

# Overview of Landfill Directive – An Irish Perspective

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# Outline of Presentation

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- Directive and it's main provisions,
- Irish Law,
- Competent Authorities,
- Relevant Documentation
- *Make it interesting?*





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# Directive 1999/31/EC on the Landfill of Waste

.....Main Provisions





# Background

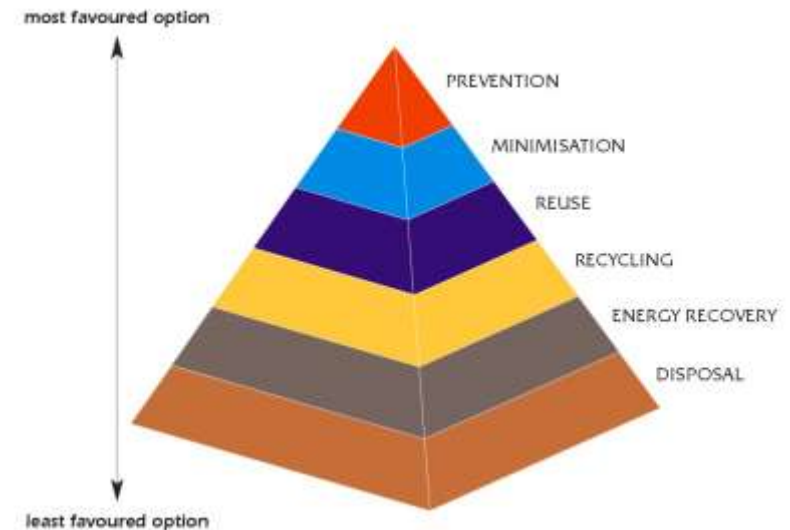
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- 22 July 1991: Cion Proposal
- 6 Oct 1995: Council - Common Position
- 22 May 1996: European Par Rejects
- June 1996: New Proposal
- 5 March 1997: Cion adopted new Proposal
- 26 April 1999: Final adoption of the Directive
- 16 July 1999.....2001



# Art 1 - Objectives

- Prevent and reduce environmental effects from landfilling via strict provisions during setting up, operation, closure and aftercare of a landfill.
- Compliance with the hierarchy of waste management.





# Art 2 - Definitions

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- The Directive shall be applied to landfills as defined in Article 2(g)
  - 'Landfill' means a waste disposal site for the deposit of the waste onto or into land (i.e. underground), including:
    - internal disposal sites (waste disposal in place of production)
    - a permanent site (i.e. more than one year) which is used for temporary storage





# Art 2 - Sites Excluded

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- **Excluded;**

- Facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere
- Storage of waste prior to recovery or treatment for a period less than three years
- Storage of waste prior to disposal for a period less than one year







# Art 3 - Operations Excluded

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- Spreading of sludges on soil for the purpose of fertilisation
- The use of inert waste for redevelopment/restoration or construction in landfills
- The deposit of non-hazardous dredging sludges alongside waterways
- The deposit of unpolluted soil, non-hazardous inert waste from mining and quarrying

*specific articles may not apply for landfills (<15kt/<1kt/y) on isolated island or in isolated settlements (Notification to Commission required)*







# Art 4 - Classification

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- Inert
  - Waste that does not undergo significant physical, chemical or biological transformation
  - Waste will not dissolve, burn, biodegrade or react





# Art 4 - Classification

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- Non Haz
  - Municipal waste
  - Waste not covered by paragraph (c) (Haz)
- Haz
  - Any waste covered by Article 1(4) of Directive 91/689/EEC on hazardous waste – listed showing the nature, constituents or properties listed in Annex I, II and III





# Art 5 - Waste Not Accepted

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- **Liquid** waste
- Waste which is: **explosive, corrosive, oxidizing, highly flammable** (defined in Annex III of Directive on haz. waste)
- **Hospital** and **clinical** waste from medical and veterinary establishments (defined as infections in Annex III of Directive on haz.waste)
- Whole **used tyres** (from July 2003) Shredded used tyres (from July 2006), excluding:
  - - used as engineering material (only whole tyres)
  - - bicycle tyres
  - - tyres with outside diameter above 1400 mm

**Article 5(3): "The dilution or mixture of waste solely in order to meet the waste acceptance criteria is prohibited."**





# Article 5

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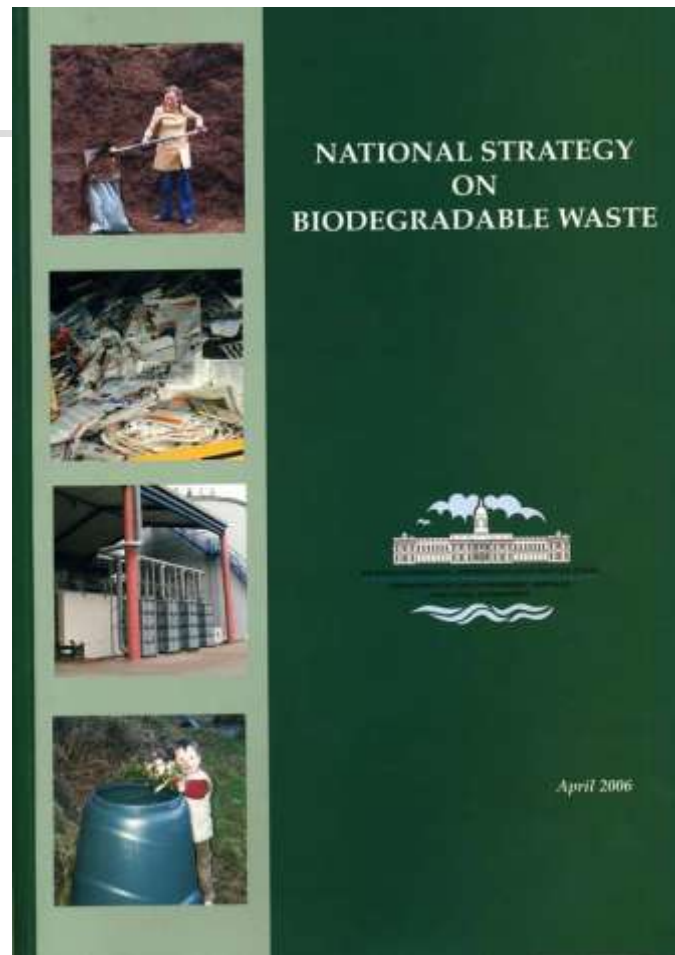
- **Biodegradable Waste**

- "*biodegradable waste*" means any waste that is capable of undergoing anaerobic or aerobic decomposition, such as;
  - Food and garden waste and,
  - Paper and paperboard



# Article 5

- develop national strategies for reduction using recycling, composting, biogas production and material/energy recovery





## Art 5 - Biodegradable Targets

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- 2006 – Reduce landfilling to 75% of BMW produced in 1995,
- 2009 – Reduce landfilling to 50% of BMW produced in 1995 and
- 2016 – Reduce landfilling to 35% of BMW produced in 1995
  - Ireland has taken the Art 5.2 derogation (2010 & 2013)



# Challenging Targets







# Articles 5 & 6

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Municipal Solid Waste –  
Pre-treatment & Residuals Management  
An EPA Technical Guidance Document

- Pre-Treatment
  - All waste accepted at landfill subjected to pre-treatment
    - Binding from July 16<sup>th</sup> 2001 for facilities commenced since that date
    - Binding from July 16<sup>th</sup> 2009 for all facilities operational at time of transposition (2001)





# Articles 5 & 6

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- NB – Pre-Treatment may not apply;
  - Inert waste – not technically feasible
  - Any waste does not contribute to Objectives of Directive;
    - Reducing quantity of waste or
    - Hazards to human health/environment





# Articles 7, 8 & 9

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- Permitting
  - Applicant
  - Conditions
  - Content
  - IPPC





# Art 10 – Cost Calculation

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- **Member States shall take measures to ensure that all costs involved in :**
    - Setting up
    - Operation
    - Financial security (as far as possible)
    - Estimated costs of closure and after-care for a period of at least 30 years
- are covered by landfill fees for disposal**





# Article 11 & 12

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- Waste Acceptance Procedures
  - Annex II – WAC
    - Characterisation
    - Compliance testing
    - On-site verification
- Control and Monitoring in Operational Phase – Annex III





# Art 13 – Closure and Aftercare

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- Closure according to;
  - permit,
  - at request of operator
  - at decision of authority
- Operator responsible for maintenance, monitoring, control as long as required by authority
- **Monitoring – Annex III –**
  - Meteorological data
  - Emission data: groundwater, leachate, gas (volume, composition)
  - Topography of the site (structure and composition, settling behaviour)





# Art 14 – Existing Landfill Sites

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## **Permit granted or in operation at the time of transposition of the Directive,**

- May not continue unless;
  - Operator presents conditioning plan
  - Competent authorities take definite decision whether operation can continue on the basis of the plan
  - In case of approval, authorisation of necessary work and setting of transitional period for completion
- ASAP & no later than 2009







# Annex 1 - General Requirements

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- Location

- Distance to residential areas, recreational areas, waterways. Waterbodies, agricultural or urban sites
- Existence of water or nature protection zones
- Geological and hydrogeological conditions
- Risk of flooding, subsidence, landslide or avalanches
- Protection of nature or cultural patrimony





# Annex 1 - General Requirements

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- Water and Leachate Management
  - Control water from precipitation; prevent surface or ground water from entering the landfill body/waste, leachate collection
- Gas Control
  - Geological barrier, sealing system
- Protection of Soil and Groundwater
  - Geological barrier, Collect & treat





# Annex 1 - General Requirements

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- Nuisance and Hazards
  - Minimise odour, dust, noise, traffic, birds, vermin, insects, fires
- Stability
  - Place in a way to avoid slippage and settling
- Barrier
  - Prevent free access and establish system to detect illegal dumping





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## **Council Decision (2003/33/EC)**

establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC





# Decision 2003/33/EC

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- **Landfill for inert waste**
  - short list of acceptable inert wastes
  - specific leaching limit values
- **Landfill for non-hazardous waste**
  - municipal waste
  - gypsum waste, stable/non-reactive hazardous waste
  - specific leaching limit values
- **Landfill for hazardous waste**
  - specific leaching limit values





# Decision 2003/33/EC

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- Basic Characterisation
  - Type, composition, consistency, leachability etc.
- Compliance Testing
  - Periodical checks
  - Key Variables
- On site Verification
  - Visual Inspection/loads





# Decision 2003/33/EC

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- Acceptable without testing
  - Landfill for inert waste
    - Single waste streams – glass, brick
  - Landfill for non haz waste
    - Municipal waste
    - Separately collected fractions
- Pre-treatment
- Contamination







# Decision 2003/33/EC

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- Testing requirements
  - Granular Non Haz
  - Granular Haz
  - Non haz gypsum
    - Sulphur, H<sub>2</sub>S ?
- Granular V Monolithic??
- Sampling and Testing according to Methods listed in Annex III – Developed by CEN





# Decision 2003/33/EC

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- Safety Assessment for Underground Storage (Site Specific)
- Securely Separated from Mining Activities
  - Geological
  - Geomechanical
  - Hydrogeological
  - Geochemical
  - Biosphere Impact Assessment
  - “Long-term” Assessment
  - Surface Facilities
  - Other Risks?



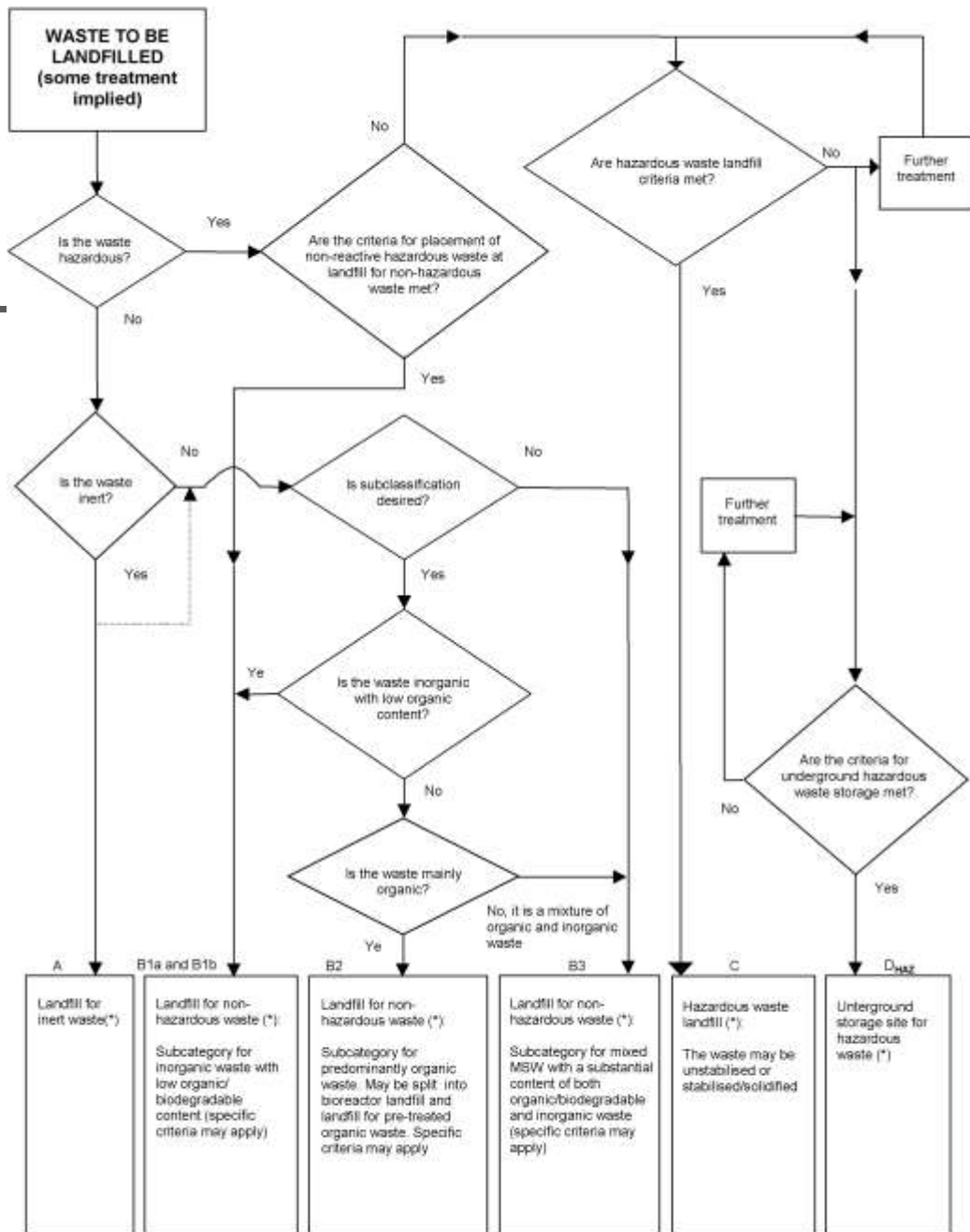
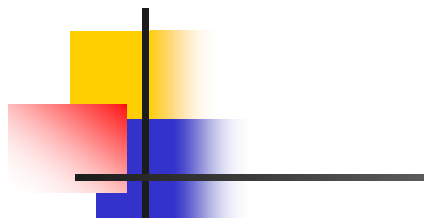


# Landfill TAC & WGs (Art 16/17)

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- EU Technical Advisory Committee
  - Implementation Issues
    - WG on Monolithic Waste – Definition?
    - WG Landfill Gas Emissions
- Diversity of Interpretation
- Costs & Feasibility
- Representative Sampling
- Storage/Sampling





(\*) In principle, underground storage is also possible for inert and non-hazardous waste.





# Legislation....Irish Law

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- Landfill Directive 1999/31/EC
  - S.I. 336 2002 & S.I. 337 2002
- Council Decision 2003/33 – WAC
  - S.I. 395 of 2004 (Consolidated)





# Role of EPA

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- CA
- Permitting/Licensing
- Guidance
  - Landfill Manuals
- Monitoring
- Inspection





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# The Irish Experience.....





# Traditional Waste Management

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1995

- Few Regulatory Controls & Little Strategic Planning
- Poor Design and Operational Standards for Facilities
- Minimal Expenditure & Low Technology to Conserve Costs
- 88.9% BMW to Landfill







# Key Policy

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1998 - Changing Our Ways

2002 - Delivering Change

2004 - Taking Stock & Moving Forward

2006 - **National Biodegradable Waste Strategy**

2008 - “Brown Bin Circular”

2009 – **EPA Guidance Pre-Treatment**

2009 – Commercial Food Waste Regulations





# Currently.....

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- Waste Management Enforcement
- Strategic Waste Management Planning
- Quality Waste Treatment, Recovery and Disposal Facilities
- Hugely Increased Waste Management Costs
- 62.5% BMW to Landfill (2008) – 90% (1995)
- *A lot Done..... a lot more to do*



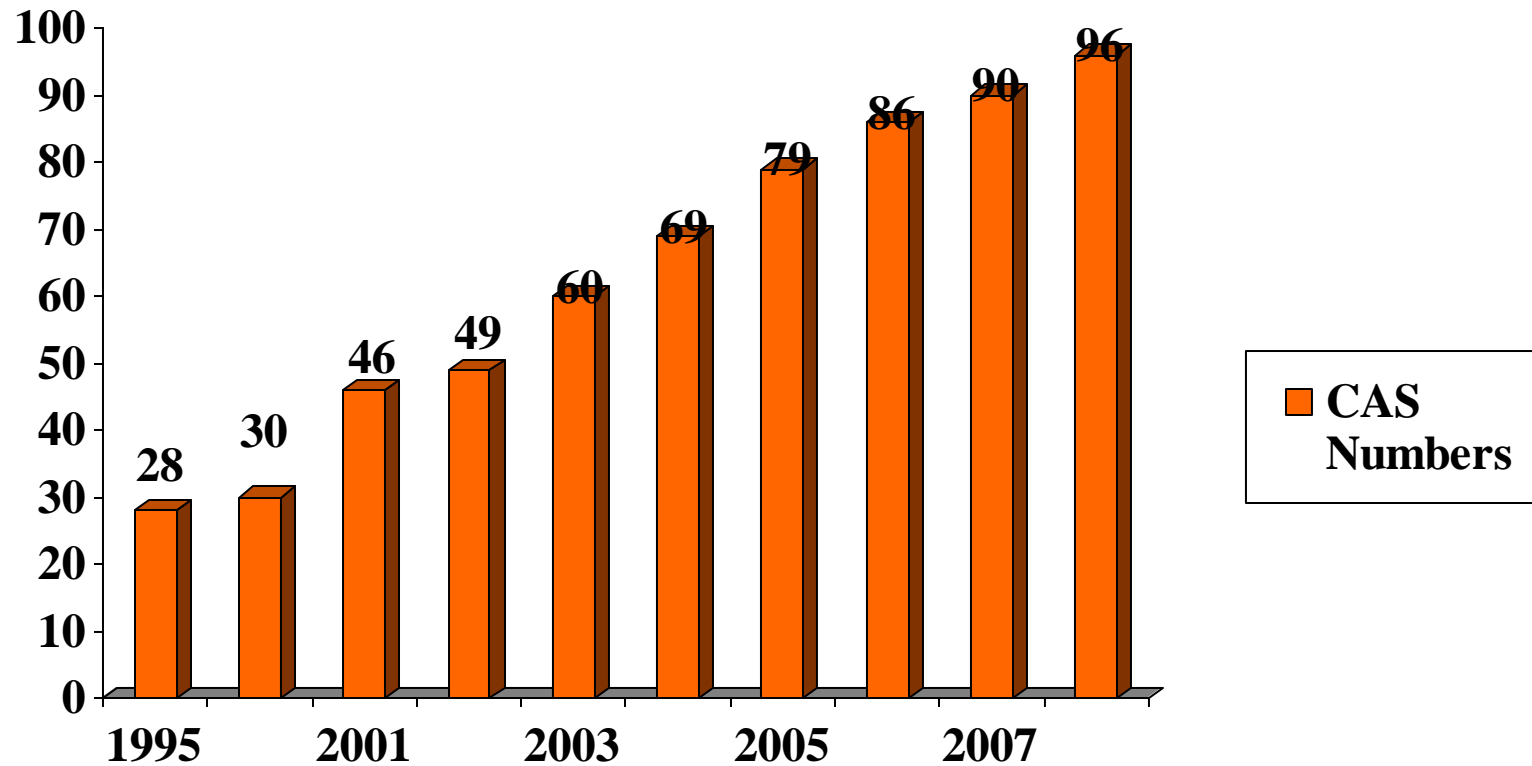


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- Waste Trends.....



# Existing Recycling Centres (Civic Amenity Sites)





## ***Paper/Cardboard Recycling Rates: 1995-2004***

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<b>Year</b>	<b>Recycling Rate (%)</b>
<b>1995</b>	<b>16.5%</b>
<b>2004</b>	<b>45.7%</b>
<b>2007</b>	<b>58.0%</b>





## Waste Stats – Headlines (2008 Data)

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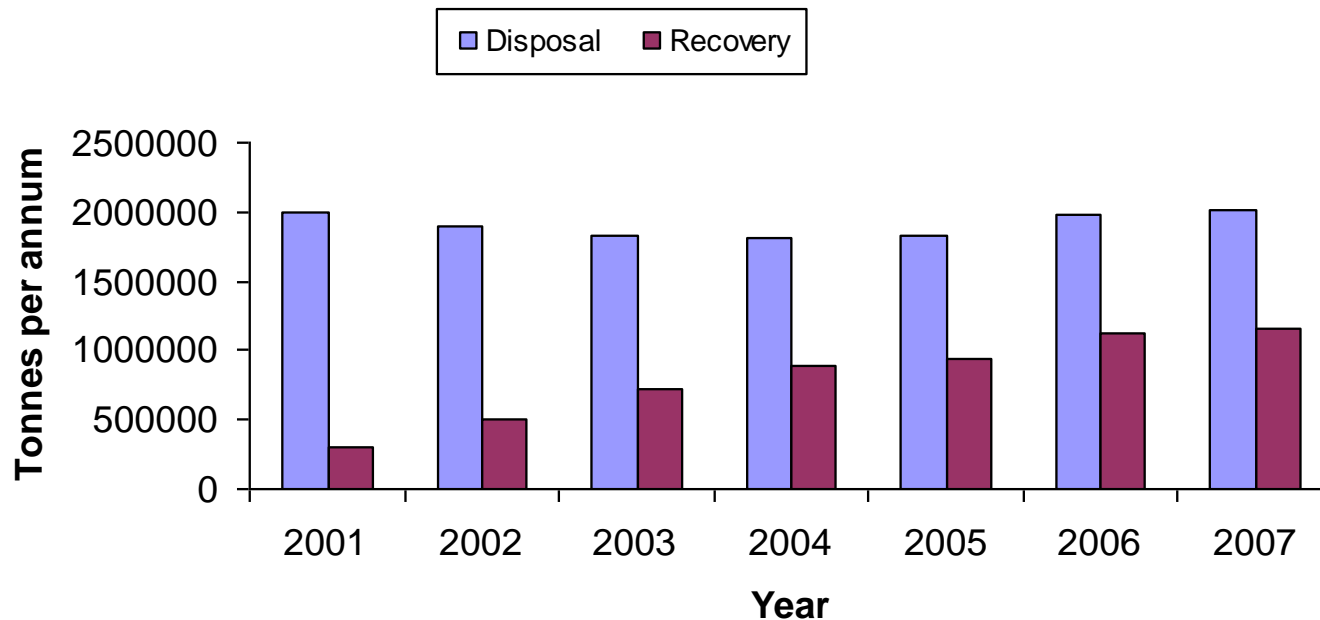
- Overall recovery – 38% - ↑ 1% (9% - 1998)
- Total MSW – 3.2M Tonnes – 0.73t per person (0.78t – 2007)
- Disposal Rate - 1% ↓
- Home Composting 7% ↑
- Organic Waste Collected x 2





# Waste Trends....

## Trends in recovery and disposal of municipal waste

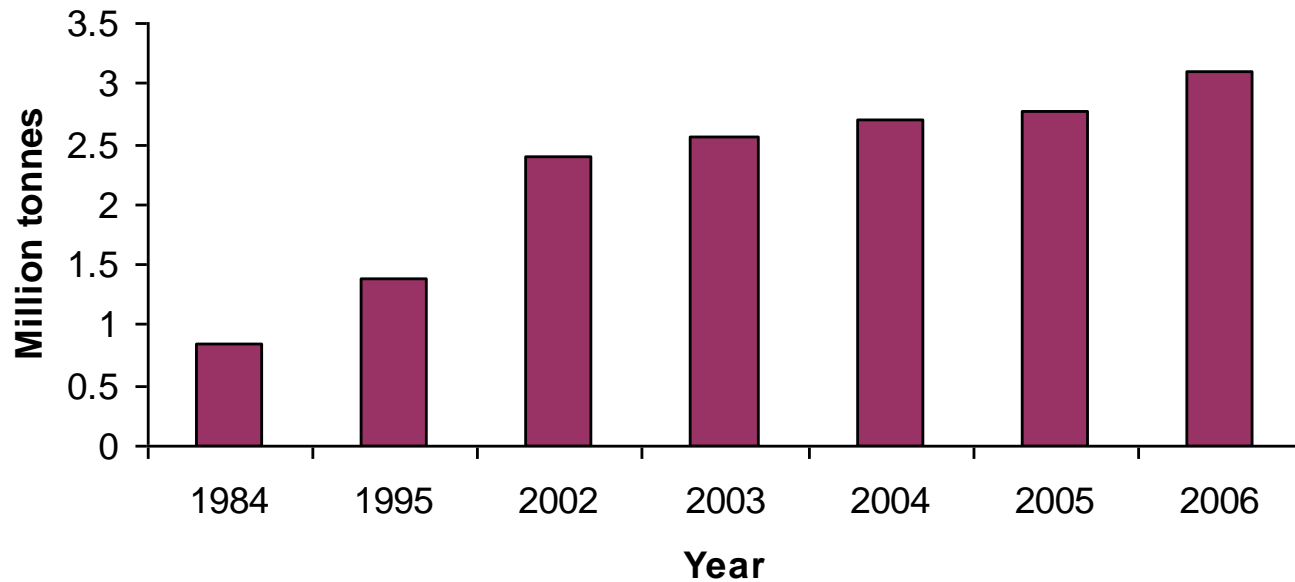




## Waste Trends.... (2)

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### Total household and commercial waste collected



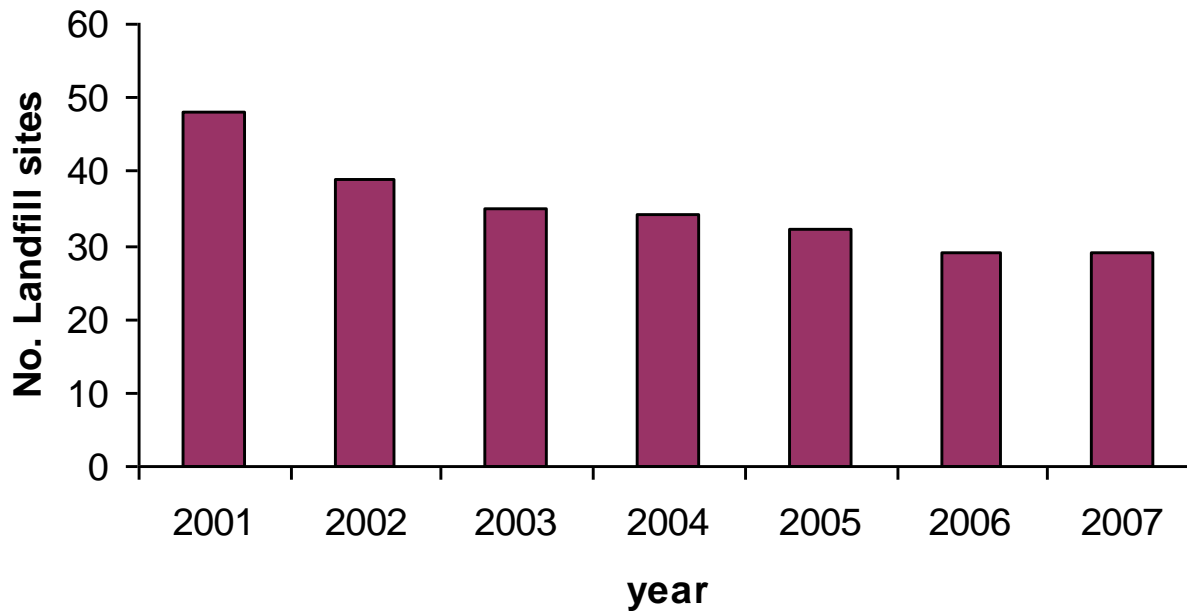




## Waste Trends.... (3)

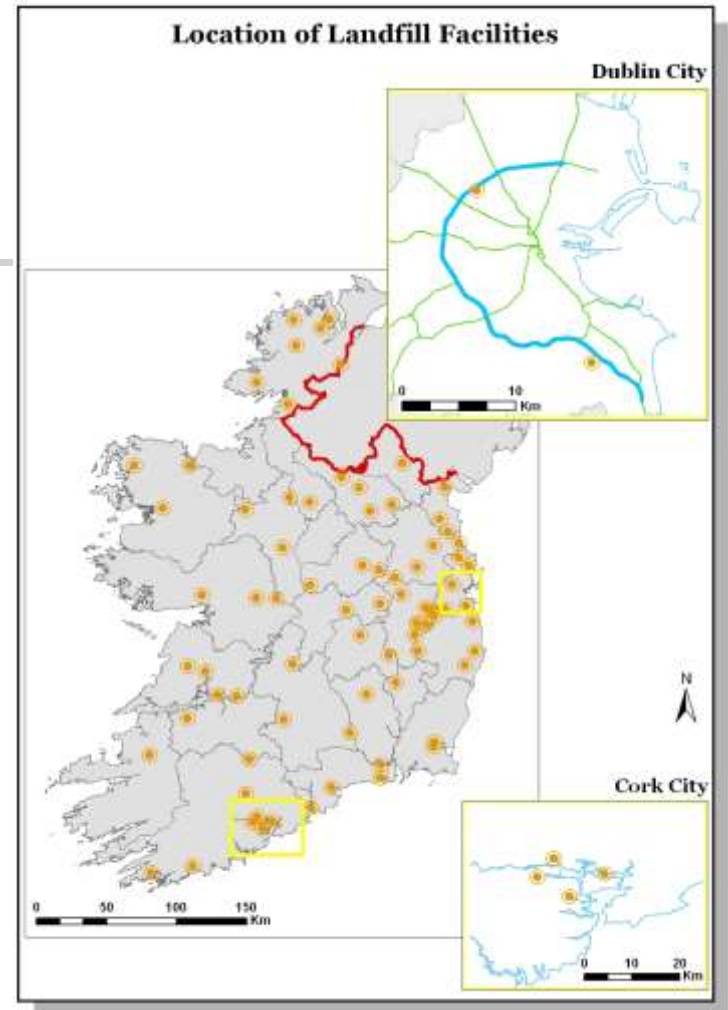
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**Number of Landfills accepting municipal waste**



# Landfills - 2008

- 79 licensed
  - 37 operational
  - 31 closed
  - 11 – not commenced/  
activities ceased





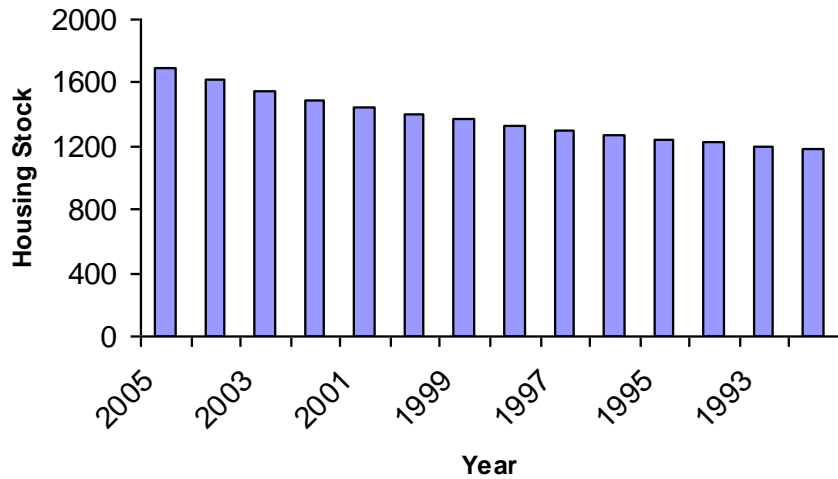
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- People Pressure.....

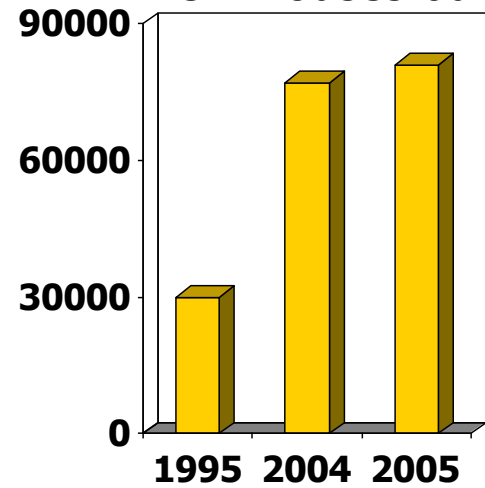


# Housing Stock

### Trends in Housing Stock



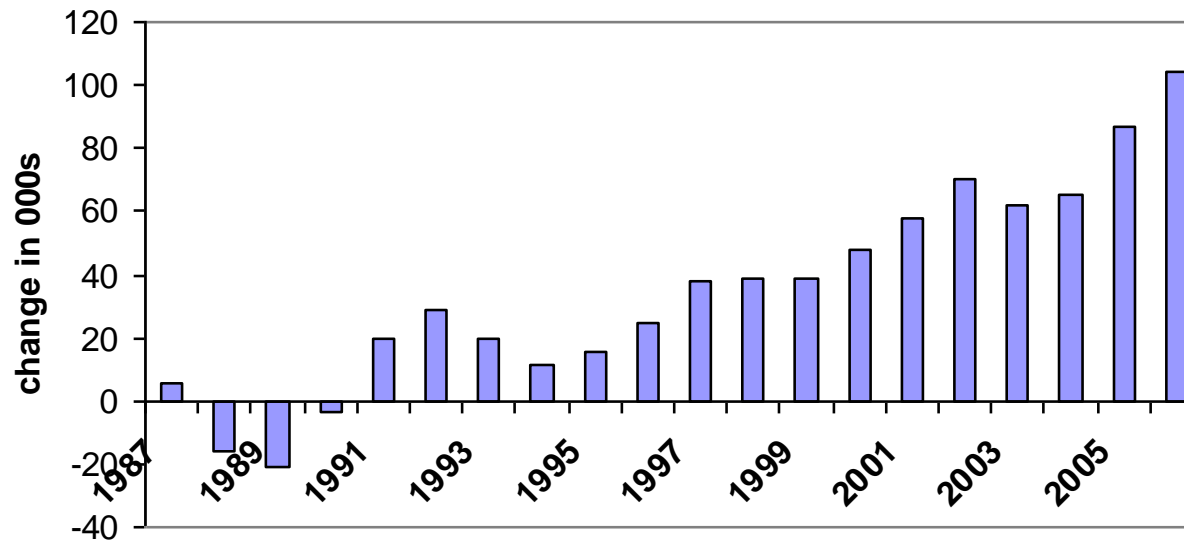
### New Houses built





# Population Trends

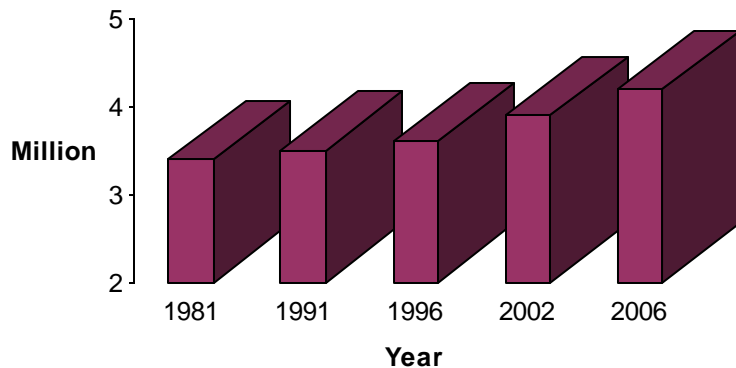
## Population Change



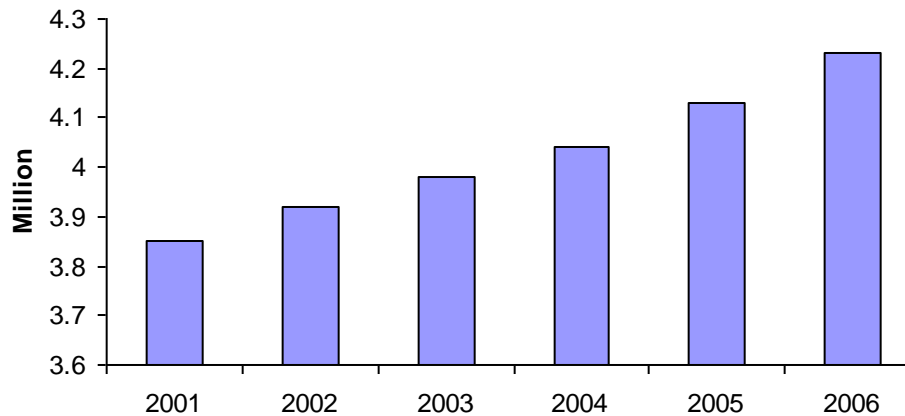


# Population Trends (2)

Population Trend



Population





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- Landfill Remediation...





# Landfill Remediation

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- Exchequer funding for 2006-2008
- Remediation of licensed closed LA landfills
- 75% Funding
- Capital expenditure - Restoration and Aftercare Plan (EPA)
- 19 sites covered – 2006-2008
- €30m approx.







# Historic legacy Landfills (1)

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- Operated between 1977 and 1997
- Section 22 of WMA 1996-2008
  - Section 26 – Hazardous
- S.I. 524 of 2008 (Certification of Historic unlicensed Waste Disposal and Recovery Activity)





# Historic legacy Landfills (2)

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- Inventory and Risk Assessment
- EPA Code of Practice
- Tier 1, 2 & 3
- EPA - Register & GIS tool
- To date 345 sites
- Pilot Programmes (May 11<sup>th</sup>)



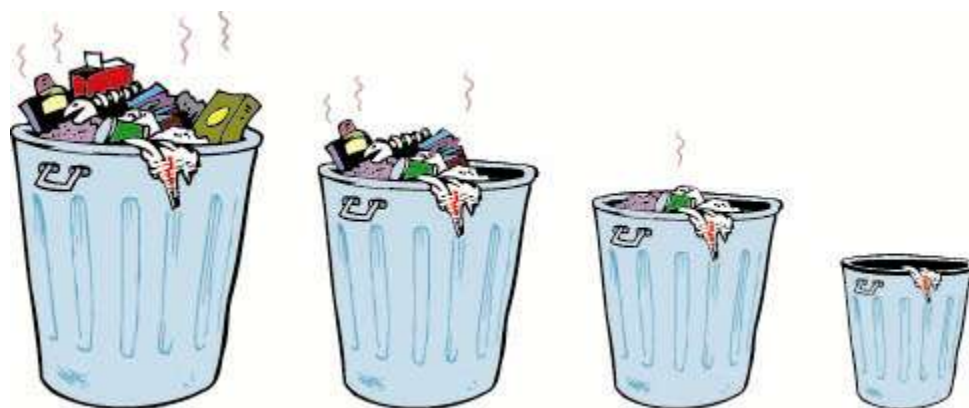


# Future?

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- Transposition of Waste Framework Directive
- New Government Policy
  - International Review?
  - Food Waste Regs?
  - Landfill Bans?
  - Levies?





Thank you for your attention.....

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