

A P O L I C Y S T A T E M E N T

waste

M A N A G E M E N T

changing our ways

by

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Environment and Local Government

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1 Introduction

1.1 Waste generation throughout Europe has continued to increase during the 1990's, and waste management continues to be dominated by the cheapest available option: landfill. Prevention and minimisation are increasingly recognised as more desirable solutions, but no overall progress in this direction can yet be seen. Recovery, including recycling, tends to be more successful in countries with a strong waste management infrastructure. These findings from *Europe's Environment: The Second Assessment* (EEA, 1998), also reflect waste management practice in Ireland. *The State of the Environment in Ireland* (EPA, 1996) highlighted annual growth in the production of all classes of waste, relatively low levels of waste recovery, and a high degree of reliance on a technically unsophisticated landfill network for the disposal of waste.

1.2 There is an urgent need, in line with Government policy and the new framework of the Waste Management Act, 1996, to modernise waste management practice and secure the provision of environmentally efficient infrastructure.

- Waste services are generally the least developed of the environmental services traditionally delivered by local authorities.
- With very few exceptions, authorities have not so far developed or applied integrated management techniques or innovative technology solutions.
- Public perception of local authority performance on waste is poor because of the environmental impact and visibility of waste, and the nuisance

which poorly managed and overfull landfills can cause.

- Private sector interest in the provision of waste management facilities is now very apparent.

1.3 This Policy Statement is addressed chiefly to local authorities in relation to the wastes traditionally collected or accepted by them from households, commercial and industrial sources, recognising that:

- the practices adopted by these authorities exert a significant influence throughout the waste sector,
- good waste management practice is a test of local authority environmental management and responsibility,
- waste management choices will have important implications for other environmental policies, notably in relation to the control and reduction of greenhouse gas emissions and control of emissions to waters.

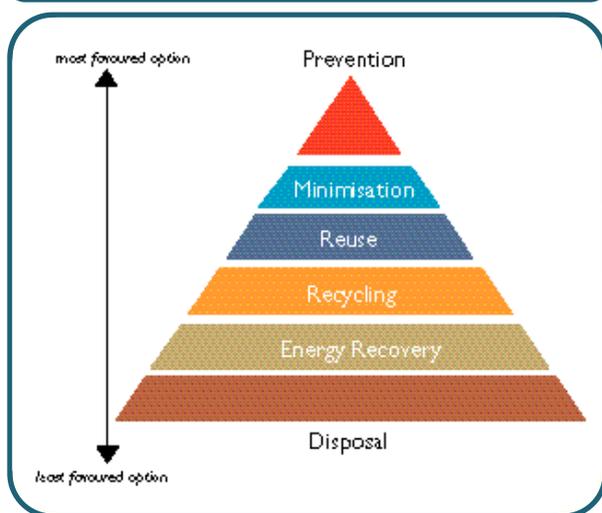
2 Government policy objectives

2.1 The overall policy of the Government in relation to waste management is set out in *An Action Programme for the Millennium* and related policy documents. It is firmly grounded in an internationally recognised hierarchy of options:

- prevention,
- minimisation,
- reuse/recycling,
- environmentally sustainable disposal of waste which cannot be prevented or recovered.

Giving clear and practical expression to the requirements of this hierarchy is a challenge for modern waste management and for society as a whole. Local authorities have a pivotal role in achieving the necessary change: the waste management plans now being, and to be, prepared must provide the strategic framework within which change can be delivered. Planning for the future has already been underway by some authorities for a number of years, but solutions to minimise and recover waste, and to provide facilities to replace full or nearly full landfills, have been slow to be developed.

Fig. 1 Waste Management Hierarchy



2.2 It is necessary now to act on Government policy as well as to build on the policies and actions outlined in earlier strategy documents, including *Recycling for Ireland* (July 1994) and *Sustainable Development: A Strategy for Ireland* (April 1997). The primary purposes of this Policy Statement are to provide a national framework within which local authorities, and the waste industry, can plan ahead with confidence, and, in particular, to:

- emphasise the need for early, major change in the planning, financing and operational approach

to waste management by local authorities, encourage local authorities to address this challenge with vision and vigour,

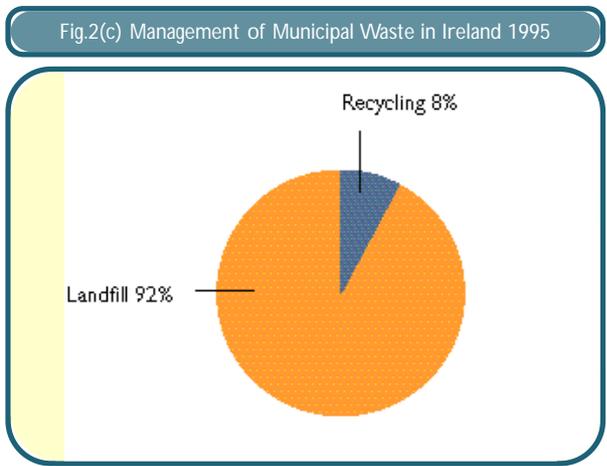
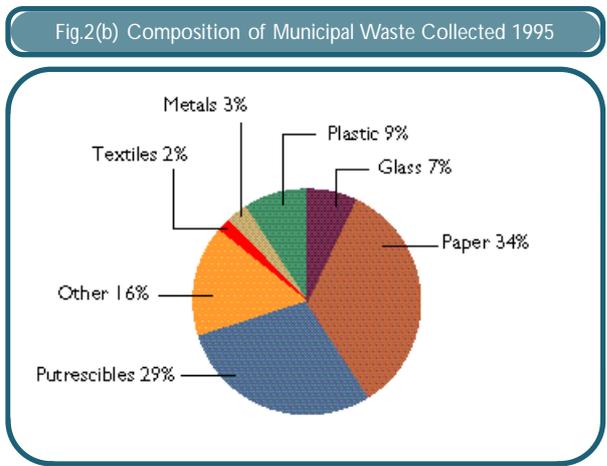
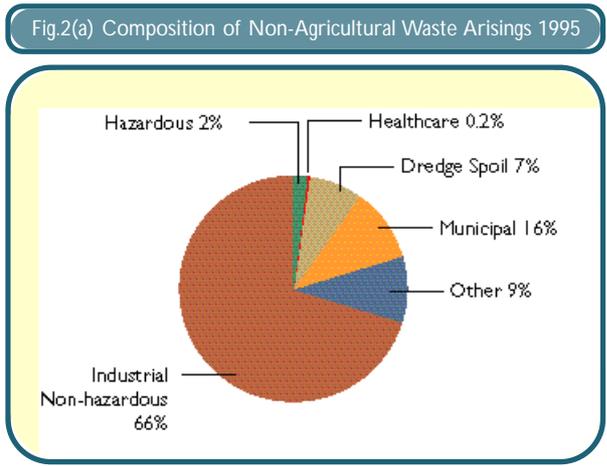
- assist in the transition from strategy studies commissioned by local authorities to the adoption and implementation by them of statutory waste management plans,
- identify policy requirements to be taken into account in the development of waste management plans,
- identify actions which should be taken by local authorities to secure the provision of an adequate, national infrastructure to meet modern waste management needs.

2.3 Key considerations in meeting these objectives will be:

- the need to take the opportunity provided by the comprehensive waste management planning exercises now underway to secure radical change in Irish waste management practice,
- the need to be ambitious: Ireland has the opportunity to achieve a high level of performance, beyond basic compliance with national and EU legislation, incorporating best practice and resource efficiency in economic sectors,
- implementation of the polluter pays principle: it is fundamental to efficient waste management that all producers of waste pay fully for its treatment and disposal,
- recognition of the importance of economies of scale: waste infrastructure should be planned on a scale that facilitates viable, cost-effective alternatives to landfill; it should also take account of opportunities for co-operation on an all-Ireland basis.

3 Reducing our reliance on landfill

3.1 Irish waste management practice is heavily reliant on landfill. The most recent comprehensive data



(National Waste Database (NWD) Report, EPA 1996) indicate that, in 1995, 84.7% of collected commercial waste, and 95.7% of collected household waste, was landfilled. In total, more than 2 million tonnes of waste were consigned to landfill in 1995. Reducing this reliance on landfill is the most fundamental issue to be addressed in the waste management area, and should be the core objective of the current local planning process.

3.2 Until recently, there were some 120 operational municipal landfill sites in the country. In line with standing policy, many of the smaller sites have been or are in the process of being closed

Fig.3 Location and Size of Landfill Sites



down, as authorities increasingly focus on improved waste management from environmental and economic points of view. Other sites are approaching their full capacity, with closure imminent. In addition, the commencement, from 1 May 1997, of waste licensing by the Environmental Protection Agency under the Waste Management Act, 1996 will ensure that facilities which do not, or cannot be upgraded to, meet high environmental standards will have to close.

3.3 Landfilling standards in the past, in many instances, left much to be desired. Local opposition to current landfill proposals understandably arises from the public perception of landfills as a source of nuisance and environmental pollution. Nuisance factors have included odours, dust, litter, noise, rodents, insects and general unsightliness. Landfills are also potential polluters of soil, water and the atmosphere and they generate methane - a significant greenhouse gas. These negative impacts of landfilling arose in part from poor site selection, as well as from low standards of management and operation.

3.4 Heavy reliance on landfill, coupled in many cases with uneconomic charging policies, has -

- limited the development of integrated waste management approaches,
- inhibited waste recovery and recycling options,
- resulted in poor experience and expertise at local authority level in regard to alternative disposal methods and technologies,
- reduced the incentive to well-defined and broadly based forward planning activity, and

- contributed in large measure to the problems now faced by local authorities who lack alternative disposal routes.

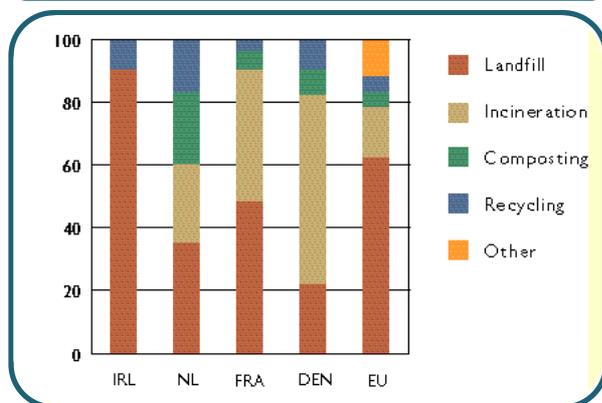
3.5 It is evident that undue reliance on landfill cannot continue to be the basis of modern waste infrastructure. Change is necessary, for a range of reasons.

- Landfill disposal is at the bottom of the waste management hierarchy, and this should be reflected in practice.
- Performance in regard to recovery and recycling must be substantially improved to -
 - address the requirements of Government policy, including diverting 50% of household waste away from landfill over a fifteen year period,
 - meet targets defined in *Sustainable Development: A Strategy for Ireland*, and
 - meet the requirements of EU legislation.
- The greatly increased costs associated with the high environmental standards now being applied under the Waste Management Act licensing system as implemented by the EPA will remove a previously perceived advantage of landfill - its low cost - and require that economies of scale are brought to bear in relation to the future landfill network.

3.6 There is a sound rationale, from a national perspective, in reducing our reliance on landfill. In any event, however, developments at EU level will require movement in this regard. EU Environment Ministers have reached political agreement on a draft Directive on the landfill of waste, which has major longterm implications for the way municipal waste is managed. Apart

from imposing high environmental controls and standards in relation to the operation and aftercare of landfills (which have already been anticipated by the EPA waste licensing system), it will require each Member State to draw up a national strategy for the reduction of the proportion of biodegradable municipal waste going to landfill, and will impose a series of mandatory reduction targets, culminating in a 65% reduction within fifteen years. Accordingly, Member States will have to develop the infrastructure to segregate and treat very substantial volumes of organic wastes. For Ireland, this implies a minimum diversion from landfill of over 0.6m tonnes of biodegradable waste annually, at current waste generation levels.

Fig.4 Management of Municipal Waste in Ireland & Other Countries



3.7 Local authorities have an opportunity, in the relatively short term, to divert significant volumes of construction and demolition (C&D) waste from landfill. C&D waste is a very significant component of the overall waste stream, particularly with current high levels of building construction, renovation and demolition. Very large quantities of this waste are being landfilled, despite its potential resource value. The technology for the segregation and recovery of

stone and concrete from C&D waste is well established, readily accessible and inexpensive, and there is a ready re-use market for aggregates, as fill for road, drainage and other construction projects. With its high volume/weight ratio, the recovery of C&D waste can make a very significant contribution to overall recycling targets, as well as extending the life of existing landfills.

3.8 The construction industry clearly has the primary responsibility to ensure the environmentally sound management of C&D waste. The Forum for the Construction Industry is tasked with overseeing the detailed implementation of recommendations contained in the 1997 Report on the Strategic Review of the Construction Industry. These recommendations identified the need for the industry to develop environmental sustainability policies addressing, among other issues, waste reduction and recycling. The Minister for the Environment and Local Government will engage in early consultation with the construction sector with a view to the development in the short term of voluntary measures which will meet the Government's objectives for the recovery of C&D waste. Mandatory producer responsibility obligations under the Waste Management Act, 1996 and/or measures very substantially to increase the cost of disposing of C&D waste to landfill are alternatives to be activated within 2 years in the absence of voluntary industry-led initiatives. Local authorities are urged energetically to pursue the scope for recovery of C&D waste from local authority projects, and the use of C&D waste in site development, roadbuilding and other construction projects.

3.9 Landfill will continue to have a role in future waste disposal in Ireland. The nature of that role must change so that landfill becomes a subsidiary element of an integrated waste infrastructure, catering for the disposal of residual waste which cannot be prevented or otherwise treated, and where the primary focus is on prevention, recovery and recycling. Strategic planning must now take account of all available options to reduce long-term reliance on landfill, so that, over a fifteen year planning horizon, required capacity can be very substantially reduced.

3.10 The waste licensing system introduced in the Waste Management Act, 1996 and operated by the EPA will ensure the environmental integrity of the landfill network. In the period to March, 1999, all landfill facilities will be licensable. Compliance with high environmental standards, aimed at minimising emissions and environmental impact, will be required. Licensing controls will focus on good design and operational controls, leachate collection and treatment, gas collection and recovery and comprehensive environmental monitoring. Upon closure, these landfills will be subject to aftercare monitoring until such time as the EPA is satisfied that the facilities do not present a threat of environmental pollution.

3.11 In summary, the outlook for landfilling of municipal waste is for:

- intensification, in the short to medium term, of capacity shortages and significant increases in the financial costs of developing and operating landfill sites,
- progressive application of high standards of environmental protection to the development,

operation and aftercare of landfill facilities,

- continued, but reducing, reliance on landfill in the short to medium term while alternative systems and infrastructure - with a high emphasis on waste recovery and recycling - are being put in place,
- continuing reductions in the number of operational municipal waste landfill sites in order to achieve economies of scale,
- significantly reduced reliance on landfill in the medium to long term, and
- intensification of efforts to extend the life of existing strategically important landfills which are capable of meeting EPA operational requirements.

4 Targets

4.1 A major general objective is to stabilise, and in the longer term reverse, the growth in waste generation, though it is recognised that achievement of this objective will require determined and ambitious measures from producers and consumers, as well as local authorities. In addition, and in the shorter term, more sustainable practices need to be applied in relation to the management of waste arisings. An adequate, national infrastructure to meet modern waste management needs should facilitate the achievement of the following targets over a fifteen year timescale:

- a diversion of 50% of overall household waste away from landfill,
- a minimum 65% reduction in biodegradable wastes consigned to landfill,
- the development of waste recovery facilities employing environmentally beneficial

technologies, as an alternative to landfill, including the development of composting and other feasible biological treatment facilities capable of treating up to 300,000 tonnes of biodegradable waste per annum,

- recycling of 35% of municipal waste,
- recycling at least 50% of C&D waste within a five year period, with a progressive increase to at least 85% over fifteen years,
- rationalisation of municipal waste landfills, with progressive and sustained reductions in numbers, leading to an integrated network of some 20 state-of-the-art facilities incorporating energy recovery and high standards of environmental protection, and
- an 80% reduction in methane emissions from landfill, which will make a useful contribution to meeting Ireland's international obligations.

5 Planning for the future

5.1 The legal background

5.1.1 Local authorities have been required since 1979 to make waste plans in respect of their functional areas. However, obligations in the past relating to the content of such plans were minimal, and this planning exercise had limited added value either for the local authorities concerned or the general public.

5.1.2 Waste management planning is now placed on a new footing under the Waste Management Act, 1996. For the first time a comprehensive and flexible legislative framework is in place, within which local authorities can define and give effect

to progressive waste management policies.

Under this Act, local authorities are required to make new, detailed, plans for the management of non-hazardous wastes within their functional areas. There is a strong emphasis on public consultation and engagement in the planning process. Reflecting the waste hierarchy, the statutory objective of these plans is to -

- prevent and minimise the production of waste and its harmful effects,
- encourage and support the recovery of waste,
- ensure that such waste as cannot be prevented or recovered is safely disposed of, and
- address the need to give effect to the polluter pays principle, in relation to waste disposal.

Detailed requirements in relation to the preparation and content of waste management plans are set out in the Waste Management (Planning) Regulations, 1997.

5.2 A new approach to waste management planning

Traditionally, local authorities have exercised their waste planning and management functions in isolation from each other and from other service providers, and essentially have seen themselves as the sole providers of public services and infrastructure in this area. Planning for the future must reflect a new approach to environmental management, involving constructive cooperation with local communities and neighbouring local authorities, and utilising the potential of the private sector to contribute in the delivery of public services. Planning must also be undertaken with a full appreciation of legislative

and technological developments, which will have a critical bearing on the outcome. The implications of these new developments must be identified and quantified, so that they can be factored into local authority waste planning.

5.3 Regionalisation

5.3.1 Local authorities have been encouraged to adopt a regional approach to waste management planning, with a view to the more efficient provision of services and infrastructure. Most local authorities have responded positively; 29 authorities are currently engaged in, or have completed, 8 regional strategy studies. Significant economy of scale is one of the main benefits accruing from this regional approach. This in turn provides -

- a viable framework in planning and volume terms for the development of integrated and innovative waste management solutions, facilitating segregated collection and incorporating materials recycling, organic waste composting, other treatment technologies and residual landfill, and
- a favourable climate for the creation of beneficial partnership arrangements between local authorities and the private sector.

5.3.2 In the case of local authorities which have completed or are in the process of making individual waste management plans, it is a serious concern that without the advantage of economies of scale, an integrated approach may not be considered viable, with the result that landfill may be identified as the primary, long term solution. Accordingly, such authorities

should avoid long-term infrastructural commitments pending an early review of their waste management plans in order either to integrate these plans into an appropriate regional planning structure, or to ensure that there is an adequate degree of coordination with neighbouring local authorities.

5.4 Public/private partnership

5.4.1 There is considerable scope for increased participation by the private sector in all areas of waste management in Ireland, and authorities should encourage and facilitate business involvement in the provision of waste management services. Private participation can contribute much needed capital investment in infrastructure, specialist expertise in the application of alternative and emerging technologies, a better understanding of the dynamics of the marketplace, especially in relation to recyclables, and in some cases greater operational efficiency and flexibility. It can also release local authority staff and resources for other productive uses.

5.4.2 To date, local authorities have sought to involve the private sector only in a limited way, mainly in the contract collection of household waste. This is an unnecessarily restricted approach. There is considerable merit in a partnership approach in the development of recovery infrastructure, markets for recyclables, and in particular the establishment and operation of waste recovery and disposal facilities, especially those requiring high capital investment. This approach is fully consistent with the legal obligations imposed on local authorities under the Waste Management

Act, 1996, and will facilitate implementation of the polluter pays principle.

5.4.3 Public/private partnerships are very well established in other EU countries and many different models are available. There is now considerable interest by the private sector in investment opportunities in waste management and the potential for partnership arrangements should be fully explored, in a positive and open minded way, in the course of the planning process.

5.5 Short term flexibility

5.5.1 There may be situations where local authorities face an imminent shortage of disposal capacity, with some situations so acute as to require action in advance of the outcome of the current strategic planning process. A commitment to the provision of new landfill facilities, in isolation from the broader issues which require to be addressed, should as far as possible be avoided. Every effort should be made to develop interim solutions which do not prejudice the outcome of longer-term strategic solutions.

5.5.2 Where immediate landfill capacity problems exist, action to extend the life of existing landfill facilities, rather than to provide new landfill sites, should be a priority. This can be facilitated by -

- diverting as much waste as possible to composting and materials recovery,
- diverting water treatment and sewage sludges for use in agriculture and forestry, as set out in the 1993 National Sludge Strategy Study, and
- seeking access to landfill capacity available in

neighbouring local authority areas.

Where a local authority determines that it has no option but to provide additional landfill capacity in advance of completion of the strategic planning process, consideration should first be given to the phased development of small scale cells, on or adjacent to existing facilities, rather than the acquisition and development of large green-field landfill sites for new landfill with a lengthy lifespan.

5.6 Local consultation

Waste management planning is clearly a task which should be addressed by each local authority within the framework of reformed local government structures and utilising, in particular, the developing Strategic Policy Committee (SPC) system. Strategy studies will -

- provide technical information and assessment of options as a basis for the making of waste management plans, and
- chart a broad course of action which seems most appropriate for each area or region.

However, these studies are intended to inform the planning process, not determine its course. It is the function of each Council and Corporation, individually or jointly on a regionalised basis, to agree to and adopt a waste management plan, and this can best be achieved on the basis of good preparatory studies and effective public consultation and participation. Councillors (and local sectoral interests) should be closely involved in the development of the policy approach which will underpin each plan.

Accordingly, waste planning should, from the outset, be referred to the relevant SPC for consideration.

5.7 Planning timescale

Local authorities should make every effort to complete this planning process as soon as possible. Substantial progress should be evident by end-December, 1998 with regard to the regional strategy studies which are currently underway. The maximum timescale which could reasonably be contemplated for the formal adoption of waste management plans (following the necessary public consultation) is end-June, 1999.

6 Resources and charges

6.1 Application of resources

6.1.1 The application of resources (human and financial) by local authorities should reflect the priority which the Government attaches to improving national waste management performance. The Local Government Act, 1998 puts in place the necessary statutory arrangements for a new funding system for local government from 1 January, 1999. This involves the establishment of a Local Government Fund to fund non national roads and the general purposes needs of local authorities. The new system will provide significant additional resources for local authorities to enable them better to carry out their wide range of functions.

6.1.2 It is recognised that Ireland's waste management infrastructure has been consistently under-resourced and that significant capital investment will be necessary to achieve the radical improvements which are required. The Polluter Pays principle generally precludes the subvention of costs associated with the operation of waste disposal facilities but, as outlined above, there is considerable scope for increased participation and investment by the private sector on a commercial basis in this as well as other areas of waste management. Under the Operational Programme for Environmental Services, 1994-1999, an EU-funded programme of grant assistance in respect of public and private waste recycling infrastructure is currently underway. Options for considerably increased funding for waste management in the post-1999 period, commensurate with national waste recovery objectives, will be explored.

6.2 Charging for waste services

6.2.1 The production of waste imposes a burden on waste management services and on the environment. By ensuring that waste generators pay directly the full costs of waste collection, treatment and disposal -

- public attention can be focused on the implications of waste generation, and
- a direct economic incentive can be provided for waste reduction.

6.2.2 However, waste collection and disposal services provided by local authorities do not reflect the full economic costs of these services. Many households face relatively low waste charges, or

no charges at all, while waste charges levied on commercial interests are often well below the true economic cost of managing their waste. In 1998, local authorities plan to spend nearly £80 million in the collection and disposal waste, but will only receive a total income of some £38 million in landfill gate fees and waste charges. This is insupportable, especially having regard to the greatly increased costs which will be incurred by local authorities in meeting the high environmental standards being applied by the EPA in relation to the licensing of waste disposal activities. Local authorities must move rapidly towards full cost recoupment for the waste services which they provide.

6.2.3 As a matter of equity, and in order to directly incentivise waste reduction, the level of waste charges should vary according to usage. Some local authorities have already adopted this approach, through bag-tagging or other use-related schemes. However, most authorities impose flat-rate waste charges. On-board weighing systems whereby waste charges are calculated relative to the weight of waste presented for collection, have been developed and operated abroad, and a pilot project has been initiated in Cork. Where local authorities provide waste collection services, they should review their approach to household and commercial waste charges with a view to introducing weight related charging to the fullest extent possible. Similarly, every effort should be made to ensure that landfill gate fees are levied in relation to the quantity of waste accepted for disposal.

6.2.4 Significant variations in the level of gate fees

imposed by local authorities could give rise to unnecessary waste transfers to low cost facilities, which would not be consistent with the proximity principle. Accordingly, there is a need for consultation and cooperation between local authorities to ensure regional consistency in waste charging policies and a broad equalisation in the level of such charges.

7 Technical aspects of planning

7.1 Context

In general, waste management in Ireland has been:

- based on low level technologies and the use of simple traditional processes,
- landfill oriented,
- limited in its approach to integrated solutions,
- lacking in adequate recycling infrastructure, a well established recycling system and control over recycling markets,
- financially under-resourced,
- limited in experience and technical expertise in innovative technologies, and
- subject to poor public perception and lack of confidence.

It is necessary to address these deficiencies and develop a more informed, efficient and confident approach to waste management, which will identify and properly utilise available opportunities and technologies to provide an

effective, integrated, waste management infrastructure.

7.2 Analysis of waste composition

7.2.1 Planning for waste management starts with accurate data gathering in relation to the origin, quantity and composition of the waste stream. There can be significant variations in the proportions of different wastes generated in urban, rural and mixed areas. In common with many other EU countries, Ireland must address significant deficiencies in the quality and scope of data on waste. While the establishment of the national waste database in 1995 (NWD Report, EPA 1996) represented a major qualitative improvement in the level of information available, significant refinement of this database is necessary.

7.2.2 The ongoing installation of weighbridges at all landfills represents an important advance, but local authorities should undertake municipal waste characterisation studies, using the

methodology and procedures developed and published by the EPA in respect of both household and commercial waste streams. The information generated will be of assistance in determining policies locally, as well as contributing to the quality of the national waste database. An update of this database has recently commenced and completion of a database for 1998 is anticipated by mid-1999.

7.3 Alternative Collection systems

7.3.1 The choice of waste collection systems is of paramount importance if the overall objective of diverting significant quantities of waste away from landfill is to be successfully achieved. The type of collection system employed must reflect the recycling scenario which is to be pursued. For instance, a significant proportion of municipal waste is organic material - either separate or alternate bin collection is necessary to allow this material to be efficiently segregated and diverted to a central composting facility. Different approaches may be utilised in order to segregate



materials for recovery purposes, including -

- the use of multiple bins or other containers,
- alternate collection schedules,
- "bring" systems (e.g. bottle banks),
- reliance on civic amenity facilities, and
- "kerbside" collection systems.



7.3.2 Factors that require consideration in choosing the individual components of collection systems include -

- population density,
- the materials targeted for recovery,
- financial implications,
- recycling infrastructure, and
- the extent of public participation.

7.3.3 New practices and technologies have been developed outside Ireland in respect of the collection and segregation of materials for recovery purposes, and this experience should inform the choices exercised by local authorities and the private sector.

7.4 **Alternative Thermal and Bio Technologies**

7.4.1 Forward planning by local authorities can no longer focus solely on the provision of replacement landfill facilities. In the past,

notwithstanding public opposition to landfill development, it was seen as a relatively low cost/low technology option with which local authorities had considerable experience. With few exceptions, insufficient consideration has been given to reducing reliance on landfill by means of diverting waste to alternative recycling, recovery or treatment options. This situation must change radically.

7.4.2 Outside Ireland, a range of alternative technologies for waste treatment, often including energy recovery, are either fully developed and being applied in practice, or are well advanced in the course of development. They include -

- composting,
- anaerobic digestion,
- incineration with energy recovery, and
- thermochemical processes, such as gasification and pyrolysis.

7.4.3 Some of the issues associated with the use of alternative technologies are outlined below. These technologies involve -

- different environmental impacts,
- considerable variation in cost structures, and
- different sensitivities with regard to scales of operation.

No one solution can address all waste management requirements; consequently, the emphasis of this policy statement is on integrated waste management. Local authorities must identify and fully assess the various issues involved, with a view to identifying the nature and scale of facility, or mix of facilities, which in

their circumstances appears to offer the best balance between maximised output of materials or energy, and minimised environmental emissions, at reasonable cost.

7.5 Composting



Open air windrow composting, Dublin.

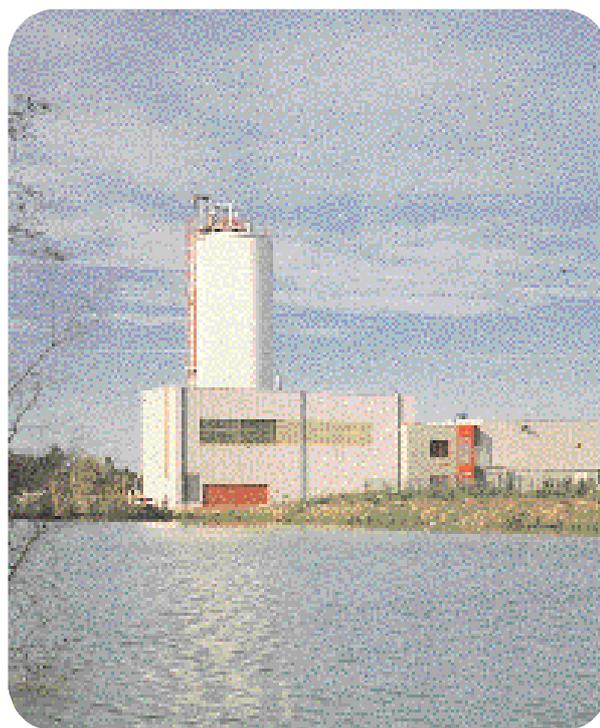
7.5.1 This is an aerobic treatment process which is well suited to dealing with the biodegradable organic fraction of household waste, and is readily within the scope of most local authorities. Two options may be considered - centralised composting facilities, which are generally only viable if servicing areas of high population density, and home composting schemes, which are more suited to low density rural areas.

7.5.2 In the case of centralised composting, organic wastes must be segregated either at source, by means of a dual bin or alternate collection system, or by mechanical sorting after collection. Separation at source tends to generate a cleaner waste fraction, which in turn produces a better quality compost. Potential environmental impacts can be readily addressed by careful site selection and the application of appropriate technologies to control emissions. In developed waste management systems, composting has successfully evolved from a low technology outdoor process to an enclosed, automated, high technology operation.

7.5.3 Given that organic materials constitute up to 40% of household waste, composting is a potentially significant technology which merits detailed consideration in any waste management planning process.

7.6 Anaerobic Digestion

This process has been used for many years to treat agricultural waste and sewage sludge. Its use in the treatment of organic municipal wastes is more recent but there are now a number of such plants in operation outside Ireland, and the scope for application of this process in Irish circumstances should be examined. Though more expensive plant is required for anaerobic digestion than for composting, it has the advantages of recovering energy and reducing emissions of methane to the atmosphere. Sludges and other wastes from the food industry are also amenable to treatment by this process. There is therefore a potential synergy which is worth exploring in appropriate circumstances.



Anaerobic digestion facility, Belgium.

7.7 Waste to Energy Incineration (WTE)

7.7.1 Mass burn WTE plays a major part in municipal waste management in many other EU countries, as well as further afield. In general, materials recycling and WTE incineration are fully compatible in an integrated approach to waste management. While landfill disposal of residues will always be required, mass burn WTE is effective in diverting over 70% of municipal waste away from landfill and, if properly controlled, has a considerably lower environmental impact than landfill.

7.7.2 WTE facilities involve a relatively high initial capital outlay and until recent years were viable only on a very large scale (c. 400,000 tonnes per annum (tpa) input, 30MW power output). Available technologies have now advanced so as to make small to medium scale WTE plants (c. 75,000 tpa input, 5.5MW power output) viable. Accordingly, it is possible that this technology has a role to play within an integrated waste management programme.



Mass burn municipal WTE facility, France.

7.7.3 Incineration processes have undergone major technical developments in recent years and emission scrubbing systems are now capable of

achieving very high environmental standards, albeit with implications for costs. In the medium to long term, emission control standards applicable to municipal waste incineration within the EU may be expected to increase significantly, to a level comparable with those currently applied to hazardous waste incineration.

7.7.4 In general, composting or materials recovery are preferable to incineration. However, where markets for recyclables are uncertain, or the recycling sector cannot reasonably be expected to cater for the volumes of waste diverted from landfill in accordance with EU or national targets, WTE could prove to be a beneficial option. Care is necessary, however, to ensure that the development of WTE capacity does not militate against long term investment in materials recycling.

7.7.5 The development of WTE capacity is consistent with, and could make a significant contribution to the implementation of, the Government's renewable energy policy which currently aims to increase the share of renewable energy to 10% of the country's installed electricity generating capacity by the year 2000, with subsequent increases to be delivered in a programme which will be the subject of a forthcoming Green Paper on sustainable energy.

7.7.6 There is scope for the use of waste (and residual materials from certain waste treatments) as a fuel in other combustion processes, including power generation and cement manufacture, subject to appropriate controls and emission standards. Elsewhere in the EU, cement kilns have traditionally burned a wide range of wastes,

including tyres, oils and plastics, and this option merits investigation, where circumstances are appropriate.

containing lower levels of contaminants. While developments are on-going, there are indications that pyrolysis has reached a stage where plants in the order of 20,000tpa -80,000tpa, to suit less



Thermolysis process, France.

7.8 Thermolysis

7.8.1 Technology is advancing and diversifying, and the waste industry is seeking to develop alternative thermal processes which offer a better environmental performance than, and may in the long term provide an alternative to, WTE incineration. Thermochemical processes such as gasification and pyrolysis produce fuel from waste by direct heating, rather than burning, of the waste. Heating at high temperatures results in the production of high calorific gases and solid or liquid fractions which can then be used for the generation of either heat or electricity.

7.8.2 These processes are under development, construction or operation in Europe, and have significant advantages over landfill in terms of energy production and greatly reduced volumes of material for final disposal. They also offer advantages over conventional mass burn WTE in that less atmospheric emissions are produced,

urbanised areas, may be viable and merit consideration.

7.9 Current feasibility studies

With a view to supporting the current planning process, two feasibility studies have been initiated to provide an in-depth analysis of certain waste treatment options in Irish circumstances. One study will examine the technical, environmental, financial and social advantages and disadvantages of thermal treatment as one possible element of an integrated waste management strategy in two distinct regions - the North East and the Mid-West. The second is a similar study of thermal and biological treatment options in the greater Dublin area. It is envisaged that these studies will be completed by the end of 1998 and that they will provide valuable guidance for local authorities on the practicality of these technologies.

8 Legislative developments

8.1 The legal context in which local authorities have traditionally carried out waste management functions has already changed significantly under the Waste Management Act, 1996 and future legislative developments will involve local authorities in a wider day-to-day relationship with business and the local community.

8.2 The 1996 Act -

- establishes basic legal structures and assigns functional responsibilities to public authorities,
- provides for a meaningful system of waste management planning by local authorities and the EPA; and
- introduced a system of stringent licensing by the EPA in respect of all significant waste recovery and disposal activities.

8.3 A significant number of subordinate Regulations addresses these matters and implements all relevant EU requirements in relation to waste management. By and large, these have been concerned with the fundamentals of environmental protection - the permitting of waste facilities, control of national and international waste movements, the phasing out of certain hazardous substances, the management of specific hazardous wastes, etc.

8.4 While the development of progressively higher environmental standards and regulatory controls is anticipated, the broad thrust of future waste legislation, at both EU and national level, is likely

to be more concerned with the utilisation of market-based instruments. Producer responsibility obligations (PROs) intended to influence production/consumption patterns, minimise waste generation and facilitate better waste recovery performance will be an increasingly significant aspect of waste management policy.

8.5 The 1996 Act clearly reflects the importance which must be attached to waste minimisation and recovery. It imposes an overarching obligation on agricultural, commercial and industrial activities to prevent or minimise the production of waste, and provides considerable regulatory powers in support of this objective. In particular, a wide range of PROs may be imposed on businesses, and PROs have already been introduced in relation to packaging and farm plastics waste. Future legislation will extend the scope of PROs to encompass other waste streams.

8.6 It is essential both for the achievement of national recycling targets and for the acceptance and success of future producer responsibility initiatives that businesses which, as members of Repak or the IFFPG, currently participate in packaging and farm plastics waste recovery schemes, are not put at a competitive cost disadvantage by non-participants who fail to discharge their obligations under the relevant Regulations. Current PRO initiatives deserve the highest level of support by way of active enforcement of the relevant Regulations by local authorities.

8.7 Forthcoming EU waste legislation will also give

an impetus to Community-wide measures which reflect the waste hierarchy. Apart from the proposed Directive on the landfill of waste, proposals which are currently under consideration are likely to involve -

- the separate collection and recovery of all spent batteries, and of the hazardous component of household wastes,
- obligations in relation to the composting of organic waste, and
- programmes for the recovery of specific waste streams, e.g. electrical goods, end-of-life vehicles and construction and demolition (C&D) waste.

8.8 This developing orientation has significant implications for the role of local authorities, who will generally remain responsible for the supervision and control of waste management activities within their functional areas and for the enforcement of waste management legislation. Local authorities will increasingly be required to interact with business and consumers, and to monitor compliance with legislative requirements regarding the composition, nature, marketing and recovery of products and packaging. Authorities have been given significant new powers under the 1996 Act to facilitate regulatory enforcement.

8.9 Local authorities have also been given substantial powers under the 1996 Act to influence the minimisation and recovery of wastes, and it is incumbent on them fully to utilise these powers in pursuit of their waste management objectives. For instance, local authorities are specifically authorised to engage in commercial waste recovery activities, either in their own right or in

partnership with private interests. They also have wide powers to control the presentation of municipal waste for collection and facilitate schemes for the separate collection of recyclable materials.

9 The local authority role - some specific considerations

9.1 Public education

9.1.1 Clearly, the making and implementation of meaningful waste management plans, which take full account of the considerations and objectives outlined above, will require local authorities critically to evaluate and redefine their traditional role in relation to waste management. Their core functions under the 1996 Act are clear - waste management planning, regulatory enforcement, and compliance with qualified obligations to provide waste collection services and disposal facilities in relation to household waste. In association with these functions however, local authorities have a critical role in influencing change in their communities and securing a better performance in relation to the minimisation and recovery of waste. Essentially, local authorities must undertake a developmental role which exploits the potential of local communities, voluntary groups and businesses in these regards. They should approach this task with imagination, vigour and a willingness to innovate.

9.1.2 Public involvement in waste minimisation and recovery is crucial. As consumers, households can exercise a certain degree of influence over the nature of goods and packaging which they purchase. They can give preference to -

- more durable products,
- concentrated products requiring less packaging,
- goods in reusable or returnable containers, and
- recyclable goods and goods containing a significant proportion of recycled material,

while avoiding as far as possible over-packaged and disposable goods. They can also greatly facilitate materials recycling by home composting and routine use of "bring" facilities for recyclables. The key to mobilising the general public to take a more responsible approach to waste, and support waste minimisation and recovery, is sustained public information and education. Local authorities that have not already done so should develop an on-going public awareness programme, aimed at generating a clear appreciation of the nature and scale of the waste problem, and providing practical guidance on the day to day choices which can be exercised by individuals and households. Such programmes can involve -

- media presentations,
- dissemination of information leaflets to households,
- meetings with local residents groups and voluntary organisations,
- presentations to schools and youth organisations, and
- advertising which clearly identifies the availability and location of civic amenity facilities and other

"bring" centres for recyclables.

9.2 Public support and participation

New waste management facilities are generally unwelcome to the public and invariably generate vigorous local opposition. In part, this is a legacy of past poor performance, but even well designed and managed facilities can have implications for those who live nearby, whether in the form of visual disamenity, traffic volumes, concerns regarding property values, or otherwise. As a result, new developments, though considered essential in the wider public interest, routinely encounter vigorous legal and political challenges which put these projects at risk, cause delay and increase development costs. Good planning, careful site selection, public education and awareness and a policy of openness and transparency can mitigate such opposition. Local authorities, working closely with local communities, should utilise a proportion of income from waste charges and gate fees to mitigate the impact of such facilities on these communities through appropriate environmental improvement projects.

10 A preferred planning approach

10.1 Waste management plans are not just a necessary response to a legislative requirement. They provide a vital rational framework within which various players can interact and achieve clearly understood objectives. Attainment of

Ireland's overall waste management objectives will require dynamic changes at all levels, and the planning process must reflect this dynamism - waste management plans should be subject to ongoing review and refinement.

10.2 Waste management plans should reflect an overall philosophy and must outline general objectives which will be pursued. It is also necessary that they establish more detailed and meaningful objectives, including where appropriate specific targets, towards which actions may be directed and against which performance may be measured. A general statement of intent, unsupported by a clear plan of action, will not serve a local authority well and would be a disservice to the developing waste industry and to the general public.

10.3 From inception, a plan should involve a triple-track approach, with work proceeding simultaneously and in parallel on each track to deliver an integrated waste management solution for the region concerned. The three essential components are -

- a comprehensive waste recovery programme, aimed in particular at substantially increasing recycling rates for municipal waste and C&D waste;
- planning for and the provision of requisite infrastructure, which should substantially come on stream within a period not exceeding 7 years, and
- access to adequate, environmentally sound, residual waste disposal capacity.



Modern landfill facility, Ireland.

10.4 Proper management of waste is a fundamental requirement for sustainable development and environmental protection. It is a major challenge for society, which must be tackled with vigour and imagination. In cooperation with Government, business and the community at large, local authorities have a pivotal role in delivering a radical change in national waste management performance. They must now discharge this role. Achievement of national objectives will, in summary, require -

- meaningful strategic planning, on a regionalised basis,
- a dramatic reduction in reliance on landfill, in favour of an integrated waste management approach which utilises a range of waste treatment options to deliver ambitious recycling and recovery targets,
- greater participation by the private sector in the provision of waste management services,
- a more effective and equitable system of waste charging which incentivises waste minimisation and recovery,
- greater utilisation of legislative instruments extending the scope of producer responsibility initiatives, and
- the mobilisation of public support and participation.