they are a result of the interplay of a regulatory regime and the collective behaviour of bodies which interact with that regime, including regulators, public sector waste collectors, private sector waste collectors and waste producers, i.e. householders.

Environmental Failures

The current system of regulation is insufficiently strong to allow the State the fine degree of control necessary to improve environmental outcomes. Three areas are particularly problematic.

(i) Householder Non-Participation

The OECD has observed that “the prevailing legislation allows households to opt out of the collection service.”¹⁰⁰ With the exception of a minority of local authorities, which have introduced bye-laws to require householders to avail of a waste collection service in

⁹⁹ Organisation for Economic Cooperation and Development (2010), page 12.

¹⁰⁰ Organisation for Economic Cooperation and Development (2008), page 322.

certain circumstances, householders may choose not to participate in waste collection markets.

The number of households not participating in local waste markets is composed of two discrete populations. Firstly, there are those households which are offered a kerbside waste collection service and which opt not to take a service. The second group is composed of those households which are not offered a service, usually because of the remoteness of their location. The number of households which are not offered a service is poorly understood, however a 2011 research study provided an estimate that 4% of all households are not offered a service, i.e. in excess of 68,000 households; the survey on which the estimate is based included over 1,000 households.¹⁰¹

The Environmental Protection Agency's *National Waste Report 2010* estimates that 1,208,094 households were in receipt of a household waste collection service in 2010. The *Census 2011 Preliminary Results* state that there are 1,709,973 occupied households in the State. As such, the most accurate current household participation rate estimate is 71%. In six local authorities, Donegal, Roscommon, Cavan, Offaly, Sligo and Limerick County, a majority of occupied households do not receive a kerbside household waste collection service. In thirteen local authorities, the percentage of households not participating in a collection service exceeds 40%.¹⁰²

The Environmental Protection Agency estimates that in 2010 the level of uncollected waste was approximately 265,000 tonnes.¹⁰³ This calculation is based in part on a 2% estimate of bin sharing and an estimated 36,855 tonnes of home composting. Such estimates are inherently difficult, however the Agency's estimates, based on returns from waste collection firms and the local government system are the most robust available. The Agency's estimate of uncollected household waste excludes waste brought to civic amenity sites and to those landfills which accept the direct delivery of household waste. The Agency records that 18,610 tonnes of waste was delivered directly by householders to landfills in 2010, a very substantial decline from 28,631 tonnes reported in 2009.¹⁰⁴ The Agency further records that 158,302 tonnes of waste was brought to civic amenity sites in 2010.¹⁰⁵

A 71% household participation rate and the consequent 265,000 tonnes of uncollected waste are unacceptable levels which must be improved to protect Ireland's environment. A further issue of serious concern is the trend of service take-up. The numbers of households receiving a service decreased from 2010 to 2009, by 13,544 from 1,221,638 households to 1,208,094 households, a decline of approximately 1%.¹⁰⁶

¹⁰¹ Coakley T. & O'Callaghan-Platt A. (2011), page 8.

¹⁰² Environmental Protection Agency (2012), page 21.

¹⁰³ Ibid, page 25.

¹⁰⁴ Ibid, page 68. For 2010, it is notable that four local authorities account for more than 50% of household waste delivered directly to landfill by householders.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid, page 19.

Table 4.0: Trends in Household Managed Waste 2009 to 2010

Household Waste Management	2009	2010	% Change
<i>Households receiving a collection service</i>	1,221,638	1,208,094	-1%
<i>Tonnage of household waste delivered directly to landfill</i>	28,631	18,610	-35%
<i>Tonnage of household waste delivered directly to civic amenity sites</i>	177,158	158,302	-11%

As illustrated by Table 4.0, the decline in the numbers of households receiving a kerbside waste collection service is not being compensated for by increased deliveries of waste by householders to civic amenity sites or landfills.

The costs of uncollected waste are borne by wider society in the form of increased inspection, enforcement and remediation costs, and emissions related impacts. Arriving at a robust estimate of the cost of the illegally disposed of uncollected waste is difficult. While considerable attention has been given to the precise externality costs of different waste disposal and treatment options, little attention has been given to the precise cost of waste which is illegally disposed of. A robust estimate must overcome a number of challenges, including estimating how much uncollected waste is illegally dumped and how much is illegally burned.

The costs borne by society of illegally dumped waste are sizable, including the direct clean-up, disposal costs and necessary remediation costs, and other costs, such as those related to health hazards, visual disamenity and damage to industries such as tourism.

The illegal burning of waste is presumed to be more common than illegal dumping as, from the perspective of many non-compliant households, it is likely to be the path of least resistance. In addition, it does not seem to be the case that the reported tonnages of dumped waste approach the 265,000 estimate. The illegal burning of waste may be widespread. A 2006 research study commissioned by the Environmental Protection Agency on the introduction of pay-by-weight charging in West Cork in 2003 found that 42% of households burned waste of some form.¹⁰⁷ The same study also found that the burning of waste is not simply a rural phenomenon; 34% of urban householders stated that they burned waste, compared to 47% in villages and 48% in the countryside.¹⁰⁸ These are worrying statistics, not least because the levels of illegal burning of waste were high across all demographic parameters, including income and education levels, household sizes and socio-economic groupings.

¹⁰⁷ Scott S. & Watson D. (2006), page 29.

¹⁰⁸ Ibid, page 30.

Dioxins are among the most damaging of emissions as they impact extremely negatively on public health directly and indirectly via the food chain. Dioxins are often highly toxic compounds; “the toxic responses include dermal effects, immunotoxicity and carcinogenicity, as well as reproductive and developmental toxicity.”¹⁰⁹ A source of dioxins is low temperature burning, including the backyard burning of household waste, which results in dioxins entering the food chain through atmospheric deposition. The illegal burning of waste is almost certainly a major source of dioxins; “in 2000, notwithstanding the inherent uncertainties of the calculations, more than half of all air emissions could be attributed to domestic burning of waste.”¹¹⁰ European Commission research indicates that one kilogramme of waste openly burned at low temperatures may cause the same amount of dioxin emissions as ten tonnes of waste burned in a modern incineration plant.¹¹¹

In the absence of research concerning the waste management behaviours of non-compliant households and the actual costs, per tonne of illegally dumped waste and illegally burned waste, it is not possible to arrive at a robust costing. However, it is perhaps indicative to note that a cost, including all air quality and climate change externalities, of €400 per tonne,¹¹² assuming that 200,000 tonnes of household waste are illegally burned, would result in a total annual cost borne by society of €80m for backyard burning.

It should be noted that a household participation rate approaching 100% could have implications for compliance with targeted reductions of biodegradable waste under the Landfill Directive, as a large volume of such waste would be introduced to the waste collection system, and it is reasonable to assume that a proportion of that waste would be disposed of in landfill. Notwithstanding any potential impact on compliance with the Directive, a greater risk is that very large quantities of household waste are disposed of illegally.

(ii) *Householder Segregation*

In order to reduce the disposal of waste, particularly biodegradable waste as required by the National Strategy on Biodegradable Waste, in landfills it is necessary to increase the segregation of household waste.

Waste presentation is largely determined by permit conditions and local bye-laws. The Waste Management (Collection Permit) Regulations 2007 provide that a permitted waste collector must source-segregate, treat or recover a specified proportion of waste collected, or class or classes of such waste, in such manner as may be specified by the relevant local authority. In 2008, the Department of the Environment, Heritage and Local Government instructed local authorities to provide, as a matter of urgency, for the implementation of source-segregated collection for organic waste in accordance with the provisions of the

¹⁰⁹ Concannon, C. (2010), page 7.

¹¹⁰ Ibid, page 13.

¹¹¹ European Commission, (2009), page 6.

¹¹² Likely to be an extremely conservative figure, when one considers the likely health and environmental costs of dioxins and greenhouse gas emissions produced by backyard burning.

extant Waste Management Plans. Despite subsequent alterations to waste collection permits requiring waste collection firms to provide a third bin, progress has been disappointing; “the roll out of brown bins has not been notable amongst private waste collectors to date.”¹¹³ In 2010 only 35% of serviced households had a three-bin service.¹¹⁴ However, some progress has been achieved, from 2009 to 2010 the number of households receiving a three-bin service have increased from 288,474 to 418,329.¹¹⁵ Also welcome has been the introduction of a fourth bin for the collection of glass in 2010 by a number of waste collection firms.¹¹⁶

A particularly problematic statistic is that 59,135 households had a single bin service in 2010, i.e. a service with no provision for segregation.¹¹⁷ This statistic is further compounded by the fact that the number of households with a single bin increased from 43,664 households in 2009, i.e. by over 35%.¹¹⁸ Against a backdrop of declining numbers of households receiving a waste collection service, many households have been switching from a two bin service to a single bin system.

To secure investment in the suite of recovery and recycling infrastructure which is required to meet the Government’s waste management objectives, greater segregation of waste by households is necessary. Secure flows of quality recyclates will provide a platform for investment. Waste collection firms must ensure that all segregated waste collected remains segregated.

An additional benefit of greater segregation is that the industrial processes which recover and recycle segregated waste are more labour intensive than waste disposal.

(iii) Price Structures and Incentivisation

The charges applied by waste management companies are a matter between those companies and their customers, subject to compliance with all applicable legislation, particularly the conditions attached to each waste collector’s collection permit issued by the relevant local authority.¹¹⁹

The waste management industry operates a wide variety of household waste collection pricing structures, ranging from bin tag pay-per-lift systems, to flat rate annual fees, to structures which incorporate a standing charge and pay-per-lift / pay-by-weight components.

In many cases, extant pricing structures are problematic. For example, an annual flat rate charge, which is offered by a number of waste collection firms, does not incentivise the householder to reduce or segregate their waste. Some variable based pricing structures are also problematic, as the pricing structure may be volume based or may employ minimal

¹¹³ Gorecki P.K., Acheson J. & Lyons S. (2010), page 23.

¹¹⁴ Environmental Protection Agency (2012), page 19.

¹¹⁵ Ibid.

¹¹⁶ 4,188 tonnes of glass was collected in 2010. Ibid, page vii.

¹¹⁷ Ibid, page 19.

¹¹⁸ Ibid.

¹¹⁹ Latterly, the National Waste Collection Permit Office.

differentiation, for example between a 140 litre and 240 litre bin. Such pricing structures have been found to have weaker incentivisation impacts, as compared to weight based pricing structures; “the effectiveness of weight-based, and to a lesser extent volume-based prices, in diverting household mixed waste into segregated streams is well established in Ireland and internationally. Introduction of weight-based pricing in Ireland appears to reduce mixed waste quantities by about 45%, and a subsequent one percent increase in the charge per kilogramme reduces waste by about 0.27% on average.”^{120 121}

Research conducted during the preparation of this regulatory impact analysis would appear to confirm the incentivisation effects of variable charging, particularly the beneficial impact of variable charges with a weight based component.

Table 4.1: Pricing Structures and Waste Generation per Household¹²²

Local Authority	No. of Households¹²³	Total Residual / Recyclates (t)	Ave Residual / Recyclates (t)	Dominant Pricing Structure
Dun Laoghaire Rathdown	77,694	29,936 / 18,950	.385 / .244 (1.6:1)	Variable, with a weight component
Fingal	89,854	47,136 / 20,319	.525 / .226 (2.3:1)	Variable, no weight component
Clare	23,232	13,743 / 6,142	.592 / .264 (2.2:1)	Mixed: variable weight based and flat rate
Cork City	44,519	27,167 / 9,800	.610 / .220 (2.8:1)	Flat rate
Offaly	12,751	10,545 / 3,306	.827 / .260 (3.2:1)	Flat rate

As demonstrated by Table 4.1, there would appear to be a very strong correlation between variable pricing structures with a weight based component and relatively low generation of residual waste per household. In Dun Laoghaire Rathdown, the average household produces 385 kilogrammes of residual waste per year, considerably lower than the national average of 640kg in 2010.¹²⁴ In Fingal, where a non-weight based variable pricing structure is dominant, the average weight of waste generation per household is 140 kilogrammes, or 36%, higher than in Dun Laoghaire Rathdown. In Clare, a waste collection firm with over 50% of local market share¹²⁵ operates an innovative weight based pricing structure based on the household’s usage patterns, the firm’s competitors

¹²⁰ Gorecki P.K., Acheson J. & Lyons S. (2010), page 28.

¹²¹ See O’Callaghan-Platt A. & Davies A. (2007) and O’Callaghan-Platt A. & Davies A. (2008). Pages 245-59.

¹²² Based on Central Statistics Office (2012) (Table 42) and Environmental Protection Agency (2012) (Tables 12 and Appendix B) data.

¹²³ Household numbers per local authority have been adjusted to take account of vacancy rates and the percentage of occupied households which do not receive a household waste collection service.

¹²⁴ National average calculated by dividing the 773,321 tonnes of residual waste collected, as reported on page 68 of the *National Waste Report 2010*, by the 1,208,094 households estimated as being in receipt of a waste collection service.

¹²⁵ As of 2010.

offer flat rate pricing structures. The poor performance of flat rate pricing structures in terms of average per household generation of household waste is very evident; in Offaly households are generating 215% more residual waste than their counterparts in Dun Laoghaire Rathdown. To a degree, the variations may be partially explained by demographic and socio-economic difference, however such factors cannot entirely account for disparities of the scale observed.

Also of note is the somewhat constant weight of recyclate generation per household in all five local authority areas, ranging from 220 kilogrammes to 264 kilogrammes.

According to recent Irish research, 46% of households use flat-rate charging; 34% use a tag-based system and 20% use a weight-based system.¹²⁶ A shift to weight based pricing structures is desirable, as “weight-based charges are the single most effective PBU [pay by use] system. These charges have prompted the highest per household recycling levels (between 27% and 32%), highest diversion rates from landfill (between 28% and 35%) and the lowest total kerbside waste figures (between 800kg and 947kg per annum). If the estimated 80% of those households across Ireland currently on tag and differential bin systems switched to ‘per kg’ based PBU systems, it could lead to an annual diversion from landfill of approximately 446,000 tonnes of domestic waste per annum.”¹²⁷ Other Irish research would appear to confirm the assertion that weight based pricing structures would reduce residual waste; the introduction of weight based charging in West Cork was associated with a 45% reduction in waste quantities.¹²⁸

A transition to weight based charging on a national basis could be achieved relatively cheaply, in view of the potential benefits. The necessary capital investment primarily involves fitting transponders to individual bins, and equipping refuse collection vehicles with data readers and weighing equipment. Costs in relation to transponders are understood to be approximately €2.50 per unit, and approximately €3.00 installation cost per unit. Equipping a refuse collection vehicle with the necessary data reader and weighing equipment is understood to cost approximately €30,000 per vehicle. Annual repair and maintenance costs are understood to be of the order of 7% of the initial investment, e.g. €2,100 per refuse collection vehicle.¹²⁹

The conclusions of Irish research are also supported by European studies; “With regard to waste prevention, weight-based PAYT [pay as you throw] schemes (i.e. determining waste collection and treatment fees based on the weight of the waste collected) tend to be most successful... weight-based systems may require more expensive infrastructure, but this can be justified by their better results.”¹³⁰

¹²⁶ O’Callaghan-Platt A. & Coakley T. (2011), page vii.

¹²⁷ Ibid, page viii.

¹²⁸ See Scott S. & Watson D. (2006) and Curtis J., Lyons S. & O’Callaghan-Platt A. (2011).

¹²⁹ Federal Ministry for Environment, Nature Conservation and Nuclear Strategy (2012).

¹³⁰ Watkins E., Hogg D., Mitsios A., Mudgal S., Neubauer A., Reisinger H., Troeltzsch J. & Van Acoleyen M. (2012), page 97.

It is notable that despite a substantial increase in the availability of the third, organic, bin from 2009 to 2010, in which an additional 129,855 households were provided with a three bin service, only a marginal increase of 2% of additional household organic waste collected occurred, from 62,447 tonnes in 2009 to 63,836 tonnes in 2010, i.e. 10.7 kilogrammes per additional household.¹³¹ It is likely that extant pricing structures help account for this low additional usage.¹³²

Appropriate variable price structures, which encourage the reduction of waste and segregation by the householder are necessary to reduce the disposal of waste in landfill and increase the volume and quality of recyclates. Pricing structures should also reflect the costs of providing the various elements of the service.

(iv) *Capacity to Meet Legal Obligations*

European Union environmental legislation is a driver of national waste policy. In respect of household waste collection, two Directives are of particular note:¹³³

The Landfill Directive: Article 5(2) of Directive 1999/31/EC requires that biodegradable municipal waste going to landfill be reduced to 916,000 tonnes by July 2010, 610,000 tonnes by July 2013 and 427,000 tonnes by July 2016. The *National Waste Report 2010* states that the July 2010 target has been met, however, the State is at risk of not meeting the 2013 and 2016 targets. The regulatory regime which applies to household waste collection will be a considerable influencing factor as to whether the requirements will be met in 2013 and 2016, as biodegradable waste from households is a major proportion of the national total.¹³⁴ During the summer 2011 public consultation process it was suggested by a number of consultees that the combined impact of Environmental Protection Agency conditions in landfill licences restricting acceptance of biodegradable municipal waste at landfill, new regulations requiring separate collection of biodegradable municipal waste, and recent and planned increases to the landfill levy will result in further progress towards achieving biodegradable municipal waste disposal targets. However, there is no guarantee that the current package of regulatory measures will be adequate to change waste management practices sufficiently to ensure compliance in respect of the 2013 and 2016 requirements.

The quantities of future waste streams is directly linked to economic performance, as economic growth and increases in waste generation have yet to be decoupled. It is of note that the most recent ESRI *Quarterly Economic Commentary*¹³⁵ predicts a low level of growth in 2013, as measured by expenditure on Gross National Product. Private Consumer Expenditure is forecast to increase by 0.6%, to €81.5bn in 2013. For the purposes of waste policy making, it is perhaps most appropriate to assume low levels of growth over 2012-2014, shifting toward moderate levels of growth from 2015-2016.

¹³¹ Environmental Protection Agency (2012), page vii.

¹³² Unseasonably cold weather in late 2010 may also have had an impact on collection volumes.

¹³³ In addition to the Landfill and Waste Framework Directives, household waste collection is a relevant element in meeting obligations under the broader family of waste directives.

¹³⁴ 50.8% in 2010, according to the *National Waste Report 2010*, Table 16, page 31.

¹³⁵ Duffy D., Durkan, J. & O'Sullivan, C. (2012).

Under such circumstances, household waste arisings will almost certainly increase, in line with personal consumption. The ISus model¹³⁶ predicts growth in municipal solid waste within the coming decade; an additional 825,000 tonnes per annum within the next 15 years.¹³⁷ In the context of growing municipal waste, it seems unlikely that in the absence of other policy measures the proportion of biodegradable municipal waste will fall, as required by the Landfill Directive.

A further challenge will be the impact of increased household participation in household waste collection markets. It is obvious that managing an additional 265,000 tonnes of waste will be a challenge; it will be necessary to ensure that a minimal proportion of this waste is residual waste, therefore appropriate incentives and systems must be put in place to maximise recovery and recycling.

It should be noted that the 2013 and 2016 targets under the Landfill Directive are not the final destination, as it were. They are envisioned as waypoints en route to a European waste management system in which landfill is virtually eliminated by 2020.¹³⁸ A revision of the diversion targets of biodegradable municipal waste from landfill is expected by 2014; the European Commission has signalled that Member States, including Ireland, should step-up their efforts to reduce the disposal of waste in landfills in line with the waste hierarchy as expressed in the Waste Framework Directive. As such, it is prudent to anticipate diversion targets in the latter half of this decade based on levels of ambition which exceed that of the 2016 target of 427,000 tonnes.

This is the reality of the fundamental strategic direction of waste policy. The European objectives, and therefore Ireland's objectives, are declining waste per capita, massive uptakes in recycling and reuse, and minimal residual waste, i.e. close to zero. The regulatory regime in respect of household waste collection must be designed such that it is capable of managing the transition to this goal.

The Waste Framework Directive: Directive 2008/98/EC contains a number of relevant Articles. Firstly, Article 4 requires that the Waste Hierarchy be reflected as a priority in the development and making of waste prevention and management legislation and policy. Member States must encourage the options that deliver the best overall environmental outcome. Member States must take into account the principles of precaution and sustainability, technical feasibility and economic viability, protection of resources as well as the overall environmental, human health, economic and social impacts. Such thinking must be reflected in analyses such as this Regulatory Impact Analysis and must be reflected by the objectives policy and specific policy measures.

Article 10 requires that Member States shall take the necessary measures to ensure that waste undergoes recovery operations, and where necessary to do so or to facilitate or improve recovery, waste shall be collected separately, if technically environmentally and

¹³⁶ The *Sustainable Development Model for Ireland*, which forecasts environmental emissions and resource use, and which was built by the Economic and Social Research Institute on behalf of the Environmental Protection Agency.

¹³⁷ Environmental Protection Agency (2011), page 13.

¹³⁸ European Commission (2011), Page 8.

economically practicable, and shall not be mixed with other waste or other material with different properties. Article 10 is strongly relevant to the regulation of household waste collection as it introduces an imperative to recover, as opposed to dispose, of waste, and, under certain conditions, that waste be segregated. Article 11 is similar in that it includes a requirement to promote high quality recycling and the establishment of separate collections of waste where technically, environmentally and economically practicable and appropriate to meet the necessary quality standards for the relevant recycling sectors. Under Article 11, by 2015 separate collections must be in place for at least the following: paper, metal, plastic and glass. In addition, under Article 11, the preparing for re-use and the recycling of waste materials such as, at least, paper, metal, plastic and glass from households must be increased to a minimum of overall 50% by weight.¹³⁹ Article 22 requires that Member States shall take the necessary measures to encourage: the separate collection of bio-waste with a view to the composting and digestion of bio-waste. The potential implications for the segregation of household waste and pricing structures are obvious; it is certainly the case that a situation in which waste collection firms provide a residual waste only service to 59,135 households, i.e. without a recycles or organic bin collection, must not persist.¹⁴⁰

Articles 14, 15 and 16 emphasises the importance of the polluter pays principle, and the principles of self-sufficiency and proximity. Article 16 places a requirement on Member States to take appropriate measures to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households.

Article 36 requires that measures be taken to prohibit the abandonment, dumping or uncontrolled management of waste. Member States must also ensure the penalties applicable to infringements of the Directive's provisions are in place and must take all measures necessary to ensure that effective, proportionate and dissuasive penalties are implemented. Article 36 has clear implications in respect of householder responsibilities to demonstrate the proper management of waste.

The regulatory regime defines the degree to which the State can directly and indirectly control waste management outcomes. The current system of regulation could be fairly described as *laissez faire* in many respects, relative to the requirements of the Waste Framework Directive. The implications for the household waste collection regulatory regime of the Directive are broad, notwithstanding that a precise interpretation of the Waste Framework Directive's requirements, for example in relation to terms such as "separate collection" will emerge in time.

The Commission will require reports from Member States on the implementation and compliance with the requirements of these Directives. Non-compliance will result in infraction proceedings. For example, the Commission will ask each Member State how that Member State has given effect to the requirements of Articles 10 and 11.

¹³⁹ In respect of the 50% target, Ireland is on track to meet this requirement.

¹⁴⁰ Environmental Protection Agency (2012), Page 20.

(v) *Network Duplication: Pollution and Disamenity Costs and Health and Safety Risks*

The activity of household waste collection requires that household waste collection vehicles travel to and operate within residential areas. In collecting household waste, it is no longer necessary for households to transport their waste to civic amenity sites. As such, household waste collection services result in fewer journeys and therefore less risk of accidents to other road users and pedestrians. However, the fewer the number of waste collection vehicles servicing any given route or visiting any given housing estate, the lower the potential for accidents.

Refuse collection vehicles are large and tend to be noisy. A frequent complaint voiced in relation to household waste collection services is the noise and general disamenity of several refuse collection vehicles operated by different waste collection firms visiting the same areas due to route duplication. It is not unusual for a residential to be serviced by four waste collection firms.

Economic Failures

The current system of regulation also has a number of failings or potential failings, which could be described as economic in character. Two areas have been identified as problematic, in the case of prices, and potentially problematic in the case of market power, monopolisation and collusive behaviour.

(vi) *Price Levels*

It is essential that the appropriate price signals are sent to the waste producer, i.e. the householder. Waste is a cost for society, and must be reduced. Economic mechanisms such as the landfill levy are intended to transmit this signal to the householder. It is desirable from society's wider perspective that waste collection charges reflect the actual costs of waste management and act to dissuade the householder from unsustainable behaviour.

Table 4.2: Consumer Price Index Price Growth for Household Waste Collection 1998-2012 (Note: 2006 is the base year.)¹⁴¹

'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12
17	24	28	38	45	54	68	94	100	105	105	105	102	98	100

In recent years, the movement towards full cost recovery for waste services, in line with the polluter pays principle, and higher environmental standards,¹⁴² have led to increased charges for the consumer. Substantial price growth has occurred; prices have risen by a factor of six from 1998 to 2007, fell marginally in 2011 and have risen again in 2012.

¹⁴¹ Data supplied by the Central Statistics Office in June 2012. The May value for each year has been used.

¹⁴² For example, costs associated with the closure and proper ongoing management thereafter of landfills, and costs of the provision of appropriate recycling facilities.

Notwithstanding the economic and environmental logic of ensuring that household waste collection charges reflect the actual costs, waste collection and management costs to the householder should not be unduly high. In particular, costs should not be passed to the householder which may be derived from inefficiencies caused by market structures. There have been persistent concerns that Ireland's side by side competition market structure results in household waste collection prices which are higher than those which would arise under an alternative market structure. For example, the Eunomia International Review states that "by simply moving to a 'competition for the market' approach, it ought to be possible to save around €80 per household per year on average, more in some cases, less in others, on the costs which households are charged."¹⁴³

Economic theory underlines the importance of consumer welfare, i.e. that consumers benefit from the workings of the market. It is important that policy in respect of household waste collection flows from a clear appreciation of the importance of consumer welfare; provided service quality and environmental outcomes are satisfied, the price paid by householders is an important concern.

The role of the price of household waste collection charges should not simply be considered from the perspective of the householder. Inefficient, costly household waste collection markets have implications for the efficiency of the wider cluster of waste management markets, such as recyclates markets, and for national competitiveness.

The matter of price and market structure will be returned to in Chapter Five.

(vii) *Market Power, Monopolisation and Collusive Behaviour*

It has been observed that "the commercial reality of the Irish household waste collection market is that collectors generally appear unwilling to enter each other's areas of operation or to compete head-to-head with each other, although competition may occur at the boundary between the areas served by each firm."¹⁴⁴ If this is the case, if waste collection firms tend not to challenge one another in certain markets, then a clear difficulty exists as market dynamics are not operating correctly; firms will have market power, i.e. the ability to set prices, and monopolies in local markets may emerge. The OECD has observed in respect of Ireland that "the introduction of private providers in the [household waste collection] market did not necessarily mean more competition. In some regions, a private regional monopolist is simply replacing the local authority."¹⁴⁵

The number of household waste collection firms in the national market at any point in time is a function of a range of factors. The number of service providers has not been static in recent years; local authorities have exited the market and some private sector companies have acquired, i.e. bought out, their competitors. Further change can be expected, whether or not the system of regulation of the market is changed. It may be the case that as the industry evolves and concentrates, over the medium to long term competition becomes less vibrant and local monopolies form and persist.

¹⁴³ Eunomia et al (2009), page 1062 (annex to main report).

¹⁴⁴ The Competition Authority (2005), page 28.

¹⁴⁵ Organisation for Economic Cooperation and Development (2008), page 333.

It should be stressed that no evidence has been presented to the Department of anti-competitive practices among waste management firms. However, markets which have a limited number of sellers and in which the product is relatively homogenous are typically considered to be amenable to cartel behaviour, such as price fixing, market sharing or other collusive behaviour which increase profits at the consumer's expense. Local waste collection markets are homogenous and are oligopolies, and therefore are at potential risk of the formation of cartels.

Notwithstanding any concerns which may exist regarding competition issues, or the potential for competition issues, the observed degree of competition in household waste collection markets in 2012 would appear in many local markets, in a broad sense, to be healthy. It has been reported to the Department that, based on survey returns from waste collection firms, on average four waste collection firms are offering services on some or all parts of a route or area.¹⁴⁶ Certainly, it can be observed that in many local markets a number of waste collection firms are present and are engaged in active competition. In many markets competitive activity has resulted in customer churning, as households switch from one private sector firm to another.

Analysis of market shares in certain areas in 2010 does indicate that market power and dominance may have existed, and may continue to exist, in certain local markets for household waste collection services.¹⁴⁷ Dominance, in an economic sense, is the strength of a firm or product as compared to its competitors. Market power “may be described most simply as the ability to raise price consistently and profitably above competitive levels... Firms with market power... may instead simply opt not to compete as aggressively as they otherwise might, and, in so doing, allow costs to rise, reduce quality, restrict the diversity of choice and/or slow the rate of innovation.”¹⁴⁸ Market power can be thought of as the ability of a firm to act independently of competitors and, ultimately, of consumers. A firm with market power may engage unilaterally in anti-competitive behaviour.

¹⁴⁶ DKM Economic Consultants (2012), page 22.

¹⁴⁷ The latest period comprehensive figures are available for.

¹⁴⁸ Competition Commission (2007), page 11.

Table 4.3: 2010 Market Shares in Selected Local Authority Areas

Local Authority Area	% Market Share of Largest Waste Collection Firm¹⁴⁹
Leitrim County	95
Limerick City	81
Roscommon County	77
Longford County	77
Carlow County	75
Monaghan County	75
Galway County	71
Cavan County	66
Clare County	58
Kilkenny County	56

It should be noted, however, that in some of the markets listed above, the market share of the largest waste collection firm is known to have diminished in 2011, due to competition within that market. Notwithstanding any such changes, it has been reported to the Department that market shares of 90% exist on certain waste collection routes in 2012.¹⁵⁰ In many areas of Dublin City, monopoly conditions have existed since Dublin City Council withdrew from the market.

The economic concepts of dominance and market power should be applied with care. Market share should not be equated with market power; market shares can only ever be a proxy measure of market power. For example, highly concentrated markets may be contestable, i.e. subject to competition, if barriers to entry are low; in effect the potential entry of a competitor to a market ensures that the incumbent firm does not exploit its position. Determining whether market power exists requires the application of a number of economic conceptual tools and falls beyond the scope of this analysis, other than to note that market power may have existed, and may continue to exist, in certain markets.¹⁵¹

The Department notes that a number of waste collection firms have stated, publicly and privately, to the Department in recent months that anti-competitive practices have or are occurring in certain markets. The Department is not in a position to make any validation of these claims.

In the event of the emergence of evidence of monopolisation, abuses of market power, or collusive behaviour, competition law and the Competition Authority are the appropriate remedies.

¹⁴⁹ Expressed as a percentage of total households participating in household waste collection markets.

¹⁵⁰ DKM Economic Consultants (2012), page 22.

¹⁵¹ These tools include market and product definition, the application of the SSNIP (Small but Significant Increase in Price) Test, and considerations of demand and supply side substitution.

Social Failures

The final category of regulatory and market failure concerns waivers for low income households and difficulties associated with a local authority's dual role as regulator, and in a limited number of cases, service provider.

(viii) *Waivers*

Waiver schemes for household waste collection are currently operating in a number of local authorities. Approximately 109,000 households are recipients of a waiver scheme, ranging in average value from €40 to €318. In several instances the waiver schemes will cease to operate at a given date, e.g. in Fingal County Council in November 2012, or in Dublin City Council in January 2013. As local authorities have withdrawn from household waste collection markets, waiver scheme coverage has decreased. The current situation should be regarded as temporary and transitional; *ceteris paribus*, in 12 months time in very few local authorities will a waiver scheme be in operation.

The current system has a number of shortcomings:

- It is inequitable in terms of geographic location. In some local authorities a functioning scheme is in place. In other, no scheme exists;
- It is inequitable in terms of the terms and condition of the schemes. Eligibility criteria and waiver values vary considerably;
- The funding of waiver schemes, where they exist, has a financial impact on those local authorities operating a scheme; and,
- The administration of waiver schemes can be costly.

Waiver scheme commitments will expire in most local authorities in the next 12 months; Cork City and County Councils have 24 month extensions which are due to expire in the summer of 2014. Assuming no policy change, in 12 months almost 80,000 households will be impacted by the expiration of waiver schemes. A further 20,000 households will be impacted by the expiration of waiver schemes in the following year.

Market developments, as opposed to policy decisions, in particular the near total withdrawal of the local government sector from household waste collection markets have resulted in a situation in which waiver scheme coverage will decline to a limited numbers of households.

(ix) *Dual Role: Service Provider and Regulator*

The dual regulatory and direct service provision role of those local authorities which continue to offer a service renders them exposed to legal challenge, thereby inhibiting the capacity of those local authorities to effectively regulate.

To a large degree this failing has receded as most local authorities have withdrawn from the direct provision of household waste collection services. However, two local authorities continue to provide services, in competition with the private sector, and it is possible, albeit unlikely in the short to medium term, that other local authorities may

decide to re-enter the market. As such, the dual role issue remains a failing of the current system in certain markets.

Waste Permitting

A number of respondents to the summer 2011 public consultation process in relation to the regulation of household waste collection have suggested that the objectives of any such policy change can be achieved by other means. Specifically, amendments to and improved enforcement of the current waste collection permitting system have been offered as a mechanism which can rectify many of the difficulties associated with the system by strengthening regulatory control over private sector waste collectors.

Under Section 34 of the Waste Management Act a waste collector other than a local authority must have a permit to collect waste, and must comply with the conditions of the permit. Waste collection permits are issued by the relevant local authority, or a nominated authority acting on a local authority's behalf.¹⁵² A local authority may review or amend the conditions attached to a waste collection permit, or may revoke a waste collection permit, effectively barring a waste collector from a market. As such, it would seem, on the face of it, that the waste collection permitting system may be used by local authorities in a flexible and responsive manner to control waste collection and thereby achieve the objectives required by national, regional and local waste policy.

However, in reality, the waste collection permitting system is imperfect for a range of reasons; conditions are ignored by waste collectors, are challenged in the Courts, and/or are difficult and costly to enforce.

Waste Permitting and the Organic Bin in the Connacht Region

The Connacht Waste Region¹⁵³ waste management plan requires that 90% of urban households and 25% of rural households, equivalent when aggregated to 40% of households, be serviced with a segregated organic waste collection service, i.e. a third bin, to support the national effort to meet the requirements of the Landfill Directive and to comply with the National Strategy on Biodegradable Waste of 2006.

All permitted household waste collectors in the Connacht Waste Region have been required, by alterations to the conditions of their waste collection permits, to provide segregated organic waste collection services to 20% of households from 1 September 2009, and to 40% of households from 31 December 2010. From February 2009 the Connacht Waste Region advised all 30 permitted waste collectors in the region of the change to waste collection permits and requested each collector to draw up a plan and programme to demonstrate how the collector would meet the new requirements. The response to this and subsequent communication has been described by the Waste Region as “insufficient and inadequate.”¹⁵⁴ Subsequently, representatives

¹⁵² In all but one case, the nominated authority is the waste region's lead authority for waste management planning.

¹⁵³ I.e. in the functional areas of Galway City Council and Galway, Roscommon, Leitrim, Mayo and Sligo County Councils.

¹⁵⁴ In a letter from Connacht Waste Region to the Department, dated 19 December 2011.

of the Waste Region met with almost all of the permitted waste collectors to advise them, in detail, of the requirements of the altered waste collection permits and the need to provide a third bin.

The Connacht Waste Region has stated that the introduction of the three bin domestic refuse collection service has “not been in accordance with our requirements”,¹⁵⁵ that it is to say that the requirements of waste collection permits have not been complied with by much of the household waste collection industry in Connacht, despite education and awareness programmes.

Table 4.4: 2010 Compliance with Third Bin Collection Permit Requirements, by County Council

County Council	% of Households 2010 Actual	% of Households 1 September 2009 Permit Requirement
Galway	15%	20%
Leitrim	1%	20%
Mayo	16%	20%
Roscommon	9%	20%
Sligo	3%	20%

Many household waste collectors have simply refused to comply with collection permit conditions. This failure by household waste collectors to comply has a tangible, negative impact: the disposal in landfill of thousands of tonnes of organic waste which is economically inefficient and which, should such practices continue, would help jeopardise Ireland’s fulfilment of national obligations under the Landfill Directive.

Connacht Waste Region has characterised the collective response of household waste collectors to the altered collection permits as resistant and non-cooperative, resulting in “a process of dare and filibuster”,¹⁵⁶ which is often accompanied by a willingness to challenge permit conditions, or changes to permit conditions, in the courts.

Local authority resources are required to tackle non-compliance; legal cases must be prepared and won. The costs of doing so are substantial and are generally non-recoverable. The opportunity cost, in terms of alternative enforcement action foregone, is also high.

Organic waste collection in the Connacht Waste Region is an illustrative example of problems associated with the waste permitting system, as currently constituted. Difficulties with translating waste permit conditions into action, in instances in which those conditions are resisted by waste collectors, are reported in other waste regions. For example, in the Limerick-Clare-Kerry Waste Region, all waste collection permits were reviewed in 2007 and conditions were added to require that 40% of households be provided with a segregated organic waste collection service by the end of 2010. As of 2010, three of fifteen household waste collection service providers were

¹⁵⁵ Ibid.

¹⁵⁶ Ibid.

compliant with the permit condition. Five household waste collection service providers provided no separate organic waste collection service whatsoever.¹⁵⁷

Chapter Four Conclusion

The current model of regulation of household waste collection is not sustainable. Regulation has fallen behind market developments, in particular a shift from public to private provision, and the State's evolving needs for improved environmental outcomes. The waste permitting system is insufficient to act as a sole platform to correct these failures. The OECD's conclusion that the State's "reluctance to fully use policy tools at its disposal (e.g. pricing, contractual, and regulatory tools) has created new tensions in the system and continues to impede its ability to keep up with the shift from public to private delivery" is difficult to challenge.¹⁵⁸

¹⁵⁷ Data provided by Limerick-Clare-Kerry Waste Region to the Department, December 2011.

¹⁵⁸ Organisation for Economic Cooperation and Development (2008), page 326.

Chapter Five - Policy Options and an Analysis of Impacts

Identification and Description of Options

As has been discussed in Chapter Four, the current regulatory regime is inadequate as it is associated with a number of failings, or potential failings, both environmental and economic.

A number of policy options are available to Government:

- (i) Do nothing;
- (ii) Price regulation accompanied by no fundamental change to market structure;
- (iii) Alter market structure by restricting service in each market to a public monopoly;
- (iv) Alter market structure by restricting service in each market to a hybrid public-private monopoly, such as the formation of joint venture firms in which ownership is divided between a local authority and the private sector;
- (v) Alter market structure by restricting service provision to the winner of tender for a given period of time, i.e. introduce franchise bidding; or,
- (vi) Retain the current market structure and strengthen the regulatory regime to address the failings identified in Chapter Four.

Analysis of option (i), do nothing, is a requirement of the Regulatory Impact Analysis process, although this option does not address the difficulties inherent in the current system and as such is likely to be an insufficient policy response.

Option (ii), that of price regulation would, if successful, address one perceived difficulty of the current system, that of high prices.¹⁵⁹ However, in practice price regulation is difficult and the question arises as to who would perform such regulation; “neither the Competition Authority nor the courts are equipped for such regulation.”¹⁶⁰ Price regulation, i.e. the setting of prices, price floors, price ceilings etc. is considered inappropriate due to the risks of market distortions, unintended consequences and that such a system of regulation would, alone, fail to address many of the current regulatory regime’s failings. An effective price regulation regime would also require the establishment of an appropriately resourced national office which is undesirable under current circumstances. As such, this option can be rejected outright.

Option (iii) would involve ejecting the private sector from the national waste collection market, replacing the private sector with (a) local authority provision, or (b) a national public waste utility service provider. The option of effectively reinstating former local authority monopolies would raise a number of problematic issues. In view of the development of the national market, including the respective current roles of the public and private sectors, such an approach can be rejected outright as extremely problematic from economic, legal and other perspectives.

¹⁵⁹ The use of price regulation is not new in an Irish context. However, it is considered to be undesirable in this instance, due to the difficulties a regulator may have in determining a firm’s costs, and a general preference that prices are restrained, where possible, using the competitive dynamic of the market. C.f. the Commission for Energy’s tariff regulation of the domestic electricity market and the recent removal of price controls.

¹⁶⁰ The Competition Authority (2005), page 1.

The formation of hybrid public/private joint venture firms, option (iv), is a common approach in many local governments in Europe, particularly in Iberia. The formation of such vehicles, majority owned by a local authority in partnership with a large firm, autonomous and managed and organised along commercial lines, has been an option open to local authority and potential private sector partners for some time, as there has been no statutory impediment to such an endeavour. Behaviour has demonstrated that neither the private nor public sectors have favoured such an approach to date. Again, in view of national market developments and the respective current roles of the public and private sectors, such an approach can be rejected at this time.

Option (v) will be considered in detail in this Chapter, as will Option (vi).

A Note on Method

A notable challenge of conducting this Regulatory Impact Analysis has been the scarcity of detailed independent academic research specific to Ireland on many relevant issues. Less surprising, perhaps, is the limited quantity of academic research in respect of the likely economic impacts of altering a side by side market structure to a franchise bidding market structure. In part this reflects the fact that in almost all developed countries, the policy approach has been to prevent, by regulation, the emergence of side by side competition in household waste collection markets on grounds that such markets are a natural monopoly. As noted in the literature review section of this analysis, there is almost no debate in the corpus of policy and academic publications as to whether household waste collection markets constitute a natural monopoly. A consensus is apparent on this point.

Determining the likely cost and price impacts of a change to market structures is an exercise in considering the counterfactual. Prices in the current market structure may be observed and costs may be inferred, however costs and prices in an altered market structure must, by definition, be estimated.

One method or approach estimating such costs would be, using management information data available to a waste collection firm or firms, to understand the costs and prices which firms experience under the current market structure and to model the costs and prices which would be generated under franchise bidding market conditions. Such a model would need to be extremely detailed and robust to generate valid data. Inputs would include a very wide range of efficiency, vehicle, labour, and back office related information, and such inputs would be variable dependent on a range of geographic and other market specific conditions. The development of such a model would require (i) the cooperation and assistance of a private sector waste collection firm¹⁶¹ willing to dedicate a non-nominal quantity of resources and management attention to such a project, and (ii) Departmental satisfaction that information asymmetries do not result in inaccuracies. It has not been feasible to adopt this method.

The Department's preference has been to seek to examine international best practice, market and regulatory structures in other EU states and to survey all available literature on the subject of

¹⁶¹ The Department considers that local authority inputs would be insufficient and could distort an analysis, not least because local authority waste collection costs and working practices have in many instances been very divergent from those found in private sector counterparts.

waste markets. This has allowed the Department to establish likely conditions in a counterfactual scenario using an alternate method, that of comparing prices found elsewhere with prices observed in the Republic of Ireland, in an informed and balanced way, using information provided by the waste industry during the summer 2011 public consultation process and arising from subsequent engagements with individual firms and with the industry's representative body, the Irish Waste Management Association.

The Principal Policy Options - a Detailed Description

The policy options which will be considered in this analysis are (a) do nothing, (b) restructure household waste collection markets and introduce franchise bidding, and (c) retain the current market structure and strengthen the regulatory regime.

(a) Do Nothing

The current market structure is preserved and the regulatory regime remains in place with no major changes to its provisions. Transaction costs, to the State and to the waste collection industry would not arise. No legislative change would be required.

As noted previously, this option would not address the difficulties inherent in the current system and as such is likely to be an insufficient policy response.

(b) Restructure Household Waste Collection Markets and Introduce Franchise Bidding

In a franchise bidding system, a local authority or other such State body¹⁶² issues a tender the winner of which will be the sole provider of household waste collection services, under contract, in accordance with a given service level, for a given period of time, and for a given geographic area, i.e. a local market. In simple terms, an auction is held for the right to deliver a service on a monopoly basis. It is during this auction when competition occurs, as the bidding firms¹⁶³ compete to win the tender by offering bids. The successful bidder is the firm which offers the lowest combination of price to the householder and/or meets the service quality standards.

With very few exceptions, in those EU jurisdictions in which the private sector collects household waste, franchise bidding is the norm. Proponents of franchise bidding state that the benefits of such a market structure are that:

- Competition occurs *ex ante* and in a manner which is extremely transparent to the awarding authority, as opposed to ongoing competition in the market which may be substantially hindered by natural monopoly conditions.
- Such a market structure places the auctioning body, usually a local authority, in a monopsonistic position, which results in considerable market power that can be used to maximise the common good.¹⁶⁴
- Related to the former point is the capacity of the awarder of the tender to establish the terms of the contract. A contract is used to define levels of service, price and pricing structure, adherence to environmental objectives, monitoring and audit arrangements, and penalty clauses in the event of non-compliance. A contract may also be used to address

¹⁶² Such as a combined utilities regulator.

¹⁶³ Which may include the in-house local authority service provider.

¹⁶⁴ A monopsony is a market structure in which one buyer faces many sellers.

other issues, such as waiver arrangements for low-income households. Contracts are powerful legal instruments, and due to the consensual nature a contractual relationship between local authority and firm may be preferable to a formal regulation relationship in certain respects. To a certain degree, a contract may be regarded as a proxy regulatory instrument.

- The relevant literature over four decades has demonstrated that monopoly provision market structures, such as franchise bidding, deliver lower costs, typically through the more efficient use of workers and capital equipment.
- The periodic renewal of the franchise ensures that the franchise winner has an interest in maintaining a positive relationship with the awarding authority, i.e. the local authority, and its customers.

Such a market structure establishes State control of entry and exit to a market. Control of entry and exit is a long established form of regulation, however it should be clearly noted that competitive tendering for household waste collection markets will, in many instances, force several firms to exit the market, will compel one firm, the successful bidder, to remain in the market for the duration of the contract, and will by definition prevent new entry. As such, it is the creation of a monopoly, in natural monopoly conditions. In such market structures, it is important to ensure that certain traits associated with monopoly, such as output restriction and high prices, do not occur.

Amendments to the Waste Management Act 1996 and associated regulations would be required to alter the structure of household waste collection markets. Operational implementation would be staggered and would be preceded by the provision of necessary central supports, including technical guidance documents and standardised contracts. In all likelihood, a full transition to a franchise bidding market structure would require 3 to 4 years to fully implement.¹⁶⁵

(c) Retain the Current Market Structure and Strengthen the Regulatory Regime

Under this option the market structure would continue to be side by side competition. Dynamic, continuous competition between waste collection firms would continue. Innovation would occur organically, from local market to local market. The entry and exit of waste collection firms to local household waste collection markets would not be limited. Waste collection permits would still be a requirement and therefore a regulatory barrier to entry would continue to exist, albeit, in economic terms, such a barrier would be regarded as quite low, notwithstanding any potential State imposed increases to the cost of entering the market.

Proponents of the current market structure of side by side competition state that the benefits of such a market structure are that:

- Competition is vibrant; the competitive pressures inherent in the current system have a greater impact than economies of density on the price charged to the householder.
- The costs of household waste collection services have declined steadily in recent years.

¹⁶⁵ The ongoing Polish transition from side by side competition to monopoly provision is scheduled to be complete by July 2013, some 19 months from the enactment of legislation.

- Side by side competition results in rapid reactions by waste collectors to market developments such as decreased disposal costs and increased value of recyclable materials.
- Side by side competition allows for organic, dynamic innovation.
- In a system of side by side competition, the consumer can pick and choose, switch service provider, and negotiate from a position of relative strength.
- The preservation of the current market structure will preserve existing business models and will provide the certainty which the industry requires to make investment in progressive waste management infrastructure.

Notwithstanding the benefits listed above, in order to address the market and regulatory failures of the current regulatory regime under this option the waste permitting and wider regulatory system would need to be substantially strengthened, including by:

- Placing a legal obligation on each household to have its waste collected or to demonstrate, if required, that if its waste is not collected, that the household is managing its waste in accordance with the law. Strict penalties would be required, including a staggered scale of penalties for repeat offences. Such a requirement on all householders would have a number of benefits, including reducing illegal disposal of waste and increasing the density of many local waste collection markets and associated economies, therefore lowering the average cost of the service. However, such a measure could also be expected to impact on performance in respect of Landfill Directive targets for the disposal of biodegradable waste in landfills. To support households, awareness and education measures would be initiated; the waste collection industry would be expected and encouraged to play a substantial role in such awareness and education measures.
- Regulating the pricing structures which apply to household waste collection services to ensure that pricing structures incentivise householders to reduce waste and segregate recyclates in defined categories. Waste collection firms which fail to comply would have their waste collection permit suspended or revoked. It should be noted that such a requirement would not constitute price regulation in the commonly understood sense, that is, prices would not be set, or price ceilings or price floors applied by regulation. Instead, the components of the price structure would be defined by regulation to, for example, ensure that a simple flat rate annual fee, based on the size of the bin regardless of households waste arisings, would be invalid. All waste collection firms could, as a further example, be required to offer a price structure which is composed of a standing charge, and variable weight based fees for different categories of residual waste, segregated recyclates and organic waste. Consideration could also be given to a requirement that behavioural levies, such as the landfill levy, when passed through to consumers by each waste collection firm, are included as a visible proportion of the charge for residual waste, as opposed to the inclusion of the landfill levy in the standing charge. In addition to help incentivise sustainable waste management behaviour in households, mandated pricing structures would also increase pricing transparency for the householder, making comparisons of market offerings by competing waste collection forms easier to understand, and therefore better enabling switching to the waste collection firm whose price structure most appeals to any given household. The waste collection industry would be strongly encouraged to provide information to households concerning how best to

manage their waste and to reduce the prices they pay for waste collection, for example by segregating and recycling waste.

- Regulating the household waste collection service offerings of firms to ensure that all firms offer segregated collections in accordance with the State's requirements. For example, all waste collection firms could be required to provide, without exception, at a minimum a residual waste collection, a recycles collection, and, in specific circumstances, an organic bin collection. It would be open to waste management firms to exceed such requirements, for example by offering a separate glass collection service, however non-compliance would result in permit suspension or withdrawal. This issue is further discussed on page 70.
- The ownership of waste would rest with the holder of the waste. Until the moment of collection the householder would own the waste. Subsequent to the moment of collection, the waste collector would enjoy ownership and would therefore assume primary responsibility and liability for that waste.¹⁶⁶ The new holder of waste would be free to direct that waste to the appropriate tier of the waste hierarchy, subject to the requirements of EU and national law. In view of the State's obligations under the Landfill Directive in respect of biodegradable waste and the wider requirements of the Waste Framework Directive, and the financial liabilities which exist should non-compliance occur, it is necessary to share responsibility for compliance and liability for the financial risks of non-compliance with the waste management industry. Such an arrangement would involve changes to the waste collection permit fee structure to reflect the value of the permission to collect waste conferred by a permit, the need to contribute to the costs of essential enforcement of the permitting system and the potential liabilities for the State which may arise from poor collection practices. Increased waste collection permit charges would be a contribution to the costs of enforcement and inspection, and would act as a form of insurance against unmet liabilities due to the collapse of any individual waste collection firm. Non-compliance with such a scheme by any given waste collection firm would result in permit suspension or revocation. The collection permitting system will also be strengthened so that robust controls are in place to ensure that only "fit and proper" individuals and companies are allowed to hold such permits.
- Measures would be taken to manage the nuisance, emissions and health and safety risks of network duplication. An option would be to regulate the hours during which household waste collections could occur, to minimise the risk of a serious or fatal road traffic accident and to reduce the nuisance value of multiple refuse collection vehicles and crews collecting from housing estates. Alternatively, refuse collection vehicles could be required to operate under a certain decibel threshold, for example by using electric vehicles, in residential areas. A requirement to progressively introduce compartmentalised refuse collection vehicles could also be put in place, to reduce the number of waste collection journeys made by a waste collection firm on any given street. In addition, compulsory compliance with Euro VI standards could be required.¹⁶⁷ Non-compliance with such measures by any given waste collection firm would result in permit suspension or revocation.
- The Competition Authority would be requested by Government to assume an overwatch stance in respect of household waste collection markets, and to actively monitor

¹⁶⁶ Subject to Article 15 of the Waste Framework Directive 2008/98/EC.

¹⁶⁷ Emissions limits for heavy duty vehicles.

concentration levels and pricing in local markets, with a view to the early identification of abuses of dominant positions or collusive behaviour. In addition, the Competition Authority would be required in 2016 to prepare a detailed analysis and report to the Minister for the Environment, Community and Local Government on the functioning and outcomes of the side by side market structure from an economics of competition, or industrial economics, perspective, comprehending issues such as market structures, the strength of competition in local markets, price levels, evidence of collusion etc. Such a report to the Minister would be accompanied by a detailed analysis and report on the environmental outcomes of the regulatory regime prepared by the Department of the Environment, Community and Local Government, comprehending issues such as performance in meeting relevant waste management targets and objectives, and householder and industry compliance with regulations, in addition to any pertinent observations the Department may wish to make on the economic operation of the regulatory regime.

For such a system to function, the credibility of the inspection and enforcement apparatus as viewed from the perspective of households, waste collection firms and Central Government, would be paramount. Sufficient resourcing will be a requirement. A failure to adequately resource inspection and enforcement would result in severe environmental and economic risks.

Amendments to the Waste Management Act 1996 and associated regulations would be required to introduce such a regulatory system. The detailed design of the various components would take some time in order to identify optimal structures, and operational implementation would be preceded by the provision of necessary central supports to householders, the waste management industry and regulators. The full transition to such a regulatory regime would require 18 to 30 months to fully implement.

It should be noted that this option, that is the strengthening of the regulatory regime without altering the current market structures will create a unique system of waste management, in which the role of the private sector is central. The private sector will control and own waste, throughout the waste management process, from collection at the kerbside to final disposal or treatment. The waste industry will collect, hold, own and direct waste, albeit under a system of regulatory oversight by the local government system and the Environmental Protection Agency. Future investment in waste infrastructure will in all likelihood be provided exclusively, or almost exclusively, by the private sector.

Analysis of Costs, Benefits and Other Impacts for Each Option

The multi-criteria analysis technique has been employed, as prescribed in Department of Finance literature.¹⁶⁸ Multi-criteria analysis is an evaluation method used to help establish preferences

¹⁶⁸ See Annex 4 of Chapter 5 of Department of Finance (2007). This analysis is necessarily subjective because many of the objectives are qualitative by nature, and are not amenable to direct measurement. However, a degree of subjectivity is inherent in any form of *ex ante* appraisal which seeks to determine the non-financial benefits of a given programme.

between options by reference to an explicit set of objectives and criteria; a linear additive model of multi-criteria analysis with a simple weighting system has been used.¹⁶⁹

The preparation of a multi-criteria analysis involves the following steps:

- (i) The identification of Criteria;
- (ii) Description of the performance of each option against the Criteria;
- (iii) Scoring and Weighting;
- (iv) Examining the Results; and,
- (v) Sensitivity Analysis.

It should be noted that alternative techniques, such as Cost Benefit Analysis and Cost Effectiveness Analysis are not considered to be appropriate techniques for the purposes of this analysis, given the timeframes, the policy area and the methodological complexities of monetising impacts.

The Criteria

The second step of a multi-criteria analysis is the identification of criteria that reflect the value associated with the consequences of each option. Each objective must be expressed by a criterion or criteria. Criteria should be complete, should be without redundancy (i.e. all criteria should be necessary), should be capable of being effectively, if subjectively, judged, should be mutually independent, and should be measured without double counting of benefits.

The criteria for assessment of the three valid policy options flow from the Government's household waste collection policy objectives, as stated on page 41. The criteria are:

- 1. Support the attainment of environmental objectives and consistency with the legal cornerstones of policy;
- 2. Provide for the segregation of waste;
- 3. Maximise householder participation with waste collection services;
- 4. Minimise price, commensurate with environmental goals;
- 5. Provide a quality service to the householder;
- 6. Sustain a competitive, progressive industry, working in partnership with the State;
- 7. Provide market stability and regulatory certainty; and.
- 8. Meet other social preferences.

Each of the three options will be judged in terms of its propensity to meet the policy objectives.

The issue of householder choice has not been included among the criteria for analysis. A number of participants of the summer 2011 consultation process stated that customer choice is a merit of the current system of regulation, and a flaw of a system of monopolised provision. The Department does not fully concur. Not all householders currently enjoy choice in respect of household waste collection services. In certain areas of the country, either no waste collector

¹⁶⁹ Used in instances in which criteria are preferentially independent of each other, and in which compensation is permitted, compensation being a willingness to accept that a strong performance on one criterion can compensate for weak performance in relation to another criterion.

offers a service or a single service provider offers a service. Even in those markets in which a number of competitors are active and the householder may choose among competing firms, there is no guarantee that choice will exist in perpetuity, as the dynamics of competition and concentration may result in a monopolist achieving control of that market. It is also notable that in some markets in which choice between rival waste collection firms is available to the householder, the pricing structures and services offered by the rival firms are not highly differentiated, and can be remarkably similar. Further, for many households the issue of choice is tertiary; the primary issues are price, service quality and environmental outcomes, and as such many households may regard a loss of choice of household waste collection service provider with indifference, especially if that loss of choice were to result in lower costs and therefore lower prices for an equivalent or superior level of service.

Criterion One: Supporting the attainment of environmental objectives and consistency with the legal cornerstones of policy

Policy in respect of household waste collection must support the attainment of the State's wider environmental objectives, including adherence to the waste hierarchy and the giving of effect to the principle that the polluter pays. The disposal of waste in landfill must be minimised and recoverable resources maximised. Policy must be consistent with the legal cornerstones of National and European policy, including the Landfill Directive and the Waste Framework Directive. Criterion One also comprehends the capacity of the option to ensure that the level of inspection and enforcement in respect of households and waste collection firms is sufficient and is adequately funded.

Option (a): Under the 'do nothing' option, the State's wider environmental goals are unlikely to be fully met, although partial local progress is probable. In particular, the waste hierarchy will be breached as the role of landfill is likely to be far more prominent than under options (b) and (c), with corresponding failures in respect of the recovery and recycling tiers. The alignment of Option (a) with the polluter pays principle would be partial, as household waste price structures which include minimal, if any, incentives to reduce waste would continue to be present. As noted in Chapter Four, the existing inspection and enforcement regime is insufficiently robust to deliver desired outcomes. Option (a) scores three points under Criterion One.

Options (b) and (c) score equally well under Criterion One. Both regulatory regimes would ensure that, the polluter, i.e. the householder, would pay and the waste hierarchy would be adhered with; the role of landfill would be progressively minimised and the waste management of household waste would transition to recovery, recycle and reuse. Options (b) and (c) would each provide a platform for the achievement of the targets set out the Landfill Directive, the Waste Framework Directive and other relevant Directives. Options (b) and (c) would both also perform well in relation to inspection and enforcement regimes. Under option (b), any given franchise would be underpinned by a contract between the contracting authority and the waste collection firm, with clear inspection, enforcement and penalty provisions. Under option (b), the costs of funding the inspection and enforcement regime, including in respect of non-compliant households, could be funded by a transfer paid by householders as part of their waste collection charges, and remitted by the waste collection firm to the relevant local authority. Under option (c), as discussed on page 65, the strengthened regulatory regime would include increased waste

collection permitting charges paid by all waste collection firms. Such an arrangement would help fund the local authority and Environmental Protection Agency inspection and enforcement regime directed at households and waste collection firms. Options (b) and (c) each score nine points under Criterion One; neither option guarantees the fulfilment of the criterion but each option, provided implementation is successful, would in all likelihood, ensure that much progress is made in respect of household waste.

Criterion Two: Providing for the segregation of waste

As discussed in Chapter Four, current levels of household waste segregation are inadequate. As a consequence, far too much waste which could be recycled is not. Markets for recyclates have not developed to their fullest potential and the suite of infrastructure necessary to process recyclates is not in place.

Option (a): Under the ‘do nothing’ option, the degree of segregation of household waste is unlikely to improve considerably in the near to medium term. Marginal progress may occur, however it will be insufficient to deliver the progress the State requires. Option (a) scores four points, to reflect the likelihood that the segregation of household waste is unlikely to radically fall and may improve marginally should the ‘do nothing’ option be chosen.

Option (b): In the event that franchise bidding is introduced, it would be open to the Government to require that the contracting authorities design tenders in accordance with nationally mandated degrees of segregation of waste. Contracting authorities would be free to exceed national requirements, in line with local preferences and circumstances, by, for example, stipulating that separate non-co-mingled collections of glass, paper and plastics occur on a fortnightly basis. The tender competition would clearly define collection and segregation requirements, and the terms of the contract between the contracting authority and the winning bidder would stipulate inspection and penalty provisions. Householders would be required to comply with the local scheme, or face enforcement action. The pricing structure would be designed with an objective of incentivising households to maximise recycling efforts, and minimising the presentation of residual waste, by imposing a high variable charge for residual waste and a low charge for segregated recyclates. Such a system would, in respect of a local market, virtually assure a predictable and stable volume of recyclates for treatment, processing and sale in secondary markets.

Option (b) scores nine points under Criterion Two.

Option (c): In the event that the current market structure is retained, the regulatory regime would be strengthened to require that household waste collection firms offer a mandatory level of segregation. Failure by a firm to do so would result in the suspension and/or removal of its waste collection permit. Firms would be economically incentivised to penalise households which fail to comply with the segregation requirements, by, for example, contaminating recyclates waste with residual waste. Mandated levels of segregation could vary from area to area, based on demographics, and would be designed from inception with a view to the progressive tightening of the mandated segregation regime. Collection frequencies would also be mandated, to further incentivise recycling by householders. Pricing structures would be mandated to ensure that

variable charging regimes are universal. The system would be provided for in primary legislation, including a basic, national level of mandated segregation, with provision for tightened requirements as expressed periodically in statutory instruments.

For example, legislation could define the national mandated service level to all households as:

- A mixed dry recyclates collection, occurring at least every fortnight;
- A separate collection of glass, occurring at least every month;
- An organic bin collection, occurring at least every fortnight, in all settlements with a population in excess of 5,000 persons; and,
- A residual waste collection, occurring no more than every fortnight.

Subsequent national mandated levels of segregation would be provided for by way of statutory instrument, with the goal of signalling the mandated levels of segregation 12 months in advance, to ensure householders and waste collection firms have adequate notice. For example, a statutory instrument made in January 2014 could come into force in January 2015 and could define the national mandated service level to all households as:

- A mixed paper and plastic recyclates collection, occurring at least every fortnight;
- A separate collection of glass, occurring at least every month;
- A separate collection of metal occurring at least every month;
- An organic bin collection, occurring at least every fortnight, in all settlements with a population in excess of 3,000 persons; and,
- A residual waste collection, occurring no more than every fortnight.

Further national mandated levels of segregation would be progressively laid down, with a view to the transition to the European goals of virtually eliminating landfill, and a system of waste management based on recycling and reuse.

Any waste collection firm unable or unwilling to meet the requirements of the national mandated service would be excluded from the market. Householder engagement with the system would be incentivised by the mandated price structures and by the interest of the waste collection firms in ensuring that the waste streams that they are obliged to collect are as free as possible from contamination.

It would be open to local authorities, by way of waste permit conditions or bye-law requirements to exceed the requirements of the national mandatory scheme.

Such a system, provided that waste collection firms collectively engage, comply and cooperate, and householders segregate and present their waste appropriately, would virtually assure a predictable and stable volume of recyclates for treatment, processing and sale in secondary markets. Option (c) scores highly under Criterion Two, eight points. Option (c) does not score quite as highly as option (b) due to the need to actively operate an inspection and enforcement regime for a range of waste collection firms in any given market, in view of the compliance difficulties with the existing waste permitting regime.

Criterion Three: Maximising householder participation with waste collection services

As discussed in Chapter Four, the current level of householder participation in waste collection services, in which 29% of households do not avail of a waste collection service, is unacceptable and is damaging to Ireland's environment.

Option (a): Under the 'do nothing' option, no progress would be made towards increasing householder participation. In the absence of a shift in household behaviour, the rate of household participation would be unlikely to vary to a large degree in the short to medium term. An estimated 265,000 tonnes of waste would go uncollected each year.

Option (a) scores three points, to reflect the likelihood that householder participation is unlikely to radically fall should the 'do nothing' option be chosen.

Option (b): In the event that franchise bidding is introduced, it would be open to the Government to require that the contracting authorities could design tender lots such that all areas of the State are provided with a household waste collection service. Remote areas could be served by a small collection vehicle manned by a single driver also acting as a loader, a system used elsewhere in Europe. The additional costs of servicing remote areas would be met by cross-subsidisation from less remote areas. To buttress such a system, every household could be obliged to demonstrate, if required, that that household is managing its waste in a satisfactory and legally compliant fashion, as per option (c) below. In tandem, full geographical coverage and a householder obligation would be very likely to push householder participation towards 100%. In addition, the analysis under Criterion Four indicates that the price of household waste collection services would likely be lower in many areas of the country if franchise bidding were introduced. Lower prices would be likely to stimulate additional demand from many households which would otherwise choose not to avail of a household waste collection service.

Option (b) scores the maximum ten points.

Option (c): In the event that the current market structure is retained, an obligation could be placed on every householder to, if required, demonstrate that that household is managing its waste in a satisfactory and legally compliant fashion to the relevant local authority. A household which opts not to avail of a waste collection service would be required to present invoices or receipts to demonstrate that the household's waste has been disposed of at, for example, a civic amenity site or a pay to use receptacle. Such a measure would require primary legislation. Substantial penalties, reflective of the damage done to the environment and to the wider common good by fly tipping and the illegal burning of waste, would also be legislated for. A risk based enforcement regime could be deployed to help ensure compliance. Such a measure could be expected to achieve a marked improvement in householder participation, however the retention of the current market structure, would result in the persistence of a situation in which the collective geographic coverage of waste collection firms is less than 100% of the area of the country.

Option (c) scores highly under Criterion Three, eight points.

Criterion Four: Minimising price, commensurate with environmental goals

As discussed on pages 52 to 53, the price to the householder of household waste collections services is a particular concern for a number of reasons.

The economic theory is clear. In natural monopoly circumstances, the lowest price at society's preferred output level is attained by monopolising provision, thereby maximising the benefits of economies of density by, for example, minimising network duplication. The questions are:

- (i) Is household waste collection a natural monopoly?
- (ii) If so, to what extent are prices higher than they would be under a monopolised market structure?

A role of this analysis is to make a credible determination in respect of these questions.

It is timely to repeat a number of observations:

- The economic literature in respect of household waste collection presents a clear consensus that household waste collection is a natural monopoly.
- The behaviour of Ireland's EU and OECD counterparts in designing policy and regulating the organisation of household waste collection supports the message of the economic literature.

In tandem, *prima facie*, these observations could be regarded as having a substantial weight of authority.

As discussed on page 14, the sole publication concerning a transition from side by side competition to franchise bidding for household waste collection services, published in 2010 by the Government Institute for Economic Research in Helsinki, indicates an estimated 40% average saving. The OECD has reported in respect of Finland, based on a 1997 study, that "collection costs were 20-25 percent higher in those regions with in-the-market competition compared to those regions with a local monopoly chosen by competitive tendering."¹⁷⁰ This data is reinforced by the OECD's finding, based on research in the United States,¹⁷¹ that "in cities, which allow in-the-market competition in the US, costs are 26-48 percent higher than in an equivalent market with a regulated private monopoly."¹⁷²

With regard to Ireland, as discussed on page 53, the Eunomia International Review of Waste Policy estimates that should franchise bidding be introduced, it ought to be possible to save an average of approximately €80 per household per year.

Collectively, and in the absence of any authoritative study which makes claims to the contrary, the studies listed above must be regarded as persuasive.

¹⁷⁰ Organisation for Economic Cooperation and Development (2000), page 7.

¹⁷¹ As discussed on page 37.

¹⁷² Organisation for Economic Cooperation and Development (2000), page 25.

SLR Consulting, on behalf of the Irish Waste Management Association has published research indicating that prices for household waste collection services have fallen in recent years. This research attributed a fall in prices, in part, to the operation of competition in a side by side market structure. The SLR research states that the existing market structure has reduced prices paid by householders by 26% on average, or €90, from 2004 to 2011, across a sample of 23 counties, despite an increase of 18.5% in the CPI for transport services in Ireland during this period.

Prices do appear to have fallen, however, as the SLR research acknowledges, this reduction has taken place against a background of:

- (i) A contracting national economy and therefore a decline in consumer consumption which manifests as reduced demand for household waste collection services;
- (ii) Landfill costs which have declined very considerably in recent years;
- (iii) A greater rate of recycling by households;
- (iv) The increased value of recyclates; and,
- (v) The withdrawal of many local authorities from household waste collection markets; certain local authorities charged above average prices for household waste collection; the withdrawal of these authorities in recent years has reduced the overall average price.¹⁷³

The SLR pricing data is based on the lowest price reported in a given local authority area, as opposed to the mean or median price available. The SLR pricing data also included some time limited special introductory offer prices offered by waste collection firms in several local authority areas, which acted to reduce the average price. The average price, as reported in the SLR research, was €262.86.

In any event, one may observe that in any market prices will fluctuate over time in accordance with variations in supply, demand, input prices, the strength of competition etc. The most relevant question in this instance is to what extent can one disaggregate the proportion to which side by side competition was a cause of the observed price decline, as opposed to falls in total national demand or landfill gate fees? It is not possible to say. A more fundamental observation, from the perspective of this Regulatory Impact Analysis, is that the SLR Research conclusions say nothing about what the average price would likely be were the market structure to be altered and franchise bidding introduced.

The pricing data available to the Department suggests that €262.86 may not be a perfectly accurate nationally representative figure, as of June 2012. In the absence of details of (i) the numbers of households availing of each offering, and (ii) typical waste presentation patterns of those households which avail of variable pricing structures, it is impossible to state with complete accuracy what the average price paid by householders in Ireland is. It is possible to observe that household waste collection charges vary considerably across the country.

¹⁷³ The private sector serviced 52% of the national household waste market in 2004 and now services over 98% of the market. The remaining public services are in Waterford County and Galway City.

The tables below illustrate current available pricing structures in a number of representative local authorities as of June 2012; specifically Cork City, Dun Laoghaire Rathdown, Offaly, Fingal and Clare. It should be noted that estimating the annual charge paid by a typical household which avails of a variable pricing structure is problematic, as the typical annual charge to the household will depend on presentation rates.¹⁷⁴ Robust, comprehensive information concerning the presentation rates for residual, recyclates and organics bins, and the sensitivity of those rates to variable pricing structures, is not available. Presentation patterns, even under similar pricing structures, are also known to vary considerably from local market to local market. The variable prices set out in the tables below assume, in respect of variable pricing schemes, a 60% presentation rate for residual waste bins, recyclates and organics on a fortnightly collection schedule, i.e. that the typical household will present each bin for collection on 16 occasions in any given year. It is notable that, according to a 2011 study, 46% of householders pay for waste collection services using a flat rate pricing structure, 34% of households pay using a tag or per bin lift pricing structure, and only 20% of households pay for waste collection services using a weight based pricing structure.¹⁷⁵

It should be noted that in assuming a presentation rate of approximately 60%, the basis for direct cost comparisons between variable pricing structures observed in Ireland and the prices charged elsewhere in Europe is weakened for the simple reason that we are no longer comparing like with like.

Table 5.0: Annual Household Prices in Cork City – June 2012

	Flat Rate Price 240 Litre	Flat Rate 140 Litre	Variable Price¹⁷⁶
Firm A	€335	€274.50	-
Firm B	€316.80	€258	€454.05 (Composed of a €180 standing charge plus a €0.45 charge per kilo of residual waste and no charge for recyclates.)
Firm C	€280	-	-
Firm D	€318	-	-

In general, the services offered in Cork City are alternate weekly collections of residual and recyclates waste. Firm A offers a third recyclates collection per month. Firms A and B also collect glass; firm A monthly, and firm B every 6 to 8 weeks.

¹⁷⁴ In particular, those pricing structure which charges by bin lift.

¹⁷⁵ Coakley T. & O'Callaghan-Platt A. (2011), page 7.

¹⁷⁶ Calculated on the basis of the *National Waste Report 2010* reported tonnages of residual household waste collected in Cork City, divided by the numbers of occupied households in receipt of a service.

The average price, as advertised by the four principal firms, is €312.45 for a flat rate, 240 litre household waste collection service including residual and recyclates collections in Cork City.

The high price to the householder of the variable charge option offered by Firm B is partially due to the relatively high weight of residual waste by Cork City households of 609 kilogrammes per household per year. It may be the case that those households which opt for the variable pricing offer from Firm B have considerably lower average weight of residual waste collected, however, even with 385 kilogrammes presented per household per annum, i.e. the same per household weight as in Dun Laoghaire Rathdown in 2010, the variable price would be €353.25.

Table 5.1: Annual Household Prices in Dun Laoghaire Rathdown – June 2012

Variable Price ¹⁷⁷	
Firm A	€204.98 (Composed of a €65 standing charge plus a €0.23 charge per kilo of residual waste and a €3.20 charge for each lift of a residual wheelie bin. Recyclates collected free of charge.)
Firm B	€215.56 (Composed of a €64 standing charge plus a €0.26 charge per kilo of residual waste and a €3.20 charge for each lift of a residual wheelie bin. Recyclates collected free of charge.)

In Dun Laoghaire Rathdown, two firms provide remarkably similar price structure offerings, including a standing charge and a charge for each residual waste collection of €3.20 per lift, also including a charge per kilo of residual waste collected. In both cases recyclates collections are not charged for separately. Both firms collect residual waste and recyclates on a biweekly basis. Firm A collects glass, co-mingled with other recyclates.

Firm B provides an optional organics bin collection service, with an annual service charge of €22 and a per lift charge of €2.56 and €0.16 per kilo. As an optional service, these charges have not been included in the pricing in Table 5.1.

The relatively low prices, as compared to those observed in Cork City, can be explained partially by the apparent impact of variable charging for residual waste with a weight based component, and of the fact that this pricing structure applies to all household waste collection services in Dun Laoghaire Rathdown. Households in Dun Laoghaire Rathdown are economically incentivised to reduce and segregate their waste and it would appear that the collective response is strong; the average household produced less than 400 kilogrammes of residual waste per year.

¹⁷⁷ Calculated on the basis of the *National Waste Report 2010* reported tonnages of residual household waste collected in Dun Laoghaire Rathdown, divided by the numbers of occupied households in receipt of a service, and assuming 16 lifts per bin per year.

Note that, for a household which presents the residual bin on 26 occasions, i.e. once per fortnight, the annual price is increased for Firm A and Firm B to €236.98 and €247.56 respectively.

Table 5.2: Annual Household Prices in Offaly – June 2012

	Flat Rate Price 240 Litre	Flat Rate 140 Litre	Variable Price¹⁷⁸
Firm A	€292	€250	€255 (Composed of a €79 standing charge plus a €8 per lift charge for residual waste, a €3 charge for organic waste and free recyclates lifts.)
Firm B	€324	-	
Firm C	-	-	€288 (Composed of a €12 per lift charge for residual waste and a €6 per lift for recyclates.) €356.87 (Composed of a €236 standing charge plus a €0.17 charge per kilo of residual waste. Recyclates collected free of charge.)

Firm A offers two flat rate price structures, both include residual, recyclates and organic bin collections, in addition to a variable price structure, collected on a fortnightly basis.

Firm B provides a residual and recyclates collection, with organics collection in some, but not all areas. The €324 annual price is derived from a monthly charge of €27.

Firm C offers two variable charging structures. Firm C also offers organics bin collections in some, but not all, areas.

Currently, it appears that the coverage areas of Firms B and C do not overlap.

¹⁷⁸ Assuming 16 lifts per bin per year.

Table 5.3: Annual Household Prices in Fingal – June 2012

Variable Price ¹⁷⁹	
Firm A	€238 (Composed of a €110 standing charge and a €8 charge for each of 16 lifts of a residual bin. Recyclates and organics collected free of charge.)
Firm B	€224.80 (Composed of a €108 standing charge and a €7.30 charge for each of 16 lifts of a residual bin. Recyclates and organics collected free of charge.)

In Fingal, the price structures offered by the two firms present in the market are similar, as is the case in Dun Laoghaire Rathdown. It is perhaps notable that the two firms serving Fingal also serve Dun Laoghaire Rathdown.

Firm A offers a compostable bag collection service.

Note that, for a household which presents the residual bin on 26 occasions, i.e. once per fortnight, the annual price is increased for Firm A and Firm B to €318 and €297.80 respectively.

Table 5.4: Annual Household Prices in Clare – June 2012

Flat Rate	
Firm A	€285 (Flat rate in the first year, shifting to variable weight based in subsequent years based on usage patterns.)
Firm B	€250
Firm C	€260
Firm D	€270

Firms A, B, C and D each provide services throughout much of County Clare. Firm A employs an innovative pricing structure; in the first year a flat rate fee of €285 is applied, however in subsequent years the price is derived from the quantity of residual waste presented by the household for collection in the first year. Firm A offers fortnightly collections of residual waste, recyclates, a brown bin for food waste with a 7 litre kitchen caddy and a 55 litre container for free glass collections in certain areas. Firms B, C and D offer alternating fortnightly residual and recyclates collections.

Prices available in Clare, Cork City, Dun Laoghaire Rathdown, Fingal and Offaly, as of June 2012 indicate that the average annual price paid by Irish householders vary from market to

¹⁷⁹ Assuming 16 lifts per bin per year.

market; a national average price is difficult to arrive at but may well be in excess of €250 per year, and in some markets is considerably higher.

Greenstar, in its response to the Department during the summer 2011 consultation process, provided a cost breakdown for one of its household waste collection businesses:¹⁸⁰

Staff Costs:	43%
Vehicle related costs:	21%
Waste treatment, recovery and disposal costs:	34%
Profit margin:	2%

During the course of a number of interviews between the Department and waste collection firms in autumn 2011, several firms confirmed to the Department that the costs of household waste collection are in broad accord with the following structures:

Direct collection costs, i.e. vehicle, fuel, crew costs:	50%
Waste disposal and treatment costs:	35%
Back office, including margin, legal, customer service, marketing etc:	15%

As such, given an annual price per household of €250, €125 of the cost flows from the direct costs of collection, €87.50 is due to the costs of waste disposal or treatment, including transport, gate fees and the landfill levy, and €37.50 derive from central overhead costs and profits.

International Price Comparisons

International cost and price comparisons may be misleading, as waste management regulatory regimes and practices may be different in other States. As such, they should be treated with a degree of caution.

France

In France, an annual report of French waste collection costs for the entire state is published; the most recent available being for 2007-08.¹⁸¹ Reflecting the differences in waste management and local authority accounting and financial data presentation norms, the 2007-08 report uses a number of distinct cost parameters such as complete cost, technical cost and subvented cost. The average total cost for the management of a single tonne of waste, consisting of all waste streams, was €176, including subventions of €13 per tonne from Producer Responsibility Initiatives and €2 from regional and/or national government. The range of waste collection costs is broad. 80% of municipalities have a technical cost¹⁸² of between €64 and €113 per inhabitant. Different municipalities have starkly different collection systems in place. Urban areas tend to have separate collections for separate waste streams on a multi weekly basis. Glass collection is a major part of French waste management and it is not unusual for households to have a weekly glass collection in urban areas. Most municipalities also offer a bulky goods collection service. Urban areas in France tend to have separate collections for separate waste streams on a multi

¹⁸⁰ Greenstar (2011), page 15.

¹⁸¹ Andrup A. (2011).

¹⁸² *Cout technique*: the complete cost less returns on the sale of recycle materials, energy, heat etc.

weekly basis; in high-density areas, five or more waste streams may be collected from households, including a recycling collection twice or more per week.

In France household waste collection service standards, even in low-density rural areas, are superior to those typically found in Ireland. The average cost of household waste management in France is €91 per inhabitant after the deduction of the sale of recyclates or energy, and all supports provided by Producer Responsibility Initiatives and government. This results in an average household charge of approximately €216.58.¹⁸³ It should be noted, however, that the cost of running Civic Amenity Sites, for WEEE, fabrics, wood and organics is also included in the average cost of waste management per inhabitant

United Kingdom

In the UK householders are not generally charged directly for waste collection services, as households pay an annual charge to the local authority in respect of all local authority services. However, in parts of the UK local authorities do collect and publish cost statistics for household waste collection and waste disposal treatment. Costs vary from local authority to local authority.

The 2009 Eunomia Review of International Waste Management made a number of price observations. In respect of Wales, based on UK WRAP¹⁸⁴ data, the review stated: “data suggests that a commingled fortnightly bin recycling service alongside a fortnightly refuse collection ought to be deliverable at a maximum collection cost of €73 per household per annum.”¹⁸⁵

In Eden District Council in England, a local authority with a low population density even by Irish standards, “the total collection cost for all kerbside collections services was evaluated to be €67 per household per annum”, based on a service scheme of weekly residual waste collections, and separate collections of dry recyclates and garden waste provided to some households.¹⁸⁶

In Ballymoney and Coleraine Borough Councils, both of which are small local authorities in which the local authority performs household waste collection directly, as opposed to outsourcing collection to a private sector, Eunomia modelled a service scheme in which residual waste is collected on a fortnightly basis, and separate food waste and dry recyclable collections would take place weekly, including the use of kerbside sorting by collection crews. The total cost of service provision, including sorting, treatment and disposal, were estimated to be €170 per household per year in Ballymoney and €147 per household per year in Coleraine.¹⁸⁷

The most recent available data from the UK in respect of costs, produced by an international waste management consultancy well placed to comment on UK costs, is based on a hypothetical urban authority of 100,000 households.¹⁸⁸ Each household is assumed to produce 650kgs of waste annually, and the model is based on 52 collections per annum; fortnightly collections of residual waste and food waste, and fortnightly collections of co-mingled recyclates and food

¹⁸³ Based on an average household size of 2.38 persons as per the 2011 OECD Family Database, OECD, Paris.

¹⁸⁴ WRAP is not-for-profit company, backed by government funding from England, Scotland, Wales and Northern Ireland. It is a notable producer of waste statistics and technical and market expertise in the UK.

¹⁸⁵ Eunomia et al (2009), page 1040.

¹⁸⁶ Ibid, page 1043.

¹⁸⁷ Ibid, page 1045.

¹⁸⁸ White Young Green Environment (2012), pages 29 to 35.

waste.¹⁸⁹ The maximum number of households passed per day is modelled at 1,250. It should be noted that, in an urban Irish context, waste collectors have reported similar numbers of households passed daily; “Greenstar can also confirm that in its household waste collection business the company achieves household route collection densities that for many routes are comfortably above 1,000 homes per vehicle per day.”¹⁹⁰ The overall cost is estimated as £5,048,000 per year, including collection, disposal and treatment, and haulage costs. This estimate also incorporates a landfill tax of £56 per tonne and is based on a landfill gate fee of £24 per tonne. The annual per household cost of such a waste management system is £50.48, or in Euros, approximately €62.

The Irish Waste Management Association has stated that the cost comparisons made by Eunomia “between collection costs in Ireland and the UK... are... flawed as hidden costs associated with charging customers in the UK system are not hidden in the Irish market. Householders are charged directly by waste companies and local authorities operating in the Irish market and this incurs quite high administration costs, including bad debts. In addition, pay-by-use systems operating extensively in Ireland incur additional administration costs.”¹⁹¹ The Association also stated that in Eden District Council, collections are of plastic bags, as opposed to wheelie bins, and therefore costs are lower. The Department concurs that waste collection firms operating in the Republic of Ireland do have different cost structures to waste collection organisations operating in the UK and elsewhere. However, are these differences sufficient to explain what seem to be very substantial differences in prices?

Case Study: Household Waste Collection Services in Belfast City Council

Belfast is a city of approximately 270,000 residents or 125,931 households.¹⁹² Belfast had a population density of 2,447.8 inhabitants per kilometre in 2008. The waste collection service, as is the case in Northern Ireland generally, is provided directly by the local authority on a monopoly provision basis.

Waste Disposal and Recovery in Belfast

Belfast City Council is part of a waste management region called Arc 21. Much of the City Council’s waste disposal operations are coordinated at the regional level. A regional approach permits the local authorities in the Arc 21 region to achieve economies of scale and scope for waste processing contracts and infrastructural development. Belfast is by far the largest producer of waste in Arc 21 and Northern Ireland, comprising around 15% of waste arisings. A £64 per tonne landfill tax is currently applied to most waste disposed of in landfills, which the UK Government intends to increase to £80 in 2014.

While some areas in Belfast have recycling and composting rates of close to 70% of total weight, Belfast City’s overall figure for recycling and composting was 25.3% for 2010-11, up from 22.3% in 2009-10.¹⁹³ The City Council goes to considerable lengths to encourage recycling, having spent in excess of £3m on advertising and awareness campaigns. This funding included

¹⁸⁹ In this instance, recyclates include paper, card, plastic bottles and containers, cans, aerosols, glass.

¹⁹⁰ Greenstar (2011), page 22.

¹⁹¹ Irish Waste Management Association (2011), page 18.

¹⁹² As of 2009-10.

¹⁹³ Northern Ireland Environment Agency (2011), Appendix, Table 3.

the provision of five awareness officers, who visited residential homes across the city to help improve recycling levels in the city.

Household Waste Collection

In suburban Belfast, household waste collection for most households involves separate collections of residual waste, dry recyclables and organic waste, each collected in alternate weeks, i.e. 26 collections annually. For a minority of suburban households the collection system operates on a similar basis to the dominant model observed in the Republic of Ireland, that is alternating collections of residual waste and recyclates. Approximately 60,000 households receive separate residual, recyclates and organic collections; 10,000 households receive residual and recyclates collections.

In the inner city, the collection system is different. The majority of households, approximately 47,000, receive weekly separate residual and recyclates collections. Some 7,000 households receive weekly separate residual, recyclates and organic collections. A small number of households, approximately 2,000, receive a fortnightly residual collection only.

With the exception of recyclates collections in inner city areas, Belfast City Council directly provides household waste collection services. In inner city areas a not for profit environmental organisation performs kerbside recycling under contract for the City Council.¹⁹⁴

It should be noted that the delivery of household waste collection services must overcome certain somewhat unique disadvantages in Belfast. Firstly, notwithstanding much improved community relations, the City Council operates community specific crews in certain areas of the city. Collection routes are somewhat distorted by the need to do so and by the presence of Peace Walls.¹⁹⁵ A further challenge for the City Council is the delivery of services in areas in which social deprivation is comparatively high, and in which community engagement with the Council's environmental policies may be low. Fostering behavioural change, for example to improve household waste reduction and recycling norms, has reportedly been challenging for the City Council in some areas.

Costs

The relevant, most recent available household waste collection costs relate to the 2009-10 financial year and are as follows:

¹⁹⁴ The contract for such collections was won in 2003 by a third sector undertaking; Bryson Recycling Ltd. Collections are performed using kerbsiders. In this system recyclates are sorted into cages at the point of collection. While this system is more expensive in terms of labour costs than non-kerbside recycling, the vehicles are cheaper and the system provides higher quality recyclates for resale. This is one of many contracts Belfast City Council's waste section operates, but is the only contract for household waste collection services. The Council has a profit sharing arrangement with the contractor for return on the sale of recyclates.

¹⁹⁵ It has been suggested to the Department that the efficiency costs of such unique circumstances are by no means nominal.

Table 5.5: Belfast City Council Household Waste Collection and Treatment Costs, per Household, 2009-10

Cost	£
<i>Collection Costs:</i>	
Residual	4,757,000
Dry recyclates ¹⁹⁶	1,364,000
Organic	703,000
<i>Treatment Costs:</i>	
Landfill	6,754,000
Dry recyclates ¹⁹⁷	515,000
Composting	469,000
Total	14,562,000

Per household, the cost of household waste collection and treatment was £115.63 to Belfast City Council in 2009-10. However, the cost per household excludes the central administrative apportionment, i.e. the costs which are assigned to central cost codes, such as legal services or managerial expenses.

Belfast-Cork Comparison

Belfast and Cork are alike in many respects. The demographics and geographies of both cities are not so dissimilar as to invalidate a comparison. A price/cost comparison for household waste collection services between Belfast and Cork cities should be illustrative of the relative performances of the monopoly provision and side by side competition systems of regulation, however a number of issues arise:

- While current pricing data is available for Cork, the Belfast data is older. Adjustments can be made to address this difference.
- The pricing data is in two different currencies. Adjustments can be made to address this difference.
- The pricing data is from two different economies, in which input costs are different. Adjustments can be made to address this difference.
- The data does not compare like with like as under the side by side regulatory regime cost profiles are different and central administrative costs should be captured. Adjustments can also be made to address this difference.

Step One: Adjusting for age

The Belfast data is in respect of the 2009-10 financial year and are therefore two years old. The most recent UK inflation data states that the April 2012 annualised consumer price index rate was 3.0%. In April 2011, the UK annual inflation rate was 4.5%.¹⁹⁸ Applying both annualised rates results in the following:¹⁹⁹

¹⁹⁶ Including black box bins used in Ardoyne.

¹⁹⁷ Blue bin and black box.

¹⁹⁸ UK Office for National Statistics (2012), page 3.

¹⁹⁹ At the date of writing, a 25 month period has passed since the end of the UK 2009/10 fiscal year, however the most recent UK CPI data is from the 23rd month. However, it is highly unlikely that March 2012 and April 2012 annualised CPI rates will vary to a significant degree.

£115.63 increased by 4.5% = £120.83

£120.83 increased by 3.0% = £124.50

Step Two: Currency Adjustment

At the time of writing the Euro to Sterling exchange rate is £1 to €1.25. It is noted that for much of 2010, 2011 and 2012 the exchange rate has been somewhat volatile, ranging from €1.10 to €1.25. Using monthly averages, the 2011 annual rate was €1.15. In 2012, the Pound has appreciated against the Euro. For the avoidance of doubt, an exchange rate of £1 to €1.22 has been used:

£124.50 = €151.89

Step Three: Adjusting to Take Account of Different Input Prices

Costs vary from economy to economy. The input costs of household waste collection will also vary, such as labour, fuel, vehicles, insurance, etc.

Purchasing Power Parities are currency conversion rates which (i) convert to a common currency, and (ii) equalise the purchasing power of different currencies, and are used to eliminate the differences in price levels between countries for the purpose of comparison. Purchasing Power Parity values link movements in exchange rates to differences between the price level in the domestic country and the price level in its trading partners. The most recent data, the OECD's May 2012 Monthly Comparative Price Levels entry for Ireland - United Kingdom is 99.²⁰⁰ Note that this value is a very broad value. The application of Purchasing Power Parities, however, is problematic in relation to non-traded goods and services, including household waste collection services. Further, purchasing power parities are usually expressed at national level, i.e. disaggregated values which distinguish between sub-national parts of an economy, e.g. Northern Ireland, are not available. In view of recent Sterling to Euro exchange rate fluctuations, as household waste collection is a non-traded service and as Purchasing Power Parity is not available in respect of Ireland-Northern Ireland, the value of 99 cannot be regarded as robust and could understate differences in input prices.

It is noted that the most recent Forfás Competitiveness Scorecard, in respect of 2011, states that Ireland has since April 2008 “regained some of its lost cost competitiveness as a result of falls in relative prices and favourable exchange rate movements.”²⁰¹ Labour costs relevant to the household waste collection industry have fallen, i.e. industrial, manufacturing, transport and the business sector experienced negative growth in unit labour costs in 2010.²⁰² Aside from labour costs, there have been reductions in many non-pay costs also.²⁰³ As such, it can be safely assumed that the Republic of Ireland has partially closed the gap in input prices between those paid by a typical business in Northern Ireland and those paid by a typical business in the Republic.

²⁰⁰ Available online: <http://stats.oecd.org/Index.aspx?DataSetCode=CPL>

²⁰¹ Forfás (2011), page 55.

²⁰² Ibid, page 56.

²⁰³ Ibid.

In that regard, it should be noted that Belfast City Council is a public sector organisation and as such, would be expected to have relatively high input costs in certain respects, and would not be expected to enjoy an equivalent level of flexibility in controlling costs as a private sector household waste collection firm in the Republic of Ireland. An example is labour costs, which are a major proportion of the overall cost profile of household waste collection; 43% of costs according to a leading Irish household waste collection firm.²⁰⁴

A factor of 1.15 has been used to adjust for differences in input prices between Belfast City Council and a typical household waste collection firm operating in the Republic of Ireland. It should be noted that the 1.15 factor is in addition to the exchange rate calculation detailed in Step Two above. It should also be noted that the 1.15 factor is not intended to be a general comment on the relative competitiveness of, or a general estimation of differences in input costs between, Northern Ireland and the Republic of Ireland. The 1.15 factor is a judgement specific to this case, and in view of the specific cost inputs for the delivery of household waste collection services, is considered to be more likely to err toward overestimation rather than underestimation, especially given that Belfast City Council is a public sector organisation.

$$€151.89 * 1.15 = €174.67$$

Step Four: Adjusting to account for differing cost profiles

As has been noted by the Irish Waste Management Association, the cost profiles of Belfast City Council and a household waste collection firm operating in the Republic of Ireland are different. It is necessary to capture these differences, and to include the central administrative apportionment which was excluded from the Belfast City Council costs of household waste collection. These costs, for a household waste collection firm operating in the Republic of Ireland, include:

- Managerial, human resources and accounting costs;
- Customer service, call centre, billing, credit control;
- Information technology, website maintenance, and the provision of numerous payment channels;
- Sales, marketing, advertising etc.;
- Legal costs; and,
- Insurance costs.²⁰⁵

A leading household waste collection firm has stated that these costs constitute approximately 15% of the total cost to the customer. Average prices of household waste collection in the Republic of Ireland appear to approach €300 in many markets. To equalise, as it were, the Belfast City Council cost it is necessary to apply a 15% factor, i.e. €45.

²⁰⁴ Greenstar (2011), page 15.

²⁰⁵ Tax differences have not been included. A household waste collection firm operating in the Republic of Ireland must apply the reduced 13.5% rate of VAT to its price top the householder. However, the firm may deduct the VAT paid in respect of the costs of supplying the service - it is understood that some of these costs, such as the purchase price of vehicles, may be deducted at the 23% rate. It is noted that relevant responses to the summer 2011 public consultation, in commenting on the validity of comparisons between UK and Republic of Ireland costs of household waste collection, did not raise VAT or wider taxation regime differences as an issue.

$$€174.67 + €45 = €219.67$$

As discussed on page 74, observed prices for flat rate household waste collection services in Cork City, in which a standard 240 litre residual bin is provided, range from €280 to €335. The average of the four prices observed is €312.45, €92.78 higher than the adjusted Belfast City Council price.

In Cork City, two of the leading household waste collection firms are present, and four firms in total are contesting the market. In delivering services in Cork City the household waste collection firms are not faced with addressing some of the challenges which Belfast City Council must address, such as community specific crews and routes in certain areas of the city, or the optimal collection route distortion effects of Peace Walls. The service provided by Belfast City Council is also, in some respects, superior to that provided by the household waste collection firms in Cork. For example, many households in Belfast receive a weekly residual waste collection, as opposed to fortnightly in Cork. Kerbside sorting of recyclates also occurs in Belfast. Lastly, Belfast City Council is a public sector monopoly provider. The economic literature suggests that considerable savings could be generated if Belfast City Council were to contract a private sector waste collection firm to collect waste on the City Council's behalf. The private sector efficiency savings could be substantial.

Further, the €92.78 difference excludes any savings which would be derived from the non-applicability of costs such as door to door sales, advertising in radio and print media, direct marketing, etc. which would arise under a franchise bidding system. The Department has been advised informally by members of the waste industry that the cost of gaining a customer can vary from €50 to €200, i.e. this cost is what a private household waste collection service provider can expect to spend in order to win a customer from a competitor. Aggregated, this is a major component of the industry's overall cost of doing business, which is passed on to households. Under a system of franchise bidding, this cost would be entirely eliminated. Such savings would, however, be offset by the bidding costs which bidding firms would pass on to customers on winning a franchise. However, notwithstanding the offset effect of bidding costs, the net effect of aggregated savings generated by the cessation of marketing efforts directed at individual householders would, in all likelihood, be substantial.

The €92.78 per household difference between the prices observed in Cork City and the adjusted Belfast City Council cost is striking. The Department considers that this difference is almost certainly largely a consequence of the inefficiency impact of side by side competition operating in natural monopoly conditions. The preceding statement is not a claim that all households would save €92.78 per annum if household waste collection markets were restructured. However, it is very strongly indicative that non-nominal savings for many households are achievable. It should be noted that a per household saving of €40 would have a combined national annual positive impact approaching €50m.

In view of the price offerings observed in the Republic of Ireland; the academic literature concerning natural monopolies and the literature specific to household waste collection; the evidence presented in publications such as the Eunomia International Review of Waste Policy and the White Young Green 2012 model of costs; policy, practice and our understanding of

costs in other EU Member States; and, the cost comparison between Belfast and Cork, this analysis concludes that altering the structure of household waste collection markets would result in lower prices for many households.²⁰⁶

Options (a) and (c) would result in similar price outcomes, as under both options the side by side market structure would be retained and under neither option price regulation, in which prices are set or ceilings are imposed, is envisioned. The additional regulatory requirements under option (c), such as mandated service levels would likely result in additional costs, as compared to option (a). Pricing outcomes will also vary from area to area and market to market, reflective of factors such as input costs, local geographic and demographic circumstances and the strength of competition in the local market. Excluding inputs such as increases to the landfill levy, prices in certain markets may rise or fall. Option (a) scores seven points under Criterion Four; option (c) scores six points.

Option (b), based on the analysis above, would result in lower prices for many households. However the price reductions would be very likely to vary from area to area and market to market. Option (b) scores nine points.

Criterion Five: Providing a quality service to the householder

Householder expectations of utility type services, such as electricity, water and waste collection are changing as service offerings become more sophisticated and consumer preferences evolve. It is certainly the case that household waste collection service levels have improved in many areas in recent years in several respects, although it is also the case that progress has not been uniform. Innovative price structures have been offered, as have additional services such as separate glass collections. Policy in respect of household waste collection should ensure that service levels are high and capacity for service improvement and innovation is present.

Options (a) and (c) are somewhat alike when examined from the perspective of Criterion Five. Under both options the current market structure is retained, thereby allowing for ongoing, organic and dynamic competition among rival firms. In non-monopolised markets in which competition is healthy, firms often compete by offering a service which is differentiated from their competitors. Service differentiation may occur in respect of product quality, for example the frequency of collection, or product innovation, for example monthly glass collections, as opposed to occurring solely in relation to price. Each household may then select a service based on its preferences across a range of factors. Option (a) is differentiated from option (c) in that, under the 'do nothing' approach, households and waste collection firms may choose the lowest common denominator, least costly service which is often the service level which is poorest in terms of the environmental outcomes. It should be noted that there is a degree of tension between some householders' preferences and the State's requirements. The continued use of one bin services by almost 60,000 households in 2010 is an example of how unfettered householder choice of service is not an end in itself. Option (a) scores four points under Criterion Five.

²⁰⁶ Assuming that the altered market structure is complemented by adequate tendering procedures, contracts, tender lot design etc.

Under option (c) service levels are subject to a mandatory standard setting, in relation to separate collections of segregated waste, a maximum frequency of collection for residual waste and a minimum frequency for other waste streams. These standards are discussed under Criterion Two. In addition, it will be open to waste collection firms to offer service standards in excess of mandatory requirements in order to improve their respective competitive positions vis-à-vis their competitors. Waste collection firms will also be in a position to innovate; such innovation could take many forms, such as:

- Additional services, such as the periodic collection of bulky waste;
- Customer service, including web-based service options;
- Commitments in relation to the disposal and treatment of waste designed to win the business of environmentally conscious households (e.g. a commitment that no more than 10% of waste collected by the firm in question will be disposed of in landfill);
- The provision of usage information to householder to enable households to better manage their waste; and/or,
- Vehicle based innovations, such as the use of bio-fuelled or low decibel vehicles.

The scope for innovation is broad. However, it is noted that much of the innovation which has occurred to date, such as the electronic chipping of bins, the use of sophisticated route management software or the introduction of multi-compartment vehicles has primarily been driven by the desire to reduce collection costs, as opposed to improve service levels for the householder. While such innovations are to be welcomed, it is also noted that many households do not benefit from innovation as the waste collection firms and product offerings among the competing firms in their local market are not particularly innovative. It is certainly the case that the degree of innovation is not uniform across local markets, and that in many areas which have witnessed private sector collectors for a decade or more, innovation has not been particularly strong.

Option (c), under which the dynamics of ongoing competition among rival firms is preserved under a system of strengthened regulation in which environmental outcomes will be superior, scores eight points under Criterion Five.

Under Option (b), in which franchise bidding is introduced, dynamic ongoing competition in the market does not occur. However, competition does occur on an *ex ante* basis in which rival firms compete to win a tender for a given area for a given period of time. The contracting authority will be in a position to dictate service levels, in line with national, regional and local policy. Failure on the part of the winning firm to meet its contractual obligations would result in the application of contractual penalties. The winning firm and contracting authority will be locked into the service level terms of a contract, therefore the winning firm will have very little incentive to exceed the terms of the contract by delivering service levels beyond those required. As such, the franchise bidding system secures high service levels but in doing so it largely sacrifices the potential for mid-contract innovation. A potential drawback of franchise bidding is that the winning firm focuses its efforts on meeting the expectations of the contracting authority, as opposed to the householders, with consequent negative impacts on service levels. As such, option (b) scores eight points under Criterion Five.

Criterion Six: Sustaining a competitive, progressive industry, working in partnership with the State

The relationship between the State, including the Department, the Environmental Protection Agency and the local government system, and the waste management industry is important. The achievement of the best household waste collection outcomes will require that State and industry work together in a general spirit of cooperation, respect for one another's interests and objectives, and a willingness to combine efforts for mutual advantage. Such a relationship should encompass an understanding of the primacy of the Oireachtas and Government in determining national policy, in enacting legislation and of determining the most appropriate path to take to achieve the common good. Such a relationship should also be characterised by high degrees of industry compliance with the law, specifically including the waste collection permitting regime. For its part, the State should, in designing and operating the regulatory regime, seek to support a competitive household waste collection industry which is progressive in terms of its environmental record and ambitions and which is, in the main, healthy in terms of its financial position.

A relationship between the State, including its organs, and any industry which is characterised by perceptions of relatively high incidences of litigation and of frequent non-cooperation with statutory permitting regimes cannot be considered to be in society's best interests.

Option (a): The 'do nothing' option scores five points under Criterion Six, as relationships between regulator and regulated cannot be described in many instances as one of partnership, as industry compliance with the waste permitting regime is not as strong in all cases as is desirable, and the industry, when considered collectively and from the State's perspective, is not as progressive in terms of its environmental record and ambitions as might be wished for.

Option (b): The introduction of franchise bidding would help align the interests of the State and the industry, not least by recasting the relationship. The relationship between the State, in the form of the local government system, and the household waste collection industry would be based on a series of franchise contracts. The contract terms would define the relationship between the specific local authority and the franchise winner, by aligning the interests of both parties. Contract terms could be designed to incentivise both the local authority and the waste collection firm to work together to overcome challenges; for example, mechanisms to maximise householder participation mechanisms designed to share the revenue from new household customers²⁰⁷ could be included in franchise contracts. Contracting authorities and household waste collection firms would be incentivised to manage their wider reputation; a waste collection firm considered to be difficult to work with would be at a disadvantage when competing against firms which are considered to be easier to work with. The introduction of the franchise bidding system would recondition relationships for beneficial effect, although, no doubt disputes would still arise and the extent of the alignment of interests would depend on sound tender and contract design. Option (b) scores eight points under Criterion Six.

Option (c): The retention of the current market structure with an improved regulatory regime would help reinvigorate the relationship between the State and the industry, principally by a

²⁰⁷ I.e. households which previously did not participate in household waste collection markets.

more detailed and forceful control of outcomes by way of regulation. Measures including a mandated service level and mandated pricing structures would reduce the space for misalignment between the interests of the State and the household waste collection industry. A strengthened regime for non-compliant firms, involving the suspension and revocation of waste collection permits would help ensure that the permit system plays its proper role. A well resourced and active inspection and enforcement regime would increase the risks of non-compliance from the perspective of the firm. Such a regulatory regime, in which the space for misinterpretation and misunderstanding of the State's requirements is much reduced, and the risks of serious penalties for non-compliance are much increased, should help transform the relationship between the regulator and the regulated, although disputes would still be likely arise from time to time. Option (c) scores eight points under Criterion Six.

Criterion Seven: Providing market stability and regulatory certainty

The economic stability of the waste management sector is to a considerable degree dependent on a stable, predictable regulatory regime and waste markets.

A stable regulatory regime will provide all waste management actors with the assurance that the fundamental regulatory rules will not be altered in the short to medium term, thereby reducing risk, increasing the predictability of the entire waste management system, and encouraging investment. Changes can occur, provided that such changes are signalled well in advance and complement the existing regulatory regime. The current deliberations in relation to household waste collection provide an opportunity, when Government arrives at a decision, to provide the necessary regulatory stability.

Market stability is a related concept, and is the degree to which the economic actors operating within, and the dynamics of, waste markets can be considered to be stable, to the degree deemed desirable. A regulatory regime which fosters unstable, unpredictable markets in which risks are deemed to be excessive and costs unpredictable is not desirable. Market shocks, such as the disorderly withdrawal of a waste collection firm and consequent service interruption in the absence of contingency arrangements, are to be avoided given the strategic and critical nature of household waste collection as a service.

Option (a): The 'do nothing' option would involve no change at this point to the existing regulatory regime. Market structures would be preserved as would the other elements of the regulatory regime. In the short to medium term, market stability and regulatory certainty would be achieved. However, in the longer term, to prevent or correct a series of failures to deliver on the State's environmental objectives and responsibilities, a rapid and very substantial set of changes could be required, very possible on an emergency basis. Imminent to, and during this period, regulatory certainty would be low and waste markets could be destabilised. As such, the 'do nothing' approach scores poorly, four points, under Criterion Seven.

Option (b): The introduction of franchise bidding would be a very considerable alteration to the current market structure. It is noted that very few regulatory regimes have traversed a transition from side by side competition to monopolisation of household waste collection services. Indeed, relevant examples of transitions from side by side competition to monopolisation in any markets

in recent decades are few. Several challenges would arise in the short to medium term to ensure that the transition is orderly. A degree of market instability may be expected, notwithstanding the best efforts of the State to manage the transition. For example, it is possible that one or more of the leading waste collection firms would fail to win sufficient tenders to continue to operate at its current scale. While it is not the responsibility of the regulatory regime to assure the continued operation of waste management firms in perpetuity, or to provide shelter to inefficient, uncompetitive firms, it should be noted that many of the larger waste collection firms are vertically integrated; the disorderly collapse of a vertically integrated firm could conceivably cause a shock to linked collection and treatment waste management markets.

The introduction of franchise bidding would also be likely to be accompanied, in the medium to long term at least, by a greater degree of industry concentration, that is, an industry with fewer larger firms, especially in western markets, which are currently largely dominated by smaller waste collection firms. Many smaller firms would be at a competitive disadvantage when engaging with a franchise bidding market structure, as they would often lack the degree of resources and managerial and technical expertise which would be available to their larger counterparts. For example, a larger waste collection firm would be in a position to establish full time, specialist bid teams solely focused on winning franchise tenders. It would be unlikely that a smaller waste collection firm would be able to do the same. However it should not be a purpose of household waste collection policy to provide shelter to inefficient firms, whether they be large or small. In any event, as noted in Chapter Two, the development of the industry is very likely to see a continued general trend of concentration due to natural market dynamics, as the larger firms increase their geographical coverage, and inefficient firms are either bought or out-competed due to economies of scale and other competitive advantages. As such, regardless of the market structure, the future of smaller waste collection firms is likely to be challenging, particularly for those smaller firms which are inefficient or which are poorly positioned to respond to the changing requirements of consumers and the State.

The relationship between household waste collection and commercial waste collection markets are close in many areas of the country. It is certainly the case that, in practice, many waste collection firms do not operationally distinguish between household and commercial waste in that their refuse collection vehicles collect from both sources and routes are so designed. The impact of the introduction of franchise bidding on commercial waste collection could cause unintended consequences, unless mitigation efforts were taken. A waste collection firm which has won the franchise in a rural area would certainly enjoy a competitive advantage over its rivals in competing for commercial waste contracts.²⁰⁸ The question is, to what would be the strength of such a competitive advantage? If such a competitive advantage is very strong, a consequence could be the effective monopolisation of waste collection to small commercial waste producers, and therefore price increases. However, concerns in relation to the co-collection of household and commercial waste may be overstated. For example, in Northern Ireland, local authorities deliver household waste collection on a monopoly basis and also compete in local commercial waste collection markets with private sector competitors. Further, in the event that franchise bidding were introduced in Ireland, should it be determined that the winner of a

²⁰⁸ Although, in all likelihood, any given franchise would be designed to be mapped to a certain number of waste collection vehicles, therefore excess vehicle capacity would not provide a competitive advantage, however the local scale economies of 100% of the household waste collection market, would almost certainly provide an advantage.

household waste collection franchise were to enjoy a competitive advantage which would act to distort commercial waste collection markets, it would be possible to prevent, by regulation or contract condition, the franchise winner from exploiting its position through a range of potential measures, including barring the winning firm from competing for commercial waste for the life of the household waste collection franchise contract.

A further market stability risk of franchise bidding is that of ‘over competition’. It has been observed in other national markets, in which franchise bidding is the norm, that market conditions can in certain circumstances incentivise firms to bid ‘too low’ to win franchises, i.e. that the bid is either at or below the actual cost of providing the service. Such under bidding, as it were, either leads to the renegotiation of the franchise contract, or disruption as the contract is terminated and a new franchise competition is arranged. Should such practices become pervasive across many local markets, the general stability of the system and of the industry is threatened. Quantifying the risk of pervasive under bidding is problematic; however, while the emergence of such a scenario may be unlikely it is a possibility and therefore should be acknowledged.

The introduction of franchise bidding would, however, once successfully deployed and functional, result in a number of impacts which would improve stability and certainty. Waste management operations and practices would become predictable. The system by which franchises are tendered for and awarded, would be regular and phased across markets. In all likelihood the national market would be divided into between 50 and 80 local markets; separate franchise competitions would be held in respect of each franchise and would be phased to allow firms to make bids on the basis of performance in other franchise competitions. Each successful firm would enjoy secure flows of segregated waste from the franchises it has won for the term of the franchise contract, likely to be 5 years or more. Client numbers, in terms of the number of households would be near static for each contract period. Corporate planning and the management of assets would be eased by the degree of certainty a firm would enjoy in relation to the franchises it has won. Successful firms would quickly adapt to the new market conditions and learn to operate within the system.

In view of the market stability benefits and of the challenges inherent in a transition from side by side competition to the monopolisation of household waste collection services, and of the risks, however likely or unlikely they may seem, of a negative impact on commercial waste collection markets and of pervasive under bidding, franchise bidding’s score is seven under Criterion Seven.

Option (c): The retention of the current market structure and the strengthening of the regulatory regime would provide market stability, regulatory certainty and would appear to largely avoid dangers of market shocks.

The strengthening of the regulatory regime, which would include measures such as mandatory collection standards and pricing structures applied to all collection firms, would result in a period of transition, however this transition would occur within the current market structure, i.e. in the context of a regulatory framework which householders, regulators and the industry are familiar with. The new behavioural and financial requirements of the strengthened regulatory regime

should not, in and of itself, result in market instability, provided that householders and waste collection firms collectively comply with their responsibilities.

As discussed elsewhere, it is probable that over the medium to long term, regardless of market structure, the household waste collection industry will change with a strong likelihood of a smaller number of waste collection firms being present in 5 years. Under the current market structure, such an increase in concentration will largely occur in an organic fashion, as inefficient firms gradually lose market shares to their more efficient counterparts. In other instances, firms will merge or will be purchased. As such, while the market will change, such change is unlikely to lead to protracted instability. It may be the case that certain waste collection firms, which are burdened with high levels of debt incurred prior to the recession, become unsustainable, however in general the system should be capable of managing such developments in an orderly fashion, using receivership processes and, if necessary, the managed transfer of clients to the competitors of a failing firm.

Option (c) scores nine points under Criterion Seven.

Criterion Eight: Meeting other social preferences

Aside from those objectives which may be classed as economic and/or environmental, the State has other household waste collection policy concerns, including:

- Ensuring equity in the approach to low income households;
- To minimise the risk of road traffic accidents; and,
- To minimise the disruption and disamenity caused by household waste collection.

As discussed on page 56, waiver schemes for household waste collection are currently operating in some local authorities. In many instances the waiver schemes will cease to operate at a given date, for example in Dublin City Council in January 2013. As local authorities have withdrawn from household waste collection markets, waiver scheme coverage has decreased. Quite aside from future developments, the current system has a number of shortcomings. In particular, the current system is inequitable both in terms of geographic location and in terms of the terms and conditions of the schemes as eligibility criteria and waiver values vary considerably.

As discussed on page 51 duplicated household waste collection networks result in additional noise and disamenity impacts on communities, in addition to the increased risk of road traffic accidents.

Option (a): Under the ‘do nothing’ option the currently operating waiver schemes for low income households will expire without any measure to replace them, and no actions will be taken in respect of road safety or the disruption and disamenity caused by duplicated household waste collection routes. The ‘do nothing’ option scores three points under Criterion Eight.

Option (b): The introduction of franchise bidding would provide each contracting authority, that is, the relevant local authority, with an opportunity to introduce a waiver scheme for household waste collection services for low income households. National guidance could be produced with

a view to ensuring that the overall approach is equitable and within the framework provided by the national guidance each local authority would have the flexibility to design its own waiver scheme. The franchise contract would require the winning waste collection firm to operate the waiver scheme. Each waiver scheme would be funded by cross subsidisation from households which are not eligible for a waiver in the form of higher waste collection charges. The introduction of franchise bidding would also minimise the number of refuse collection vehicles servicing any given route. The franchise contract could specify that multi-compartmental vehicles must be used, thereby reducing visits to one per fortnight. The franchise contract could also specify that low noise and low emission electric vehicles must be used.²⁰⁹ Option (b) scores nine points under Criterion Eight.

Option (c): The retention of the current market structure amid a strengthening of the regulatory regime would provide an opportunity to address the matters of safety, disruption and disamenity. The introductions of mandated service standards could include requirements that compartmentalised vehicles be introduced and that refuse collection vehicles not breach noise thresholds. The mandated service standards could also forbid the collection of household waste during anti-social hours, such as before 8.00am or after 7.00 pm. Measures to introduce specific speed restrictions in respect of refuse collection vehicles, over and above those which apply to other traffic, could be considered, particularly at times when children are likely to be playing on streets, such as during school holidays. Failure by a waste collection firm to comply with such service standards would result in the suspension or revocation of its waste collection permit.

As regards waivers for low income households, a wide range of options would be available under option (c). The available options include the following:

- To allocate responsibility for household waste collection waiver schemes to the Department of Social Protection. The conditions which mandate eligibility for a household waste collection waiver scheme are the same conditions which mandate eligibility for social welfare income support payments, i.e. an insufficiency of financial resources in a certain household to meet utility type expenses. The waiver issue can be understood as not being too dissimilar to Household Benefits, operated by the Department of Social Protection, which is comprised of three allowances; Electricity or Gas Allowance, Telephone Allowance and Free Television Licence. Were a waiver scheme to be operated by the Department of Social Protection it could take many forms; possibilities include a top up to existing income supports, an annual voucher system, or inclusion among the Household Benefits. It might also assist in delivering equity, as a national approach would be taken by that Department. It might also offer the opportunity to build on that Department's expertise in relation to poverty and income supports, the operation of means tests etc. In addition, it might also fit well with measures to streamline or centralise means testing, should means testing arise as a condition. Efficiencies would be likely to arise as those households which qualify for a national

²⁰⁹ Solna town council, a Swedish municipality, provided an environmental bid bonus in respect of low noise, low emission vehicles to waste collection companies bidding to win a nine year contract for waste collection service. For further details see: <http://www.waste-management-world.com/index/display/article-display/3537015301/articles/waste-management-world/volume-12/issue-6/features/low-key-hybrid.html>

waiver scheme would already be income support recipients. However, a national scheme would certainly have significant resource implications for the State, including the costs of administration, against a background of the considerable further fiscal consolidation required over the immediate years ahead.

- To require each waste collection firm to operate a waiver system in line with national regulations. Legislation in respect of mandated service standards and pricing structures would provide an opportunity to define standardised eligibility and other terms for such a waiver scheme. For example, any household in receipt of a primary social welfare payment would be eligible for a 50% reduction to the annual service charge component of the price for a household waste collection service from any firm. Such a scheme would be funded, in effect, by higher charges for a company's non-waiver households. A difficulty could present in relation to geographic coverage. Under such an arrangement a household waste collection firm would be incentivised to avoid offering a service in those areas with a high proportion of waiver scheme eligible households, as offering services would raise the company's prices for non-waiver households. An optimal strategy for a firm could be to avoid entirely those areas which are considered to be waiver-rich. An alternative funding approach would be to levy the household waste collection industry as a whole, i.e. each company could be required to pay a tax reflective of the number of household customers it has. This combined national fund could then be used to fund waiver scheme households, i.e. each waste collection firm would draw down a remittance from the fund based on the number of waiver scheme households it serves.
- Recognising that waivers are not available to low income households in many local authorities, that the value of waivers, where available, vary considerably, and of the general withdrawal of the local government system from the provision of household waste collection services, no new national waiver scheme is introduced. Equity would be achieved as no local authority would operate a waiver scheme. The direct financial and administrative burdens on the State would be nil, although indirectly costs in relation to enforcement would be likely to rise, to combat dumping, burning, waste hoarding etc. Notably, in South Dublin County Council and Dun Laoghaire Rathdown County Council, commitments by private sector firms to preserve a waiver scheme for 12 months have expired, however the firms in question have voluntarily opted to continue the operation of waiver schemes, albeit at a lower average value than the previous local authority scheme. The waste management industry would be expected to provide appropriate pricing structures for low income households.

Should the Government decide that option (c) is the preferred regulatory model, the Department recommends that an inter-departmental working group be established to consider supports to minimise the impact of waste charges on low income households.

Option (c) scores eight points under Criterion Eight, lower than option (b) as under option (c) it would continue to be the case that multiple refuse collection vehicles will be operating in many areas.

Scoring and Weighing the Options

Each of the three options has been scored under the eight criteria. The basic, unweighted scores are presented below. These scores should be regarded as preliminary and provisional, as weightings have not been applied.

Table 5.6: Basic Scorings

	Environmental Objectives	Segregation	Participation	Price	Quality Service	Sustainable Industry	Market Stability	Social Preferences	Total
Option (a) Do Nothing	3	4	3	7	4	5	4	3	33
Option (b) Franchise Bidding	9	9	10	9	8	8	7	9	69
Option (c) Stronger Regulation	9	8	8	6	8	8	9	8	64

The basic scorings do not represent the degree to which certain criteria are considered to be more important than other criteria. Of course, all criteria are important, in that each criterion is derived from the Government's household waste collection policy objectives. However, notwithstanding the importance of all criteria, certain criteria are assigned an additional weighting:

- Environment: The attainment of the Government's waste management environmental objectives, to give effect to the Waste Framework Directive and meet the State's obligations under the Landfill Directive, is a central objective. As such, Criterion One has been given a weighting of 1.5. Note that Criteria Two and Three are related to Criterion One, in that the impact of more segregation and greater participation is primarily environmental; therefore Criteria Two and Three have not been given additional weighting to prevent an over-weighting of environmental considerations.
- Price: The idea of consumer welfare, that is the benefits to the individual derived from the consumption of goods and services, is the foundation of European and domestic competition policy and law. Prices which are unnecessarily high damage consumer welfare. As such, the price criterion has been given a weighting of 1.5.
- System stability: Given the importance of waste management for society's well being, and the risks associated with severe market and/or regulatory failure, Criterion Seven, market stability, has been given a weighting of 1.5.

Table 5.7: Scoring and Weighting of Options

	Environmental Objectives	Segregation	Participation	Price	Quality Service	Sustainable Industry	Market Stability	Social Preferences	Total
Option (a) Do Nothing	4.5	4	3	10.5	4	5	6	3	40
Option (b) Franchise Bidding	13.5	9	10	13.5	8	8	10.5	9	81.5
Option (c) Strengthen Regulation	13.5	8	8	9	8	8	13.5	8	76

The maximum score is 95.

Following the applications of weightings, option (a) can clearly be discounted, as it is dominated under every criterion by options (b) and (c). Options (b) and options (c) both score well following the weightings applied to Criteria One, Four and Seven. Option (b)'s score is marginally higher than option (c).

Sensitivity Analysis

Considering the alteration of the market structure of an industry is, by necessity, a task which carries with it an inherent degree of imprecision. While there are robust, proven techniques to aid policy makers in doing so, such as the multi-criteria analysis employed above, it must be acknowledged that the scorings and weightings employed are, to a degree, judgements of probabilities as opposed to statements of fact. As such, in arriving at a conclusion it is incumbent on the analyst to seek to be as sure as possible that the option chosen is the strongest, particularly so when the scores achieved by the leading options are close.

A sensitivity analysis, in which scores are re-examined under altered assumptions is a technique used to stress-test multi criteria analyses. In this instance, in view of the fact that an alteration of market structure, a profound change to the organisation of a market, is contemplated under option (b), it is considered appropriate to focus the sensitivity analysis on that option.

This sensitivity analysis assumes a problematic implementation of the introduction of franchise bidding and echoes some of the objections to franchise bidding which were raised during the public consultation process held during summer 2011. The altered assumptions under this scenario are:

- The State and the local government system fail to adequately plan and prepare for the introduction of franchise bidding. Guidance produced is poor and does little to support local decision makers, the model contract is weak, inadequate resources are provided to oversee implementation at local level, and communications with the industry and with households are poor.
- Transaction costs are high in certain markets. Second order challenges such as ensuring that all bidders have access to required local infrastructure²¹⁰ and that existing bins are transferred prove to be extremely problematic.
- Competition is extremely weak in certain markets, resulting in monopoly pricing which consumers are locked into for the period of the franchise contract.
- In other areas, competition is too strong, resulting in below cost bids, whether by design or inadvertent, which necessitate contract renegotiation in the short to medium term.
- The household waste collection industry's development, in a side by side competition environment proves to be an obstacle to the introduction of franchise bidding. The fundamental and embedded business models employed by some waste management firms prove to be dependent on the side by side competition market structure and ill-suited to a franchise bidding model. Unanticipated consequences arise, such as the collapse of important firms.
- In some markets, the existing cadre of small to medium firms are out-competed by larger new entrants. In those areas, several household waste collection companies simultaneously collapse with a strong negative impact on local economies.

The emergence of such circumstances may seem unlikely, however their occurrence in some markets is not inconceivable. Under this scenario the scoring of option (b) changes considerably.

Table 5.8: Scoring and Weighting of Option (b) under the 'Problematic Implementation of Franchise Bidding' scenario

	Environmental Objectives	Segregation	Participation	Price	Quality Service	Sustainable Industry	Market Stability	Social Preferences	Total
Option (b) Franchise Bidding	12	9	10	10.5	7	7	7.5	9	72

Under such a scenario the scores under Criteria One, Four, Five, Six and Seven are adjusted, resulting in an overall score which is less than that of option (c). A degree of caution is therefore appropriate. A further analysis of some of the risks and of the financial capacity of the industry is presented in the following chapter.

²¹⁰ For example, transfer stations.

Chapter Six - Financial Capacity and Risks

In view of the proximity of the scores achieved by the two leading options analysed in Chapter Five, it is necessary to consider the financial capacity of the sector, and the risks associated with each of the viable options.

The Financial Capacity of the Waste Sector to Respond to Altered Market Structures

In considering major changes to the regulation of the waste management sector, the State must consider the likely financial ramifications of such changes on the waste management industry, given the industry's role as the deliverer of a strategic service, as an employer, as a taxpayer, and as a substantial component of Ireland's commercial environment.

A major change to the regulatory environment of any industry would necessarily impact on individual firms; operations may change, costs may alter, business models may be weakened.

The introduction of franchise bidding would be a major change in the regulatory environment. In order for competition to be strong, and the benefits of such competition to accrue to the householder in the form of reduced household waste collection charges, a number of firms must bid for any given franchise. Participation, in the form of making a bid, is not without costs. Therefore, firms will be selective about the tenders they participate in. A further factor will be the ability of a given firm to make the necessary investments to perform its contractual obligations should its bid win, typically personnel, refuse collection vehicles and any necessary depots etc. For example, should a firm win a contract, and should that firm not have the human and material resources necessary to fulfil the service, the firm would need to put those resources in place prior to the contract coming into operation.

A firm's ability to acquire the labour and capital resources would, to a large degree, depend on its financial situation. A cash-rich firm with a low ratio of debt to revenue would likely have a number of options; it could purchase the resources from its own reserves, or finance such a purchase through loans and/or from equity. A highly indebted firm with weak cash reserves could be constrained in accessing the necessary resources, and could be unable to finance expansion, i.e. growing beyond its current capacity to service contracts.

It is therefore necessary to consider the general financial health of the waste management sector. It is difficult however to make a definitive assessment. The financial position of many of the firms which collect household waste is not known and is not a matter of public record. A large number of waste collection firms are small to medium sized enterprises; many are family owned. Financial statements and annual returns, even in respect of the larger waste management firms, are not available. As such, access to reliable financial data is limited, although the Department has undertaken a preliminary analysis of the industry's financial position.²¹¹

Notwithstanding such opacity, it is possible to make a number of observations:

²¹¹ At the request of the Department, the National Development Finance Agency undertook a Financial Assessment Report of the financial capacity of a number of leading firms in the industry, which was made available to the Department in March 2012. This report is confidential and commercially sensitive.

- Currently, the financial position of a number of leading firms in the industry is diverse. Financial results, over 2010-11, range from healthy profits and growth for some companies, to extended periods of multi-million euro losses and sharp declines in turnover for others. Recent times have been challenging for many sectors of the economy, not least the waste sector. However, it is notable that a number of waste management firms have achieved counter-cyclical growth during this period. It should also be noted that varying fortunes among firms could be regarded as a normal dynamic within any given industry, albeit in this specific instance against a backdrop of a national economy which has contracted and which is seeking to restore competitiveness.
- A number of waste management firms have made high profile acquisitions of local authority client lists in recent years. Most recently, in 2011 and 2012 Panda and Greyhound have acquired extensive client lists in the Dublin Waste Region, having bought them from local authorities as they have withdrawn from direct service provision. In acquiring these lists, major costs have been incurred. Firstly, a fee has been paid to the local authority; the Department understands that such fees have in certain instances been sizeable. For example, Country Clean paid €4.6m to Cork City Council for a list of 25,000 household clients in June 2011, i.e. over €180 per household, having previously paid €6m for a list of 36,000 clients from Cork County Council in 2010, over €166 per household.²¹² Secondly, the firms which have bought local authority client lists have rapidly expanded their capacity to collect waste, i.e. by employing additional crews, purchasing or leasing additional refuse collection vehicles and reconfiguring their back-office organisations to cater for large numbers of additional customers, staff and vehicles. It is clearly the case that elements of the industry have been well placed to expand considerably, and to do so within a limited period of time.

In a franchise bidding scenario, business and revenue is, to a very considerable degree, guaranteed. Investments such as client-list purchases under current market structures involve more risk and therefore would be more expensive to finance, as client lists are subject to competition from a firm's competitors in any given market. As firms are capable of financing such purchases, one must conclude that such firms are also capable of financing franchise bids.

- In those countries which operate franchise bidding systems for household waste collection, many firms treat bidding as a central corporate overhead. Standing bid teams exist, which specialise in winning new business.
- Investment in new crews, vehicles and back-office support will only be necessary for those firms which gain sufficient new business to exceed their current capacity. For example, consider a hypothetical typical medium sized waste collection firm which currently collects waste from 20,000 households. Over a number of months, the market structure changes from side by side competition to franchise bidding. A number of franchises are offered which the firm bids for. Two such bids are successful, the first for 15,000 households, the second for 12,000 households. The firm has the existing capacity to service 20,000 of these 27,000 households, and will only need to invest to service the

²¹² As communicated to the Department by Country Clean during the summer 2011 consultation process.

additional 7,000 households. Given that the firm has predictable and safe revenue streams for the duration of these contracts, the level of risk, from a lender's perspective, should be low and accessing funding should not, therefore, be prohibitively costly for the firm.

The cost of bidding for a franchise, while certainly not nominal, should be a manageable expense for many waste management firms. In order to bid for a franchise, it is not first necessary to employ crews and purchase refuse collection vehicles. Such investments, if necessary, would be made following success for the winning bidder. Also of relevance is the option available to firms to lease, as opposed to purchase, refuse collection vehicles. The winning of a tender need not necessitate an immediate capital investment.

Further, a system of franchise bidding would be designed and implemented with the goal of ensuring that competition is strong; a method of maximising competition is to ensure that potential bidders are provided with as much information in relation to a given franchise as possible, concerning costs, risks, the service levels required, the routes, types of household, demographics, current participation and presentation rates, etc. national standardised approaches, such as a common contract and other paperwork would also help to reduce costs.

Notwithstanding such measures, small to medium sized waste management companies may be disadvantaged, relative to their larger counterparts, due to the difficulties they may have in assembling the managerial and corporate expertise required to effectively engage with a somewhat complex tendering process in a system of franchise bidding.

- Notwithstanding the financial capacity of the waste management industry to respond to altered market structures, the Department considers that the introduction of franchise bidding would be very likely to draw the attention of those firms operating in other EU Member States which are familiar with, and have experience of, the operation of franchise bidding market structures. The new entry of international firms, and the consequent strengthening of competition, would be welcomed.

The Risks

Household waste collection is a critical service. Service delivery failures could have an extreme impact on public health. Other impacts of service delivery failure could include the massive disamenity of accumulations of uncollected household waste. Security of service is therefore a concern.

Two viable options are available; introduce franchise bidding or strengthen the regulation of the industry without altering current market structures. Risks are inherent in both scenarios.

Risks Associated with the Introduction of Franchise Bidding

The Competition Authority has noted that “there are pitfalls associated with this model of competition [i.e. franchise bidding] that would need to be closely and expertly managed. If this is not done properly, a switch from side by side competition to competitive tendering risks incurring costs without achieving the intended benefits and even making the market for

household waste collection less efficient.”²¹³ Should the Government choose to introduce franchise bidding, the following risks are of relevance:

- The capacity of the current industry to engage in a franchise bidding market structure may not be strong. Many companies may not be well placed to compete for tender lots beyond the markets they are currently operating in. This could be particularly true of smaller waste collection firms, which will find it difficult to access the managerial and financial resources to engage in several tender competitions, however it may also be the case that medium to large waste collection firms would also struggle. In the event that competition among firms is weak for a given tender, the benefits of franchise bidding could be lost in that market for the duration of the contract.

Assessment of Risk: On balance, however, it is considered that due to the low barriers to entry to the waste collection industry and the intention that bid costs should be minimal due to a standardised national process, clear communications between the tendering authority and the firms which may potentially bid in relation to service requirements and tender lot information,²¹⁴ and no requirement for a bidding firm to invest, aside from a bid team, prior to securing a tender, most viable firms should have the capacity to engage in multiple bids. In many markets a number of firms are already present and competition, therefore, should be strong in those markets. Many of the larger firms should be capable of making bids in markets across the country. It may also be the case that non-indigenous international waste management firms, with experience of franchise bidding in other national markets, could enter the national market and compete for bids. However, there may be certain markets, especially low population density rural markets or markets with a high proportion of low income households, in which competition is less strong than elsewhere. It is conceivable, albeit unlikely, that no bids are made in relation to certain markets, or that only a single bid is made.

- It is possible, perhaps likely, that several waste collection firms currently in operation could fail to win any tenders, and therefore cease trading with resulting unemployment and economic consequences for third parties.

Assessment of Risk: The failure of any business is regrettable in and of itself, however the purpose of household waste collection regulation is not to support employment among inefficient service providers; the purpose is to meet the Government’s environmental objectives at the lowest cost to the householder. Also of consideration is the fact that regardless of whether franchise bidding is introduced, efficient firms will out-compete inefficient firms as the industry develops and consolidates. Inefficient firms will, in any market structure, eventually collapse. Unemployment caused by the failure of inefficient firms will be compensated for by additional employment in firms which grow at the expense of failed firms.

However, notwithstanding the competitive dynamic of markets in which efficient firms prosper and inefficient firms do not, as discussed in Chapter Five, it is possible that in some

²¹³ The Competition Authority (2011a), page 1.

²¹⁴ E.g. Number of households, current waste arisings, the required collection standards.

markets the existing cadre of small to medium firms will be out-competed by larger new entrants resulting in the simultaneously collapse of several household waste collection companies with a strong negative impact on the local economy.

- The current industry may be unwilling to engage in an altered market structure and may take actions to obstruct change.

Assessment of Risk: The household waste collection industry is largely united in its opposition to the introduction of franchised bidding. Many currently operating waste collection firms view the potential alteration of the market as a grave threat to their business models, and by extension, to the viability of their businesses. The local government system has, with the exception of a small minority of local authorities, withdrawn from household waste collection and as such, the majority of local authorities do not currently have the equipment, facilities or staff to provide a service of last resort.

It is possible that to protest against the introduction of franchise bidding, waste collection firms could take a number of actions, either individually or as part of a coordinated campaign of action, including:

- A service provision strike, for a protracted period of time, during which household waste is uncollected. While such action could be costly to individual firms, could represent a breach of contract between waste collection firms and their customers, and would in all likelihood have a very damaging impact on the reputation of the industry, firms may calculate that on balance it is a desirable course of action. An extended service strike period would be highly disruptive and could have public health and national reputation implications. Without the cooperation of the waste collection industry, the State may be unable to provide an alternative service;
- Media focused actions, intended to maximise media coverage; and/or,
- Assume a collective policy of non-cooperation with altered market structures, i.e. the industry could collectively decline to bid for tenders. However, in the event of engagement with the bidding process by new entrants, including non-indigenous waste management firms, such a policy could be self-destructive for the indigenous industry. Such a policy would also require a degree of cooperation and trust among indigenous companies which may, in practice, be unachievable, as the benefits to an individual firm of clandestinely breaking ranks could be massive.

Risks Associated with Not Altering the Current Market Structures

Should the Government choose to strengthen the regulation of the industry without altering current market structures, the following risks are of relevance:

- The management of all household waste will be privatised and control of that waste will rest with the private sector, from collection at the kerbside to ultimate disposal or treatment. Such a market arrangement has not been chosen in other EU Member States, in part,

perhaps, because the degree of control over waste management which the State surrenders by privatising the management of household waste.

As the market develops, consolidation is likely over the medium to long term, in which a small number of vertically integrated waste collection firms will capture much of the national market. These firms, collectively and individually, will have great influence over the State's waste management performance. The choices these firms make in relation to disposal and treatment infrastructure, movements of waste,²¹⁵ collection service standards and pricing structures will define waste management performance. As such, the role of regulation will be twofold; (i) to constrain undesirable choices and activities by waste management actors, and (ii) to support the industry in delivering the best environmental outcomes at the lowest cost to the householder. In a privatised waste collection market environment, the tensions between the two regulatory goals may become pronounced, particularly as the industry will collectively enjoy a strong degree of control over waste management practices and outcomes. A scenario of regulatory capture, in which the waste management industry effectively controls the regulation of its own industry is a possibility, with financial consequences for householders and environmental consequences for all of society.

Assessment of Risk: Regulatory measures may be taken to contain the risks, however, depending on the degree to which such regulatory mechanisms are at odds with the interests of the waste management industry, friction and even severe resistance by the industry, including through stealth, could occur. Information asymmetries between regulatory agencies and the industry will exist, complicating regulatory efforts, and regulatory lag²¹⁶ and the gaming of regulatory mechanisms could be pervasive features. However, it will remain open to the State to alter the model of regulation, including by changing market structures, should pervasive under-performance, friction or resistance occur.

- The full privatisation of the system could result in the State being at risk of not meeting current or future international obligations if private sector incentives and the State's interests are misaligned. The issue is primarily one of control. In a fully privatised system, the behaviour of the principal actors, i.e. private sector waste management firms, could be at odds with the State's objectives in certain respects. Behavioural incentives, such as the landfill levy, can be an effective mechanism to influence behaviour however such instruments are not always rapidly implemented and often do not permit as fine a degree of control as may be desirable.

Assessment of Risk: The State has been at risk of not meeting its landfill diversion targets in an environment in which, until recently, the State, through the local government system, controlled a considerable portion of collected waste and continues to control a large number of waste disposal facilities. In a potential national market in which a small number of large waste collection firms own and control the direction of waste, the State may encounter difficulties in achieving other targets and obligations, current and future. The consequences of such failures could be severe.

²¹⁵ Including the exporting of indigenously produced waste.

²¹⁶ I.e. the time it takes to identify a problem and implement an effective regulatory solution.

Chapter Six Conclusions

In summary, risks are associated with both the introduction of franchise bidding and the strengthening of the regulatory regime within the current market structure.

As regards the capacity of the waste sector to adjust to the introduction of franchise bidding, in general the industry appears to be capable of weathering such a transfer, however those firms which are currently experiencing financial difficulties, and smaller to medium sized firms, are likely to be least well able to manage such a transition. Such potential transition risks for firms do not arise in connection with a strengthened regulatory regime within the current market structure.

Chapter Seven - Conclusion, Policy Recommendation, Implementation and Future Review Provisions

Conclusion and Policy Recommendation

This regulatory impact analysis indicates that the two viable policy options in respect of the regulation of household waste collection options, namely (i) the introduction of franchise bidding, and (ii) the strengthening of the regulatory framework within the current market structure of side by side competition, would each have the capacity to achieve a standard of environmental, economic and other outcomes sufficient to meet the State's objectives. Franchise bidding scores highest under optimal implementation conditions, however should implementation be problematic, side by side competition provides a superior mix of outcomes.

In view of a number of factors, including;

- the critical nature of household waste collection services to the economy and the wellbeing of society; and,
- the inherent transaction costs, and the potential economic disruption and other risks, of an alteration in market structure, particularly during this difficult phase of the economy's development;

the Department recommends that the Government opts to preserve the current market structure and to strengthen the regulatory regime which applies to household waste collection. Specifically, the Government should introduce the following regulatory mechanisms:

- An obligation on all households to demonstrate that they manage their waste in compliance with legal requirements;
- Mandatory pricing structures;
- Mandated service levels;
- The strengthening of the collection permitting system so that robust controls are in place to ensure that only "fit and proper" individuals and companies are allowed to hold such permits, and waste collection permit fee structures reflect the value of the permission to collect waste conferred by a permit, the need to contribute to the costs of essential enforcement of the permitting system and the potential liabilities for the State which may arise from poor collection practices;
- Measures to manage the nuisance, emissions and health and safety risks of overlapping household waste collection networks; and,
- The Competition Authority would be requested by Government to assume an overwatch stance in respect of household waste collection markets. The Authority should also be required, by 2016, or before should the Minister so decide, to report to the Minister for the Environment, Community and Local Government on the functioning and outcomes of the side by side market structure.

Inspection and enforcement resourcing should be increased, funded by the compulsory annual contribution made by household waste collection firms.

Taking account of the Government's decision in relation to household waste collection market structures, the relevant Programme for Government commitment and the requirements of the Waste Framework Directive, including the polluter pays principle, it is recommended that an inter-departmental working group be established to consider supports to minimise the impact of waste charges on low income households in the context of the proposed new regulatory regime, to be concluded by October. The working group should be comprised of representatives of the relevant Departments and should report to Government with recommendations on measures to minimise the impact of waste charges on low income households.

Customer Service Charter

With a view to improving the degree of information made available to consumers, the Minister will write to the Irish Waste Management Association and household waste collection firms which are not members of the Association, and will require that the industry adopts a standard Customer Service Charter, within 3 months, which will be adopted by all household waste collection firms and which will address the following matters:

- The provision of charging, price structure and other terms and conditions information by firms to households;
- The provision of payment option information by firms to households;
- Easy access by households to their account statements and balances;
- The provision of clear information to households on the ownership of bins and the policy and procedure should a customer wish to return a bin;
- Procedures for the handling of billing disputes and other complaints about service levels made by households;
- Procedures for the refund of standing charges in the event that a household switches from one firm to another mid-term;
- The treatment of households which have fallen into payment arrears, including protocols concerning debt collection; and,
- The provision of information about how a household may cancel a service provided by a firm.

The Minister will also raise the issue of the communication to households by waste collection firms concerning price increases attributed to increases to the landfill levy.

Implementation

The Department will begin work on implementing the Government's decision once made, in parallel with changes arising from the new national waste policy. Primary Legislation will be required, and the Department will work toward the submission of Heads of a Waste Management (Amendment) Bill to Government in the coming months, the publication of a bill in Autumn 2012 and the Bill's enactment in early 2013. Statutory Instruments and other regulatory measures to give effect to enacted legislation, such as instruments to establish mandated pricing structures and mandatory service standards, will be put in place within 6 months of the enactment of the Waste Management (Amendment) Bill.

Review and Performance Indicators

It is recommended that the policy of retention of the current market structure, combined with a strengthened regulatory regime, be reviewed in 2016. Should it be deemed necessary, Government may then opt to alter the regulatory regime, including by introducing franchise bidding or by otherwise monopolising household waste collection services. In the event of a failure to meet obligations under the 2013 Landfill Directive, this review may be brought forward.

The 2016 review should be based on a number of performance indicators, including:

- Compliance with Landfill Directive and Waste Framework Directive obligations, and the extent to which the management of household waste has contributed to the State's overall performance;
- The degree to which the waste management industry invests in recovery and recycling management facilities;
- Household participation rates;
- Total volumes of household waste collected;
- The segregation of household waste;
- Rates of recovery and recycling of household waste;
- The price of household waste collection services;
- Competition in household waste collection markets;
- The extent to which consumers switch among household waste collection service providers;
- The collective record of compliance among the household waste collection industry with Waste Collection Permits and its other obligations under the Waste Management Acts;
- The waste industry's implementation of a Customer Service Charter; and,
- The achievement of other goals of household waste collection policy, including those associated with health and safety and with minimising noise, disruption and emissions, and the industry's collective approach to low income households.

Appendix: Literature Review Summary - The Costs of Waste Collection and the Impact of Contracting Out

Study	Country	Principal Conclusions
Stevens (1978)	USA	Side by side arrangements more expensive than monopoly provision. In lots of greater than 50,000 inhabitants, private monopolies associated with lower costs than public monopolies.
McDavid (1985)	Canada	Public provision more costly than private provision.
Domberger, Meadowcroft and Thompson (1986)	UK	Contracting out reduces cost to municipalities by an average of 22%, allowing for all other factors influencing costs.
Dubin and Navarro (1988)	USA	Monopoly provision, whether public or private, is less costly than side by side competition. Private monopoly is the most cost-effective market structure.
Reeves (1995)	Ireland	Contracting of local authority services 26% cheaper than public provision.
Szymanski (1996)	UK	Contracting out reduces costs. Cost savings are greatest when contracted out to a private firm, less when awarded to a public body (i.e. direct service provision). However, the advantages of competitive tendering diminish over time, especially if contracts are awarded in-house.
Reeves and Barrow (2000)	Ireland	Contracting out led to savings of 45% for municipalities, as compared to public provision.
Gomez-Lobo and Szymanski (2001)	UK	Whether contract is delivered by private or public monopoly provision less significant than the number of bidders for the contract.
Dijkgraf and Gradus (2003)	Netherlands	Contracting out reduces costs, however no major difference found between public and private monopoly provision.
Ohlsson (2003)	Sweden	Public production marginally less expensive than private provision.
Bel and Costas	Spain	Gap between the cost of public provision and private

(2006)		provision narrows over time. Private monopoly provision most efficient in communities under 10,000 inhabitants.
Rife and Domenech (2007)	Spain	Public-private mixed system has proved cheaper and more effective than public provision.
Dijkgraf and Gradus (2007)	Netherlands	The savings associated with contracting out are depend on the degree of industry concentration within a province; the greater the concentration, the lower the cost savings.
Hefetz and Warner (2007)	USA	Cost difference between public and private monopoly provision diminished over time. Many US cities re-internalising waste services to achieve improved environmental outcomes without sacrificing cost-savings.
Bel and Warner (2008)	Comparison of all studies	Side by side competition most expensive form of provision. Little difference observed between public and private monopoly provision in most recent studies.
Warner and Bel (2008)	Comparison of Spain and US	Mixed public-private has proved more stable in Spain than the US, where there is an increasing trend for re-internalisation of waste services. Greater organisational flexibility in Spain has proved more cost-efficient than US cases.
Bel and Fageda	Spain	Private sector delivery associated with increased waste collection costs.

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²¹⁷ I.e. the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit.

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