



National Waste Database

Factsheet Series 2001

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CONSTRUCTION AND DEMOLITION WASTE FACTSHEET

INTRODUCTION

The best estimate for construction and demolition waste generation in 2001 is 3,651,412 tonnes. Figure 1 illustrates the components of this estimate and shows that new construction, repair and maintenance activities are the greatest generators of waste followed by soil excavation and demolition activities. In addition, information provided by the Marine Institute indicates that 1,257,000 tonnes of dredging spoil were disposed of at sea in 2001.

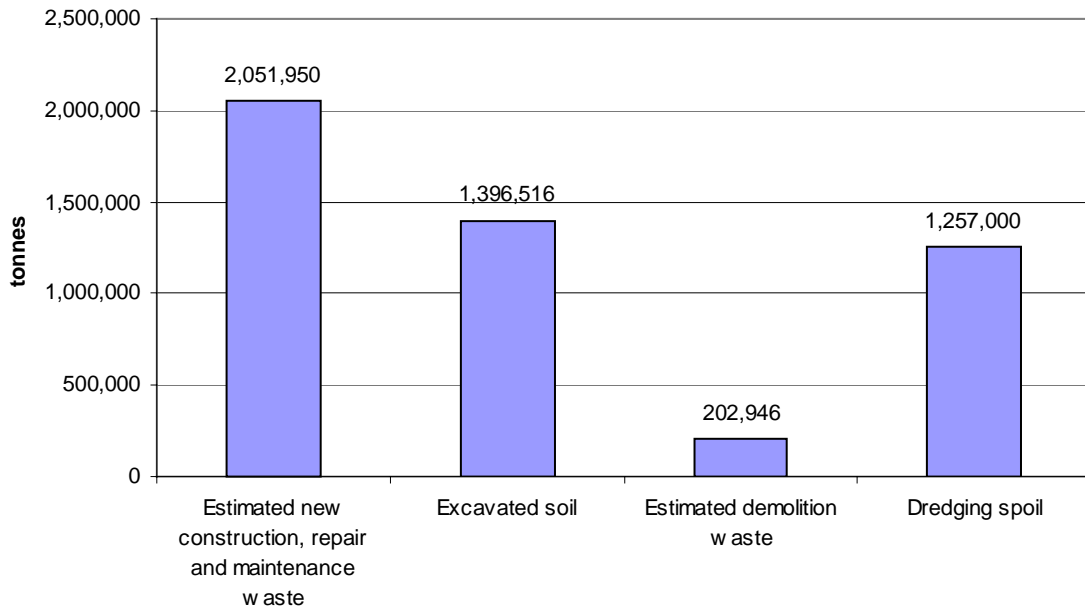


Figure 1 Construction and demolition waste and dredging spoil generated in 2001

METHODOLOGY AND RESULTS

Two methodologies were used to estimate the generation of construction and demolition waste in 2001. The first methodology uses factors developed by the USEPA. This is described in detail below. The second methodology is based on records of construction and demolition waste accepted for recovery and disposal at EPA-licensed and local authority-permitted facilities.

New construction, repair and maintenance of buildings waste

Information on the value of the output¹ in 2001 in each of the following categories of buildings construction, repair and maintenance is applied to unit waste generation factors² to estimate the quantity of waste arising from each activity:

- residential (new private and public housing);

¹ Department of the Environment and Local Government, 2002, *Construction Industry Review 2001, Outlook 2002-2004*, Stationery Office, Dublin.

² USEPA, 1998, *Characterization of building-related construction and demolition debris in the United States*, Report No. EPA530-R-98-010, U.S. Environmental Protection Agency, Municipal and Industrial Solid Waste Division, Office of Solid Waste.

- private non-residential (private and semi-state industry, commercial, agricultural, tourism and worship);
- productive infrastructure (water and sanitary services, airports, ports, harbours, energy and telecommunications); and
- social infrastructure (education, health, public buildings, local authority services and the Gaeltacht).

This model assumes that increased construction output will result in increased generation of construction waste. The link between output and waste production is uncertain; the factors used were derived in the USA and their applicability to Ireland would need to be tested through detailed waste characterisation studies at construction sites.

Table 1 presents the results of the calculations and indicates that the repair and maintenance of residential buildings is the greatest contributor to the waste stream. Table 1 does not present an estimate of waste arising from DIY activities. Neither does it present an estimate of the quantity of waste requiring management; an unknown proportion of waste is re-used or buried on construction or demolition sites. It is likely that a significant amount of waste arising from repair and maintenance activities would be more correctly classified as demolition waste; however, it is not possible to make this distinction with the available data. Studies conducted in the USA have established that the unit waste factors vary between new construction and repair and maintenance activities and this is assumed to equally apply in an Irish context. Of the total 2,051,950 tonnes generated, 289,882 tonnes (14%) were generated from new construction activity and 1,762,068 tonnes (86%) from repair and maintenance activities. Figure 2 provides an overview of the source of construction, repair and maintenance waste.

Table 1 Calculation of construction, repair and maintenance waste generated in 2001

Category	Value of construction output ¹ (million €)*	Buildings area (m ²)	Unit waste arisings ² (kg/m ²)	Waste arisings (tonnes)
Residential construction	3,785.8	7,306,418	21.34	155,919
New private non-residential construction	1,870.8	3,610,557	19.00	68,601
New productive infrastructure	1,121.2	2,163,864	19.00	41,113
New social infrastructure	661.3	1,276,278	19.00	24,249
Residential repair and maintenance	1,792.1	3,458,670	322.00	1,113,692
Private non residential repair and maintenance	360.8	696,327	422.00	293,850
Productive infrastructure repair and maintenance	193.7	373,832	422.00	157,757
Social infrastructure repair and maintenance	241.6	466,277	422.00	196,769
Total new construction, repair and maintenance waste	10,027	19,352,222	-	2,051,950

* Constant 1995 prices.

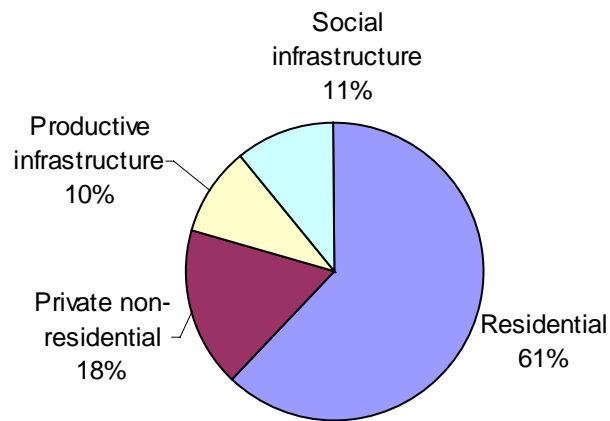


Figure 2 Source of construction, repair and maintenance waste

General excavations waste

A significant quantity of C&D waste is generated from general excavation, road building and land-clearing works. However, the methodology employed above for construction, repair and maintenance waste does not lend itself to calculating quantities generated from excavation, road building or land clearance. These quantities are estimated by examining the acceptance of soil at EPA licensed and local authority permitted sites. The total quantity of soil accepted at local authority authorised sites in 2001 was 1,396,516 tonnes. The acceptance of an additional 661,317 tonnes of construction and demolition waste at permitted facilities was recorded by local authorities. In addition, 459,692 tonnes of cover material were accepted at EPA-licensed facilities. To avoid double-counting waste that may have been accounted for in the estimate of construction, repair and maintenance of buildings waste above, only the known soil quantity (1,396,516 tonnes) is carried forward to total construction and demolition waste.

Table 2 General excavations waste

Soil accepted at local authority permitted facilities and estimated to have been accepted at unauthorised sites	Construction and demolition waste accepted at local authority permitted facilities	Cover material accepted at EPA-licensed landfills
1,396,516 tonnes	661,317 tonnes	459,692 tonnes

Demolition Waste

Eleven demolition companies were issued questionnaires for 2001, all of whom are members of the Demolition Contractors Association of Ireland, and four responses were received. A scale-up for the remaining companies was carried out based on an estimate of their relative market share as compared to the largest reporting company. It was assumed that the relative market share correlates with the quantity of demolition waste generated. The results of the extrapolation are outlined in Table 3. As stated above, it is likely that a proportion of the estimate for repair and maintenance waste in Table 1 would be correctly classified as demolition waste.

Table 3 also shows the fate of the 77,038 tonnes of reported demolition waste. The projected management routes are calculated proportionately from the reported quantities.

Table 3 Demolition waste

	Demolition waste (tonnes)	Re-used on site (tonnes)	Recycled off-site (tonnes)	Disposed of to landfill (tonnes)	Recovered at landfill (tonnes)
Reported quantity	77,038	8,264	8,408	13,750	46,616
Projected quantity*	125,908	13,506	13,742	22,472	76,187
Total	202,946	21,770	22,150	36,222	122,803

* Projected from reported quantities.

Dredging Spoil

Dredging spoil is generated as a result of two primary activities, maintenance dredging and capital dredging³. Maintenance dredging is conducted regularly in Irish ports for navigation purposes and this activity gives rise to predominantly erodible materials such as silt and sands. Capital dredging occurs when the significant removal of material is required during major engineering operations. Capital dredgings are generally bulky non-erodible materials such as rock and gravel.

A total of 14 dredging permits were granted during 2001 by the Department of the Marine and Natural Resources. The cumulative total permitted to be dumped at sea from dredging operations in 2001 was 4,433,000 tonnes. Based on information received from the Marine Institute (based on records submitted by port authorities), the quantity of dredging spoil disposed of at sea in 2001 was 1,257,000 tonnes.



Photograph 1 New housing construction

Construction and Demolition waste accepted at authorised sites

The second methodology for estimating quantities of construction and demolition waste generated is based on records of construction and demolition waste accepted for recovery and disposal at EPA-licensed and local authority-permitted facilities, as shown in Table 4. Based on this information, a best estimate of 65.4% of construction and demolition waste was recovered in 2001. The data providing this estimate contain certain assumptions. It is assumed that soil and construction and demolition waste accepted at local authority-permitted sites is recovered. It is also assumed that the deposit of an

³ Marine Institute, 1999, *Ireland's Marine and Coastal Areas and Adjacent Seas, An Environmental Assessment*.

estimated 500,000 tonnes of soil at unauthorised sites in one local authority area (as reported by that local authority) is disposal.



Photograph 2 Construction and demolition waste recycling at Ballealy Landfill

Table 4 Recovery and disposal of construction and demolition waste, 2001

Category of C&D waste	Disposal (tonnes)	Recovery (tonnes)
Cover material accepted at EPA-licensed landfills		459,692
C&D waste accepted for recovery at EPA-licensed landfills		347,341
C&D waste accepted for disposal at EPA-licensed landfills	750,297	
C&D waste accepted at local authority-permitted facilities		661,317
Soil accepted at local authority-permitted facilities		896,516
Soil estimated to have been accepted at unauthorised sites	500,000	
Total	1,250,297	2,364,866
Total recovery and disposal	3,615,163 tonnes	
Recovery rate	65.4%	
Disposal rate	34.6%	

There is not a significant difference between the two methods of estimating the generation of construction and demolition waste and this increases confidence in the magnitude of the estimates. In order to improve confidence in construction and demolition waste generation, recovery and disposal data, improved information on construction and demolition waste disposal and recovery is required. This means that all recovery and disposal operations must be appropriately authorised and records maintained. Local authorities should continue to take steps to ensure that all construction and demolition waste recovery and disposal sites are appropriately authorised. Similarly, the generators of construction and demolition waste should endeavour to maintain adequate records of waste generation and management.

Table 5 shows that progress is being made towards national targets for the recycling of construction and demolition waste. Increased efforts will be required to achieve the long term target of 85% recycling and dedicated facilities for the processing of construction and demolition waste will be required.

Table 5 Progress towards national targets for recycling construction and demolition waste

<p style="text-align: center;">Target⁴ (set in 1998, to be achieved by 2013)</p>	<p style="text-align: center;">Position in 2001</p>
<p>Recycling of 50% of construction and demolition waste by 2003, with a progressive increase to at least 85% recycling by 2013.</p>	<p>In 1998, 43.3% of construction and demolition waste was recovered. In 2001, a best estimate of 65.4% was recovered.</p>

⁴ Department of the Environment and Local Government, 1998, *Waste Management – Changing Our Ways*, A Policy Statement.