

Waste Statistics 2005

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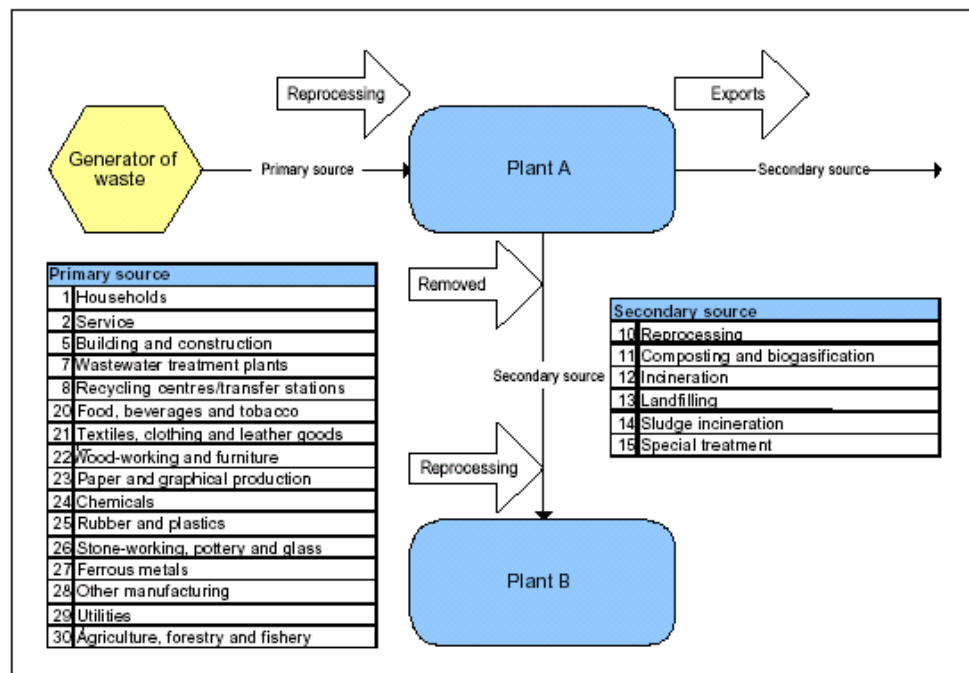
Preface

ISAG

The ISAG (Information System for Affald og Genanvendelse - information system for waste and recycling) was used for the first time in 1993. The 2005 report is the thirteenth consecutive report.

The ISAG is based on statutory registration and reporting from Danish waste-treatment plants for all waste entering or leaving the plants. Information concerning waste in the previous year must be reported to the Danish Environmental Protection Agency each year, no later than 31 January.

In order to avoid double reporting, it is important to distinguish between waste from direct (primary) sources and waste from plant (secondary) sources. The principle behind registration in the ISAG is shown below.



The Danish EPA carries out quality assurance of the information it receives and collects additional information from sector organisations and other sources. Each year the Danish EPA prepares a publication called "Waste Statistics", which gives an overview of waste composition and waste arisings in Denmark.

The publication also calculates the quantities of waste recycled, incinerated, and landfilled relative to the total waste amounts. Information is analysed between commercial sources and waste types.

New methods

Since 2001 data have been reported according to new rules set out in Statutory Order No. 619 of 27 June 2000 on waste (Statutory Order on Waste). These new rules have entailed a number of changes to the ISAG. For example, the source "manufacturing etc." was discontinued, so that since 2001 breakdown of industrial waste has been divided between 11 sectors.

Since 2001 there has been a shift between sectors in that waste volumes from industry have been falling, while waste volumes from the service sector have been rising. Waste volumes from industry thus fell by 37 per cent in the period 2000 to 2005, whereas in the service sector volumes increased by 65 per cent. From 2004 to 2005 waste volumes from industry and the service sector remained unchanged. That waste volumes from these two sources changed in the previous years may be due to faulty reporting as the source "manufacturing etc." was discontinued from 2001.

Structural changes, i.e. the fact that society is changing from an industrial to a knowledge society, may be another reason for the shift between the two sectors. The shift could be supported e.g. by the fact that from the early 1990s to 2003, the number of enterprises in traditional industry went down, while the number of new enterprises in the knowledge services industry increased dramatically.¹

Packaging waste is a fairly new waste type in the ISAG and it does not yet reflect the total amount of cardboard and plastic packaging waste collected for recycling in Denmark. Parties reporting to the ISAG are therefore encouraged to be especially aware of this reporting possibility.

The principles for categorising waste from recycling centres/transfer stations with regard to the fractions glass and paper and cardboard have likewise been changed compared to the years 1994 to 2000. See Annex 2 for a more detailed explanation of the principles for this re-categorisation.

Please note that the changes to the way data is reported to the ISAG mentioned above, mean that care should be taken when comparing waste arisings at sector level from 2001 and later with waste arisings from previous years.

The government's Waste Strategy 2005-2008 presents a shift in focus from use of waste arisings as the only indicator for target fulfilment, to the supplementary use of new waste indicators for resource loss and environmental impacts.

Reading guide

Waste Statistics 2005 follows the same structure as previous reports: Chapter 1 describes general trends in waste generation, while Chapter 2 deals with waste recycling.

Chapter 3 deals with generation and treatment of hazardous waste, and Chapter 4 describes developments in imports and exports, both for ordinary waste and waste subject to mandatory notification.

Chapter 5 describes developments in waste arisings and treatment of waste from individual sources. Furthermore, this Chapter assesses the level of achievement of targets for treatment in the Danish government's Waste Strategy 2005-2008.

Chapter 6 presents the latest figures for the number of Danish incineration plants and landfills.

In Chapter 7 the trend in waste arisings is compared with overall economic growth to show how these relate to each other. Furthermore, this chapter takes a look at expected future waste arisings.

For the first years, tables and figures will show figures for every second year; whereas for the most recent years, there will be figures for each year. This is due to visual scope and to make it possible to present the tables in a format big enough to read.

¹ Statistical Ten-Year Review 2006. Statistics Denmark.

Summary and conclusions

The 2005 reporting to the ISAG comprises 383 plants owned by 248 enterprises. In 2004, reports covered 394 plants owned by 256 enterprises. ²

Waste generation in 2005 is compared to targets for 2008 in the government's Waste Strategy 2005-2008.

The following summarises waste generation in 2005:

- In 2005, total reported waste arisings amounted to 14,210,000 tonnes, which is 851,000 tonnes, or 6 per cent, more than in 2004.
- If amounts of residues from coal-fired power plants are excluded from statistics, waste arisings in 2005 were 13,129,000 tonnes, which is an 8 per cent increase on 2004.
- If amounts of residues from coal-fired power plants and waste from the building and construction sector are excluded from statistics, total waste generation in 2005 amounted to 7,859,000 tonnes, which is 175,000 tonnes, or 2 per cent, more than in 2004. In other words, there has been an increase in total waste arisings, if residues and waste from building and construction are excluded. Waste from the building and construction sector is more sensitive to economic change than most other waste.
- The total rate of recycling was 67 per cent. The 2008 target for recycling is 65 per cent. In 2004 the total rate of recycling was 65 per cent.
- The total amount of waste led to incineration amounted to 24 per cent, plus an additional approx. 1 per cent left in temporary storage to be incinerated at a later time. The 2008 target for incineration is 26 per cent. The amount of waste which is incinerated has dropped by 2 per cent since 2004, while the amount in storage has remained almost unchanged.
- The total amount of waste led to landfills amounted to 7 per cent, which is two percentage points better than the overall landfill target of a maximum of 9 per cent landfilling in 2008. In 2004, 8 per cent was landfilled.
- The targets for treatment of waste from some of the individual sectors are still not being met: too little waste from the service sector is being recycled, and too much waste from industry is being led to landfills. However, the trend is going in the right direction.

² Primarily, the fall in the number of plants/enterprises is due either to discontinuation or they have merged with other ISAG-reporting plants.

1 Waste generation and treatment

1.1 Waste generation 2005 and developments 2004-2005

Waste generation in 2005 and developments in waste arisings from 2004 to 2005 are presented in Table 1.

Table 1. Total waste generation in Denmark	'000 tonnes								Change in % 2004-2005
	1994	1996	1998	2000	2002	2003	2004	2005	
Households	2,575	2,767	2,796	3,084	3,121	3,009	3,164	3,337	5
Domestic waste	1,662	1,655	1,702	1,676	1,700	1,677	1,692	1,711	1
Bulky waste	606	639	572	730	655	634	687	791	15
Garden waste	286	401	438	519	517	500	500	563	13
Other waste	21	72	83	158	246	198	284	272	-4
Service*	656	851	955	1,119	1,357	1,655	1,833	1,841	0
Industry*	2,309	2,632	2,783	2,948	2,311	1,841	1,855	1,854	0
Building and construction	2,433	3,088	2,962	3,223	4,044	3,785	4,496	5,270	17
Wastewater treatment plants	1,156	1,212	1,251	1,476	1,011	836	819	816	0
Slag, fly ash etc. (coal)	1,962	2,332	1,469	1,176	1,228	1,473	1,180	1,081	-8
Other	14	30	18	5	34	15	14	11	-21
Total	11,105	12,912	12,233	13,031	13,105	12,614	13,359	14,210	6

Source: ISAG; Danisco; the Association of Danish Recycling Industries and large scrap dealers; Elsam; Energi E2; and Reports to the Danish EPA on sludge from municipal wastewater treatment plants applied to farmland etc., and incineration of sludge at sludge incineration plants. (For sludge for recycling and incineration, figures from 2002 have been applied to 2005 - see footnote 26). Sludge is stated in wet weight, however from 2001 sludge for mineralisation which has been adjusted to 20 per cent dry matter. Sludge for long-term storage has been included in sludge amounts applied to farmland etc. Sludge for recovery has been included in sludge amounts for incineration.

The figures do not include imports of waste. Waste generation is stated as amounts of waste delivered to treatment plants from all primary sources. Primary sources include waste generators other than waste treatment plants (reprocessing plants, incineration plants, composting/biogas plants and landfills). Slag, fly ash and flue-gas cleaning products from waste incineration plants are therefore not included in the statement, as this would result in the waste being counted twice. Moreover, waste from the primary source recycling centres/transfer stations has been allocated among the other primary sources. The principles behind this allocation are explained in Annex 2.

Other waste includes the fractions packaging waste, plastic, sludge, and electrical and electronic equipment.

*The figures pertaining to service and industry from 2001 and onwards should be interpreted with some caution since there are fluctuations in the figures for the two sources which cannot be readily explained.

In 2005, Danish waste generation amounted to 14,210,000 tonnes. This corresponds to an increase of 6 per cent on the 2004 figure. Most of this increase stems from a 17 per cent increase in construction and demolition waste. Waste amounts of slag, fly ash, etc. have gone down 8 per cent.

Waste from households amounted to 3,337,000 tonnes in 2005. This is a 5 per cent increase in waste generation compared to 2004. The four types of waste from households either show no changes or have fluctuated slightly.

Domestic waste arisings remain almost unchanged from previous years. As Table 1 shows, domestic waste arisings have increased by a total of 3 per cent during the period 1994 - 2005, showing only very slight changes from year to year³. Domestic waste includes separately collected paper, glass, organic waste, and other waste.

The amount of bulky waste increased dramatically by 15 per cent, or 104,000 tonnes, compared to 2005. The increase in amounts of bulky waste can be ascribed e.g. to the fact that people have a greater disposable income and therefore home refurbishment etc. and procurement of new furniture etc. are more frequent.

³ Developments from 1994 to 2005 are described in more detail in section 1.5.

The amount of waste reported as other waste fell by 4 per cent, which corresponds to 12,000 tonnes. Packaging waste is included under other waste. Separated packaging waste became subject to reporting to the ISAG for the first time in 2001. However, this waste type is still not being reported to a sufficient extent. Therefore, packaging waste reported to the ISAG does not give a real picture of the total amount of collected packaging waste.

Waste from the service sector amounted to 1,841,000 tonnes in 2005, which is a slight increase on 2004; in absolute figures an increase of 8,000 tonnes. Waste from the service sector includes waste from institutions, trade and offices.

Waste from industry is more or less the same as in 2004. In reality, however, there has been a drop of in the waste volume of 1,000 tonnes compared to 2004.

Since 2001 there has been a shift between sectors in that waste volumes from industry have been falling, while waste volumes from the service sector have been rising. Waste volumes from industry thus fell by 37 per cent in the period 2000 to 2005, whereas in the service sector volumes increased by 65 per cent. From 2004 to 2005 the amount of waste from industry and the service sector has remained unchanged. That waste volumes from these two sources changed significantly in the previous years may be due to faulty reporting as the source "manufacturing etc." was discontinued from 2001.

Structural changes, i.e. the fact that society is changing from an industrial to a knowledge society, may be another reason for the shift between the two sectors. The shift could be supported e.g. by the fact that from the early 1990s to 2003, the number of enterprises in traditional industry has gone down, while the number of new enterprises in the knowledge services industry has increased dramatically⁴.

However, it is interesting how the shift between the two sectors seems to have evened out. This could be interpreted as reflective of a better registration practice, bearing in mind the structural changes mentioned above, and the fact that waste arisings might be settling at a natural level. Future statistics will tell if this is the case.

The generation of waste in the building and construction sector increased dramatically from 2004 to 2005. Volumes of construction and demolition waste amounted to 5,270,000 tonnes in 2005, which is 774,000 tonnes, or 17 per cent, more than in 2004. This increase is present in the following fractions: various non-combustible, concrete, asphalt, soil and stone, other recyclable waste, and other waste. These fractions rose by 22 per cent, 13 per cent, 3 per cent, 41 per cent, 18 per cent and 21 per cent, respectively. On the other hand, the fractions tile and other construction/demolition waste fell by 2 per cent and 11 per cent respectively. (See Table 30).

The explanation for the dramatic increase in the amount of soil and stone is increased activity in the building and construction sector. By far the major part, or 94 per cent, of waste generated by the building and construction sector is recycled. A total of 565,000 more tonnes of soil and stone were reported in 2005.

The amount of sludge from municipal wastewater treatment plants has remained more or less the same as in 2004. In 2005 the amount was 816,000 tonnes stated as 20 per cent dry-matter content. Therefore 3,000 tonnes less has been registered than in 2004.

⁴ Statistical Ten-Year Review 2006. Statistics Denmark.

⁵ As of yet, there is no statement from the municipal wastewater treatment plants of the amounts of sludge applied to farmland or incinerated at sludge incineration plants in 2005. For recycling and incineration, the 2002 figures from the Danish EPA's sludge statistics have therefore been used, while for landfilling the 2005 figures from the ISAG have been used. See "Sewage sludge from municipal and private wastewater treatment plants in 2002". Environmental Review No. 5, 2004, Danish EPA.

Waste generation at coal-fired power plants fell by 8 per cent, from 1,180,000 tonnes in 2004 to 1,081,000 tonnes in 2005. This is primarily due to the fact that Denmark's actual consumption of coal for energy generation fell significantly from 2004 to 2005. In the period 1996 to 2000, there was a fall in waste arisings from coal-fired power plants. This can be attributed e.g. to the fact that there has been a conversion of energy generation from coal to renewable energy resources. In 2000 and 2005, Denmark had net imports of electricity⁶.

1.2 Waste management in 2005

In the following, developments in Danish management of total waste arisings are described. Waste management is compared to treatment targets in the Danish government's Waste Strategy 2005-2008.

Table 2 shows that 9,545,000 tonnes, corresponding to 67 per cent of total waste arisings, were recycled in 2005. In absolute figures, this is an increase of 799,000 tonnes in recycled waste relative to 2004.

Table 2. Waste treatment and targets for 2008	1994		1996		1998		2000		2002		2003		2004		2005		2008		
	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	'000 tonnes	%	
Recycling	6,174	56	7,787	60	7,542	62	8,461	65	8,382	64	8,218	65	8,746	65	9,545	67	65		
Incineration	2,216	20	2,507	19	2,740	22	3,064	24	3,344	26	3,287	26	3,437	26	3,473	24	26		
Landfilling	2,613	24	2,524	20	1,868	15	1,489	11	1,194	9	981	8	1,024	8	983	7	9		
Special treatment	102	1	95	1	84	1	17	0	22	0	20	0	16	0	18	0	0		
Storage									163	1	108	1	136	1	191	1	0		
Total	11,105	100	12,912	100	12,233	100	13,031	100	13,105	100	12,614	100	13,359	100	14,210	100	100		

Source: same as Table 1, and the Danish government's Waste Strategy 2005-2008.

The total sum of the percentage distribution between the different treatment options for 2001, 2003, 2004 and 2005 does not add up to 100 per cent due to rounding.

Special treatment includes treatment of hazardous waste, including healthcare risk waste.

The amount of waste incinerated in 2005 came to 3,473,000 tonnes. This is inclusive of 339,000 tonnes of sludge from municipal wastewater treatment plants. This is actually a 36,000-tonne increase in waste amounts compared to the previous year, and it corresponds to 24 per cent of total waste arisings.

Waste led to landfill in 2005 amounted to 983,000 tonnes, which is a decrease of 41,000 tonnes from 2004. The rate of waste landfilled amounts to 7 per cent of total waste arisings. The percentage share of waste led to landfills fell by 62 per cent in the period 1994 to 2005, corresponding to a fall in landfilled waste amounting to 1,630,000 tonnes.

As the table shows, the relative distribution in recent years among treatment options has varied only little. Variations are often explained by developments in waste arisings in individual fractions. For example, variations in amounts of residues from coal-fired power plants and construction and demolition waste have large implications on the total rate of recycling, as these two waste types account for a large percentage of total waste arisings and typically have a rate of recycling of 90 per cent or more.

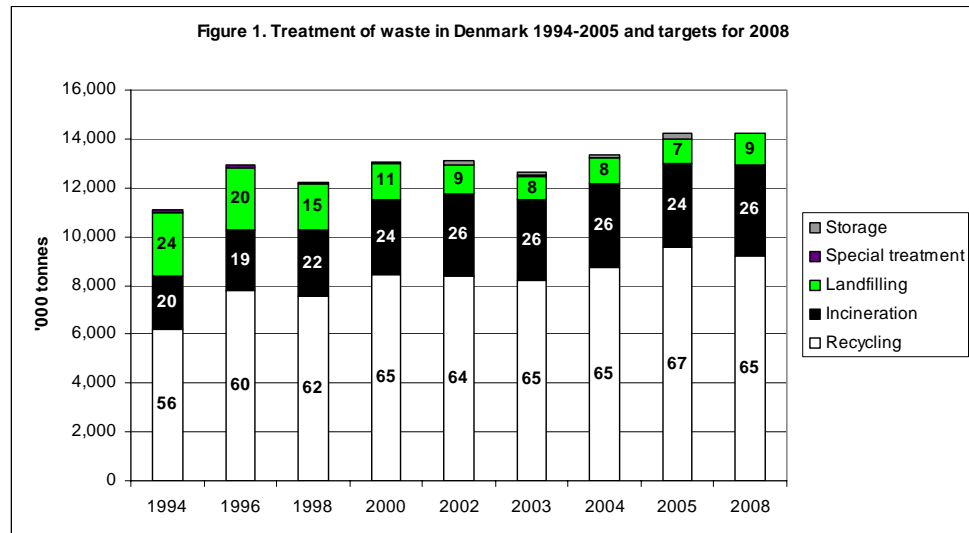
In the Danish government's Waste Strategy 2005-2008 the target of stabilising Danish waste generation is supplemented by a number of qualitative elements such as better exploitation of resources in waste, better quality in treatment of waste, and limitation of problems caused by environmental contaminants in waste.

Overall waste treatment targets for 2008 in the government's Waste Strategy 2005-2008 are 65 per cent recycling, 26 per cent incineration, and a maximum of 9 per cent landfilling.

⁶ Preliminary figures from the Danish Energy Authority on energy generation and consumption, and CO₂ emissions in 2004. Denmark's actual energy consumption of coal and coke was 184 PJ in 2004. In 2005, this figure has dropped to 156 PJ.

As can be seen from Figure 1, the overall targets for treatment of waste in 2008 were met in 2005 and were already met for the first time in 2003. In 2004, one per cent of total waste arisings was reported under the treatment option storage. Storage means temporary landfilling of waste suitable for incineration until incineration capacity is available. This means that the waste is stored until it can be incinerated for the purpose of energy/heat generation.

The general fall in the rate of waste led to landfills can be attributed to the ban on landfilling of waste suitable for incineration that came into effect on 1 January 1997. However, there are other important factors as well.



Source: same as Table 1. Note that total waste arisings in 2008 have been set to correspond to waste arisings in 2005. This should not be seen as a projection of developments in total waste arisings.

The amount of residues from coal-fired power plants was reduced significantly and recycled to a greater extent. Thus as opposed to previously, a larger proportion was recycled rather than landfilled.

1.3 Treatment of waste without residues and construction and demolition waste

Amounts of residues from coal-fired power plants not only depend on energy consumption in Denmark, but also on exports of electricity to Sweden and Norway. Furthermore the change from use of coal and coke as fuel to natural gas and renewable energy continues to take pace.

Since 1996, when Denmark's electricity exports to Sweden and Norway were particularly large, amounts of residues decreased steadily up until and including 2005. In fact, this is a 1,251,000-tonne decrease (see Table 32), corresponding to a 54 per cent reduction. In the period 2004 to 2005, there has been a fall of 99,000 tonnes, which is primarily attributable to falling exports of electricity to e.g. Sweden, Norway, and Germany. Thus, net exports fell by 148 per cent from 2004 to 2005.⁷

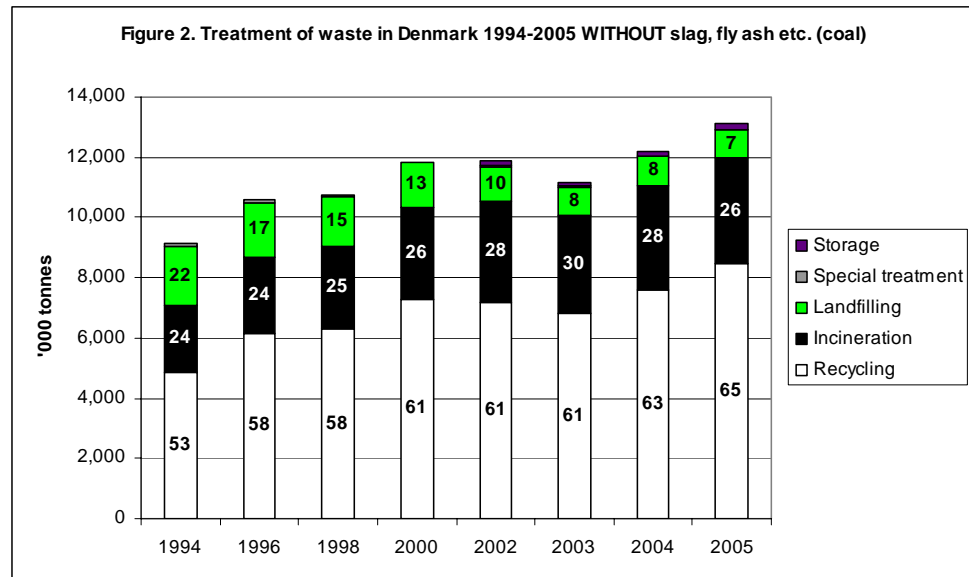
Naturally, this has an impact on developments of total waste arisings, but as residues have a very high rate of recycling, it also has an impact on the ability to meet overall treatment targets.

⁷ The Danish Energy Authority's monthly electricity statistics.

A similar picture is seen for construction and demolition waste. As discussed in section 5.4, the rate of recycling of construction and demolition waste typically reaches around 90 per cent.

It is therefore interesting to look at the distribution of waste between the different treatment options, if residues and construction and demolition waste are excluded from the statistics.

Figure 2 shows the distribution between the different treatment options when residues from coal-fired power plants are excluded from the statistics.



Source: same as Table 1.

When residues are excluded it is seen that 65 per cent of remaining waste was recycled in 2005, which is an increase of 880,000 tonnes compared to total amounts in 2004. This more or less means that a substantial part of the increase in overall waste arisings is to be found in construction and demolition waste volumes, of which, as mentioned, a large part is being recycled.

The rate of remaining waste in 2005 which was incinerated is 26 per cent, which is to say that 36,000 tonnes more waste were incinerated in 2005 than in the year before. The proportion of waste led to landfills was 7 per cent. In absolute figures this means that 23,000 tonnes less waste was landfilled in 2005 than in 2004.

In absolute figures this means that in 2005, apart from residues, 13,129,000 tonnes of waste were generated, corresponding to an increase of 8 per cent on 2004. Of this, 8,492,000 tonnes were recycled, whereas 3,473,000 tonnes were incinerated, and 955,000 tonnes were landfilled. Moreover, 18,000 tonnes were given special treatment and 191,000 tonnes have been temporarily landfilled until incineration capacity becomes available⁸.

Total waste amounts without waste from coal-fired power plants increased by 44 per cent from 1994 to 2005.

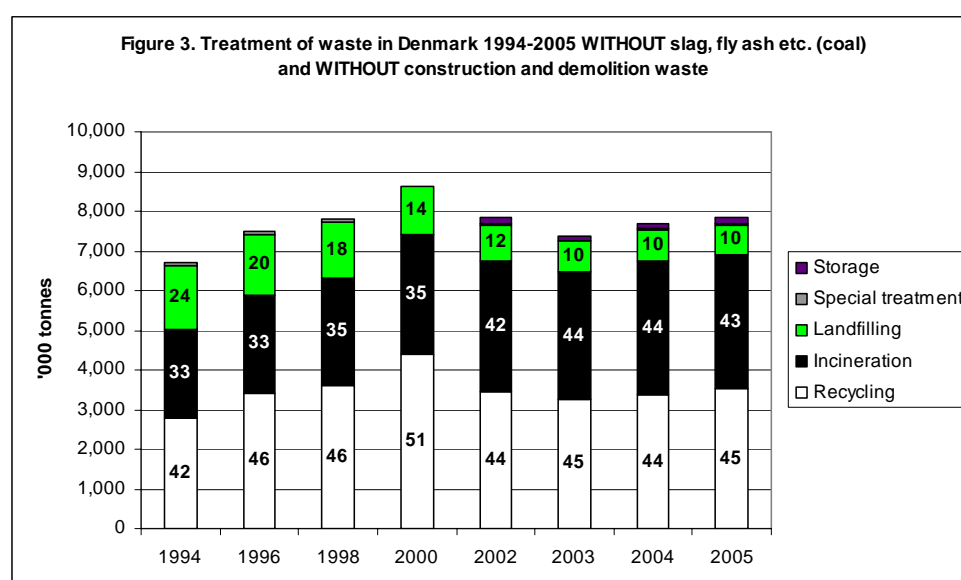
Waste from the building and construction sector has also been excluded from statistics in Figure 3. As is evident, this will make the recycling rate fall and the rate of waste which is incinerated or landfilled grow.

⁸ Exemption clause in Section 37(3), Danish Statutory Order on Waste (Statutory Order No. 619 of 27 June 2000).

In absolute figures, waste generation without residues and without waste from building and construction amounted to 7,859,000 tonnes in 2005, which is 175,000 tonnes, or about 2 per cent, more than in 2004. In other words, there has been a slight increase in total waste arisings, if residues and waste from building and construction are excluded. This increase is explained by an overall increase of waste from households of 173,000 tonnes from 2004 to 2005. (See Table 1).

Residues from coal-fired power plants and construction and demolition waste are recycled to a very large extent: in 2005, 97 per cent and 94 per cent respectively, cf. Chapter 5. As can be seen from Figure 3, the high recycling rates for these two sources contribute significantly to the overall recycling rate for the remaining waste. Since, proportionally, construction and demolition waste constitutes a large part of overall waste arisings, it means that the recycling rate falls when this waste type is excluded from the statement.

The recycling of residues from coal-fired power plants and construction and demolition waste will therefore also have a great influence on fulfilling the treatment targets set out in the government's Waste Strategy 2005-2008.



Source: same as Table 1.

1.4 Treatment by source and waste type

Figure 4 shows total waste generation in 2005 analysed by source and treatment option. Figure 5 shows waste generation analysed by waste type and treatment option. Tables with detailed figures are given in Annex 1.

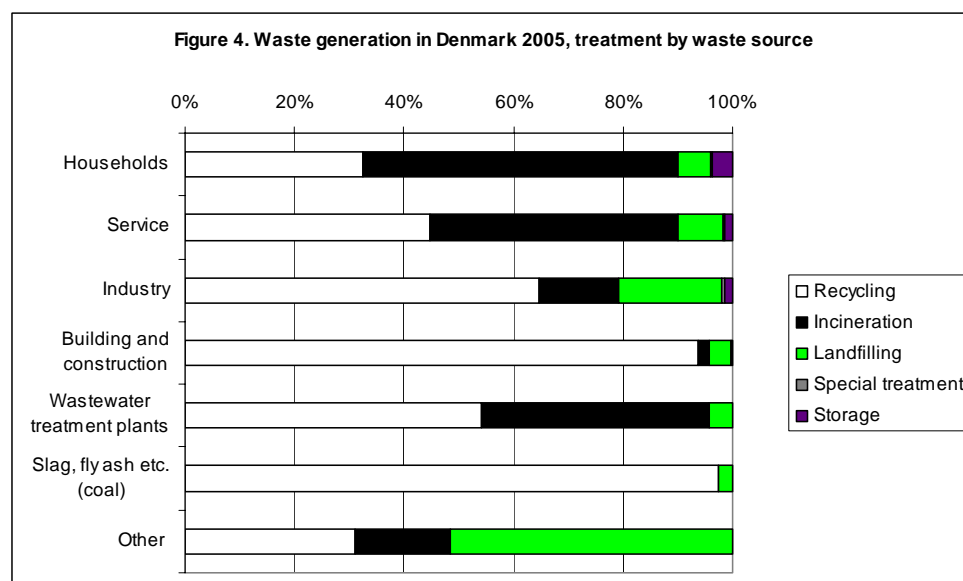
Figure 4 shows that especially waste from the building and construction sector, power plants, industry and wastewater treatment plants is characterised by very high recycling rates. Consequently, the targets for recycling set out in Waste Strategy 2005-2008 have been met for waste generated by these four sectors (see Annex 1).

The high rate of recycling for industry is especially attributable to recycling of ferrous metal. Despite the fact that the amount of waste from industry led to landfill is falling, too much waste from this sector is still being landfilled with 19 per cent against a target of 15 per cent. A challenge lies ahead to divert larger amounts of the other fractions besides ferrous metal from landfilling to incineration or recycling.

The recycling rate for waste from the service sector has increased considerably. Thus, in 2005, 45 per cent of the waste from this sector was recycled, whereas, in 2004, only 36 per cent was recycled. The target for recycling of waste from the service sector is 50 per cent by 2008.

Too much waste is still being landfilled: 8 per cent against a target of 5 per cent. For the service sector the challenge is therefore to divert more waste from landfilling to recycling.

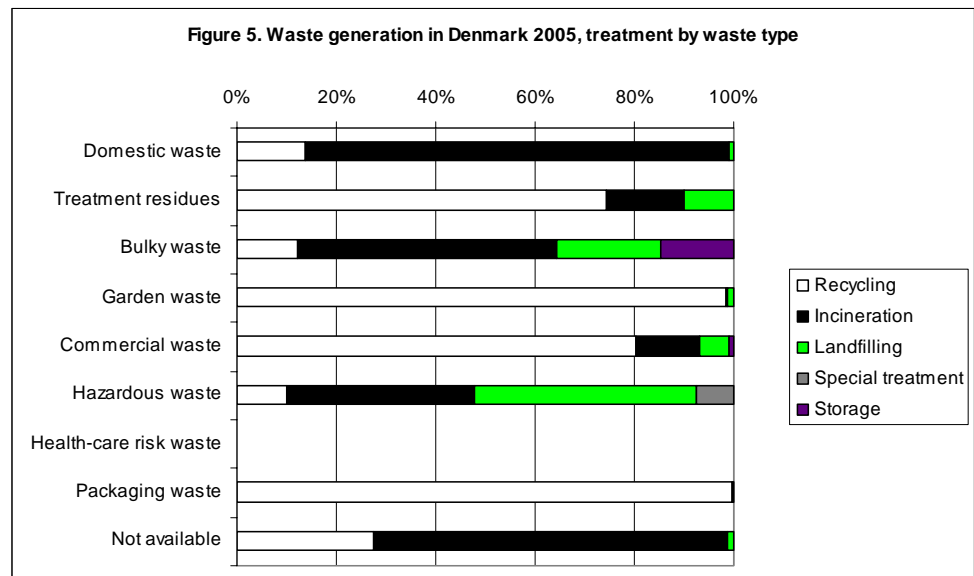
Treatment of the waste type domestic waste has almost reached the target for 2008. Thus, in 2005, 18 per cent of this waste type was recycled against a target of 20 per cent by 2008. In the period 1994 to 2005 the recycling rate fluctuated between 14 per cent and 18 per cent (see also Figure 7).



Source: same as Table 1.

The target is to reach a recycling rate for domestic waste of 20 per cent in 2008, whereas the targets for incineration and landfilling are 80 per cent and 0 per cent respectively. The rate of domestic waste incinerated in 2005 reached 81 per cent, whereas about 1 per cent was led to landfill⁹.

⁹ Note that domestic waste suitable for incineration must be assigned to incineration. However, for islands that are not connected by land to an incineration plant there is an exemption from this duty of assignment.



Source: same as Table 1.

1.5 Developments in waste generation 1994-2005

Table 3 shows total waste arisings in Denmark for the years 1994 to 2005. Breakdown of the information is by source.

There was a 28 per cent increase in total waste arisings in the period 1994 to 2005.

Waste generation was largest in 2005.

In the period 1994 to 2005, waste arisings have fluctuated, but have stayed at around 13 million tonnes in recent years, however with greater increases in 2004 and 2005. As in 2004, the great increase in waste arisings in 2005 is due to growing waste amounts from building and construction. Soil and stone is the waste type that has grown the most, due to a growing number of building and construction works. The total amount of construction and demolition waste increased by 775,000 tonnes from 2004 to 2005. Of this increase, soil and stone accounted for 565,000 tonnes.

The increase in waste arisings in the first half of the 1990s may be due partly to the fact that coverage of the ISAG system increased and partly due to real increases in waste arisings.

The large amounts of waste in 1996 were primarily due to particularly high amounts of residues from coal-fired power plants in 1996, which in turn were due to large exports of electricity to Sweden and Norway. However, increasing waste arisings in 2000 must be attributed to an increase in waste from households and waste from building and construction. The same applies for 2002. As mentioned, for 2004 and 2005, the increase in waste arisings must be ascribed to more waste from the building and construction sector.

Table 3. Total waste generation in Denmark	'000 tonnes								Change in % 1994-2005
	1994	1996	1998	2000	2002	2003	2004	2005	
Households	2,575	2,767	2,796	3,084	3,121	3,009	3,164	3,337	30
<i>Domestic waste</i>	1,662	1,655	1,702	1,676	1,700	1,677	1,692	1,711	3
<i>Bulky waste</i>	606	639	572	730	655	634	687	791	31
<i>Garden waste</i>	286	401	438	519	517	500	500	563	96
<i>Other waste</i>	21	72	83	158	246	198	284	272	1,200
Service*	656	851	955	1,119	1,357	1,655	1,833	1,841	181
Industry*	2,309	2,632	2,783	2,948	2,311	1,841	1,855	1,854	-20
Building and construction	2,433	3,088	2,962	3,223	4,044	3,785	4,496	5,270	117
Wastewater treatment plants	1,156	1,212	1,251	1,476	1,011	836	819	816	-29
Slag, fly ash etc. (coal)	1,962	2,332	1,469	1,176	1,228	1,473	1,180	1,081	-45
Other	14	30	18	5	34	15	14	11	-19
Total	11,105	12,912	12,233	13,031	13,105	12,614	13,359	14,210	28

Source: same as Table 1.

Other waste includes the fractions packaging waste, plastic, sludge, and electrical and electronic equipment.

*The figures pertaining to service and industry from 2001 and onwards should be interpreted with some caution since there are fluctuations in the figures for the two sources which cannot be readily explained.

2 Recycling

2.1 Recycling by fraction

Table 4 shows the amounts separated from the different waste fractions for the purpose of recycling in the form of either reprocessing, composting or biogasification. The Table does not show the total amount of waste generated by the individual fraction.

Fraction	1995	1996	1998	2000	2002	2003	2004	2005
Hazardous waste	28	53	56	51	46	85	89	66
Paper and cardboard	557	548	623	702	688	691	677	763
Bottles and glass	92	99	104	108	135	118	140	165
Plastic	26	29	33	40	51	50	54	63
Food waste/other organic waste	198	193	194	252	151	160	165	143
Waste electrical and electronic equipment					15	17	26	27
CFC-containing refrigerators and freezers					6	5	8	9
Branches, leaves, grass etc.	376	452	551	632	652	675	663	722
Ferrous metal (1) and (4)	983	899	968	1,192	788	670	606	716
Automobile rubber	9	8	31	34	45	47	76	55
Concrete	485	942	780	1,054	980	1,016	1,119	1,262
Tile	75	93	123	227	250	228	280	272
Other construction/demolition	526	532	507	311	331	453	632	549
Asphalt	694	737	654	551	563	723	731	739
Waste wood	10	15	24	81	55	74	58	90
Soil and stone	344	391	388	460	1,291	834	1,360	1,925
Other recyclable waste	108	166	228	373	362	360	306	314
Fly ash and slag from coal-fired power plants, including bio fly ash and slag (2)	1,276	1,213	859	770	802	1,090	851	783
Fly ash and slag from other sources, however not from waste incineration plants	3	2	2	1	60	54	60	59
Flue-gas cleaning products (plaster, TASP, sulphuric acid) (2)	288	416	400	406	388	323	329	270
Sludge from municipal wastewater treatment plants applied to farmland, composted or biogasified (3)	918	918	875	1,132	568	354	354	354
Sludge from other sources	50	81	141	83	129	117	153	147
Total	7,046	7,787	7,541	8,460	8,357	8,144	8,738	9,494

Source: the ISAG and (1) Recycling industries and other large scrap dealers. (2) Elsam and Energi E2. (3) Reports to the Danish EPA on sludge from municipal wastewater treatment plants applied to farmland etc. Data has been delayed a year so that 2002 figures are used for 2003, 2004 and 2005, and 2001 figures are used for 2002 (see also 5.6). Sludge for long-term storage has been included in the amount for recycling. (4) To avoid double reporting, figures have been corrected for ferrous metal removed from waste incineration plants.

The Table shows that in 2005 9,494,000 tonnes of waste were recycled. This is 9 per cent, or 756,000 tonnes, more than in 2004. The increase is primarily due to more recycling of soil and stone, while there has also been an increase in the amount of concrete and ferrous metal recycled. Fly ash and slag from coal-fired power plants fell by 68,000 tonnes, while other construction/demolition waste has gone down by 83,000 tonnes. Otherwise, there are no large fluctuations evident for the individual fractions.

2.2 Paper and cardboard

Consumption of virgin paper and the rate of collection of waste paper in the period from 1994 to 2004 are shown in Table 5.

The total amount of waste paper collected in 2005 amounted to 677,000 tonnes. This constitutes a reduction of 14,000 tonnes or 2 per cent relative to the amounts collected in 2004.

	1994	1996	1998	2000	2002	2003	2004	2005
Consumption of virgin paper (1)		1,181	1,304	1,332				
Waste paper collected in Denmark (2)	352	548	623	702	688	691	677	763
Collected waste paper as a percentage of the amount of virgin paper consumed		46	48	53				
Danish waste paper led to Danish paper mills (2)		318	334	424	396	406	410	427
Net exports of waste paper (1)		220	242	287				

Source: (1) Statistics on recycling of packaging waste 2004. Danish EPA, Environmental Project No. 1129, 2006. (2) The ISAG reports.

Table 6 shows collected paper by source and by packaging waste and remaining waste types. Not surprisingly, the largest amounts of waste paper are collected from households, the service sector and industry. The largest amounts of packaging waste are collected from the service sector.

Type	Source	1994	1996	1998	2000	2002	2003	2004	2005
Packaging waste	Households	-	-	-	-	11,784	10,071	6,933	4,991
	Service	-	-	-	-	28,567	32,777	31,616	71,538
	Industry	-	-	-	-	33,881	41,879	47,268	53,416
	Building and construction	-	-	-	-	1,257	1,552	1,401	1,233
	Wastewater treatment plants	-	-	-	-	2	101	187	126
	Other	-	-	-	-	0	0	0	0
Subtotal		-	-	-	-	75,492	86,380	87,404	131,305
Other waste types	Households	142,668	160,469	208,486	181,315	192,275	210,893	213,806	244,878
	Service	102,889	173,289	203,537	227,790	221,747	272,316	277,463	255,276
	Industry	106,463	214,015	210,278	292,069	197,002	119,693	97,157	129,677
	Building and construction	5	163	255	401	1,921	1,278	803	2,123
	Wastewater treatment plants	0	2	1	3	1	8	7	28
	Other	1	213	0	0	0	0	0	0
Subtotal		352,027	548,150	622,557	701,579	612,947	604,189	589,236	631,982
Total		352,027	548,150	622,557	701,579	688,438	690,570	676,641	763,287

Source: ISAG reports 1994-2005. Note that double reporting in 1998 apparently explains why the total amount is about 20,000 tonnes too high.

Packaging waste is a new waste type in the ISAG and it does not yet reflect the total amount of cardboard packaging waste collected for recycling in Denmark. In 2004, 292,000 tonnes of paper and cardboard packaging waste were collected for recycling¹⁰.

As is apparent from the table, the amount of paper collected for recycling has gone up by about 86,646 tonnes from 2004 to 2005. This increase primarily covers increasing amounts of packaging waste from the service sector (up 39,922 tonnes) and increasing amounts of other paper from industry (up 32,520 tonnes). The table also shows that the amount of recycled paper from households in the period 1994 - 2005 has increased by about 107,000 tonnes.

¹⁰ Reporting of packaging waste to the EU.

The amount of paper collected from the service sector has gone up by around 17,735 tonnes, or 6 per cent, amounting to 326,814 tonnes in 2005. The amount of paper collected from industry has increased by around 38,668 tonnes corresponding to 27 per cent compared to 2004.

In the ISAG, waste delivered to a recycling centre/transfer station is reported with the commercial source "recycling centre/transfer station". This means that it is not stated whether the waste originated from households or from other primary commercial sources. From 2001, recycling centres/transfer stations must indicate a split between waste types and primary source. Since this is not yet routine, the ISAG Secretariat has divided the waste as shown in Annex 2.

2.3 Plastic

Table 7 shows the amount of plastic collected for recycling, reported to the ISAG. In 2005 this amount was 63,058 tonnes, which is an increase of around 9,061 tonnes from 2004. However, it is assumed that some plastic has been collected and exported directly for recycling abroad without having been registered at a Danish treatment plant. It is therefore probable that the amount of waste plastic collected in Denmark is more than 63,058 tonnes.

Type	Source	1994	1996	1998	2000	2002	2003	2004	2005
Packaging waste	Households	-	-	-	-	1,682	1,130	692	2,352
	Service	-	-	-	-	2,764	2,413	2,808	5,893
	Industry	-	-	-	-	1,342	3,197	1,602	1,477
	Building and construction	-	-	-	-	26	30	93	170
	Other	-	-	-	-	0	0	0	0
<i>Subtotal</i>		-	-	-	-	5,814	6,771	5,195	9,893
Other waste types	Households	1,372	1,206	1,233	1,585	3,165	1,737	3,146	4,588
	Service	2,546	2,928	4,021	7,411	10,126	10,124	12,807	12,826
	Industry	24,678	24,551	27,517	31,150	30,713	29,287	31,234	33,533
	Building and construction	1	29	67	117	719	1,896	1,420	2,212
	Wastewater treatment plants	0	0	0	0	6	8	8	5
	Other	0	0	129	0	81	116	189	0
<i>Subtotal</i>		28,597	28,714	32,966	40,263	44,809	43,170	48,802	53,165
Total		28,597	28,714	32,966	40,263	50,623	49,941	53,997	63,058

Source: ISAG reports 1994-2005.

The fraction plastic covers both production waste, plastic packaging waste, and other plastic waste, with individual figures shown in Table 7.

Packaging waste is a new waste type in the ISAG and it does not yet reflect the total amount of waste plastic packaging collected for recycling and reprocessing in Denmark. Therefore, in the following description of plastic recycling, ISAG figures have been supplemented with information from statistics on waste packaging.¹¹

The statistics show that in 2004, 28,439 tonnes of waste plastic packaging were collected and recycled in Denmark. Of this amount, 17,131 tonnes were exported for recycling abroad.

The total amount collected corresponds to 16.3 per cent of the total Danish consumption of plastic packaging. This constitutes a drop from 2004, when 17.4 per cent of waste plastic packaging was collected for recycling. Waste plastic of the type polyethylene (PE) accounted for 70 per cent of collected amounts.

¹¹ Statistics for recycling of packaging waste 2004. Environmental Project No. 1129, 2006.

2.4 Bottles and glass

According to the ISAG reports, 165,094 tonnes of bottles and glass were collected for recycling in Denmark in 2005. This is 24,622 tonnes more than in 2004.

As seen in Table 8, the amount of glass collected for recycling went up by 55,566 tonnes, or 51 per cent, during the period 1994 to 2005. However, the figures fluctuate somewhat throughout the period. At the same time it is seen that the amount of glass packaging collected from households has dropped in the period 2002 to 2004.

Table 8. Glass collected for recycling 1994-2005, stated by source and in tonnes

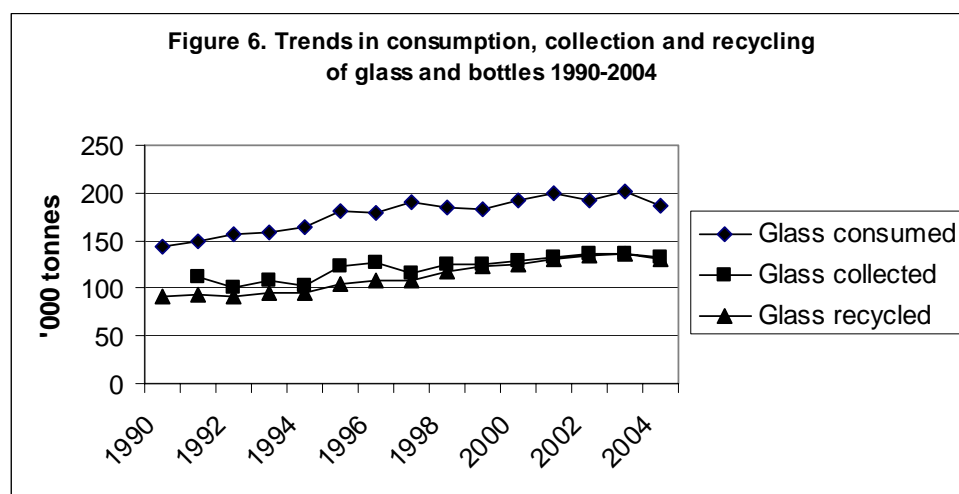
Type	Source	1994	1996	1998	2000	2002	2003	2004	2005
Packaging waste	Households	-	-	-	-	103,895	74,128	75,947	87,325
	Service	-	-	-	-	6,824	14,052	9,455	5,334
	Industry	-	-	-	-	6,667	12,800	11,984	21,166
	Building and construction	-	-	-	-	0	0	6	0
	Other	-	-	-	-	0	0	0	0
<i>Subtotal</i>		-	-	-	-	117,385	100,979	97,393	113,824
Other waste types	Households	69,064	64,903	83,033	82,351	6,863	2,833	11,652	11,728
	Service	25,507	34,282	20,076	18,262	4,859	2,529	5,132	5,020
	Industry	14,778	53	27	7,453	473	6,435	12,722	4,823
	Building and construction	0	199	455	234	5,420	5,050	13,573	29,689
	Wastewater treatment plants	0	0	0	0	0	0	0	10
Other	178	0	0	0	0	0	0	0	
<i>Subtotal</i>		109,528	99,438	103,590	108,300	17,616	16,847	43,079	51,270
Total		109,528	99,438	103,590	108,300	135,001	117,826	140,472	165,094

Source: ISAG reports 1994-2005.

It is evident from Table 8 that by far the major part of the glass collected is packaging waste: thus, packaging waste accounted for 69 per cent of the total amount of glass in 2005.

However, the ISAG does not provide a complete picture of the overall material flow. This is especially significant with regard to recycling of bottles and glass, which is a process comprising several collection, reuse and treatment steps before glass becomes waste.

Therefore, in the following description of overall glass recycling, ISAG information is supplemented with information from statistics for packaging waste¹², cf. Figure 6.



Source: Statistics for recycling of packaging waste 2004. Environmental Project No. 1129, 2006.

¹² Statistics for recycling of packaging waste 2004. Environmental Project No. 1129, 2006.

Apart from minor fluctuations, consumption of glass packaging increased throughout the period.

Correspondingly, the amount of glass packaging collected and recycled has increased. The amount of glass collected was 132,000 tonnes in 2004. This is around 6,000 tonnes less than in 2003. Amounts of recycled glass also dropped, namely from 137,000 tonnes in 2003 to 131,000 tonnes in 2004.

This means that in 2004 the collection rate as a percentage of total consumption reached 70 per cent, which is an increase of 2 percentage points compared to 2003. In 2003, the recycling rate as a percentage of total consumption reached 68 per cent.

Bottles for beer and soft drinks manufactured for reuse are not included in this statement. Refillable glass bottles, on average, make 30 trips. If these bottles were manufactured as single-use bottles, it would give an increase in waste glass of around 310,000 tonnes.

2.5 Ferrous metal

Table 9 shows the overall amount of ferrous scrap collected, analysed between consignees. It is seen that 475,000 tonnes of ferrous metal were recycled in 2005, which is a decrease of 159,000 tonnes, or 25 per cent, from 2004.

	1995	1996	1998	2000	2002	2003	2004	2005
I. Ferrous scrap from Denmark led to foundaries and the Danish Steel Works (2)	471	356	462	416	183	261	137	35
II. Ferrous scrap exported by scrap dealers (2)	567	612	535	689	611	738	571	494
III. Ferrous scrap imported by scrap dealers (2)	32	35	26	16	76	142	74	54
Total amount of Danish scrap collected for recycling I+II+III	1006	933	971	1089	718	857	634	475
Ferrous scrap imported by foundaries and the Danish Steel Works (1)	-	263	216	220	116	10	8	23

Source: (1) ISAG reports, (2) information from the Association of Danish Recycling Industries and other large scrap dealers. Note that calculations in Table 9 differ from those in Table 4. Amongst other things, the figures have not been corrected for amounts of ferrous metal removed from waste incineration plants. 2003 to 2005 saw a substantial drop in imports of ferrous scrap by foundries and the Danish Steel Works. This is because the Danish Steel Works was closed down and therefore no longer contributes to the ISAG.

Table 9 shows a drop from 2002 to 2005 of 93,000 tonnes, or 80 per cent, in the amount of ferrous scrap imported by foundries and the former Danish Steel Works. The Association of Danish Recycling Industries has reported that ferrous scrap not sent to the Danish Steel Works has been exported.

However, the Association of Danish Recycling Industries normally estimates a recycling rate for ferrous scrap in excess of 90 per cent.

According to reports to the Danish EPA, the Danish Steel Works and other Danish foundries imported 23,000 tonnes of ferrous scrap in 2005, whereas scrap dealers imported around 54,000 tonnes. In other words, total imports in 2005 amounted to 77,000 tonnes, which is 5,000 tonnes, or 6 per cent, less than in 2004.

Scrap dealers exported 494,000 tonnes of ferrous scrap in 2005, which means that net exports in 2005 were 440,000 tonnes. This is a fall of 11 per cent from 2004.

2.6 Organic waste for composting, wood chipping and biogasification

The amount of organic waste led to reprocessing in the form of composting, wood chipping, biogasification, or fodder is shown in Table 10.

Organic waste led to reprocessing in 2005 amounted to 1,257,000 tonnes. This is 28,000 tonnes more than in 2004. The increase is due in particular to the fact that the amount of branches, leaves etc. has increased by 55,000 tonnes.

Material and treatment	1995	1996	1998	2000	2002	2003	2004	2005
Branches, leaves etc. led to plants for composting/wood chipping	376	452	551	677	685	716	682	737
Organic domestic waste led to plants for composting	34	36	42	38	18	18	47	38
Organic domestic waste led to plants for biogasification	5	10	9	7	19	20	1	1
Other organic waste led to plants for composting	6	2	1	9	45	48	6	7
Other organic waste led to plants for biogasification	120	111	96	165	65	74	114	106
Other organic waste led to plants for animal fodder	32	34	44	48	18	17	4	4
Sludge led to plants for composting	7	6	57	218	348	336	53	50
Sludge led to plants for biogasification	59	92	91	35	86	77	91	87
Sludge led to plants, applied to farmland	0	0	0	0	0	0	6	5
Sludge led to plants for incineration	0	0	0	0	0	0	54	43
Sludge led to plants, used for carbogrit	0	0	0	0	0	0	172	179
Led to plants in total	639	743	891	1.197	1.284	1.306	1.229	1.257
Bark/wood chips removed from plants	49	34	15	13	15	27	14	15
Compost removed from plants	102	162	197	293	323	312	311	333
Screenings removed from plants	5	19	16	21	12	18	22	22
Removed from plants in total	156	215	228	328	350	356	346	370

Source: the ISAG does not contain information on whether organic materials are reprocessed via composting, wood chipping or biogasification. Figures are based on assessments and calculations of data from the ISAG reports. See Annex 3 for a specification of waste types and plants included in the different categories. According to calculations in Statistics on treatment of organic waste from households 2001, Environmental Project No. 856, 2003, organic domestic waste led to composting and biogasification amounts to 37,000 tonnes.

The amount of bark/wood chips and compost removed from treatment plants does not reflect the total amount generated at the plants. Rather, this amount indicates the quantity sold or delivered free from the plants.

As is seen from the table, the amount of sold/removed bark/wood chips came to around 1,000 tonnes more than in 2004 while the amount of sold/removed compost was 22,000 tonnes more than in 2004.

2.7 Tyres

In 1995, the Minister for Environment and Energy entered an agreement with a number of organisations, on a take-back scheme for used tyres from cars, vans, and motorcycles.

The purpose of the agreement is to ensure collection and recycling of used tyres in Denmark. In this way, landfilling is avoided and appropriate resource recovery ensured which prioritises recycling over energy recovery.

The scheme commenced on 1 April 1995 and is financed by a fee on all tyres covered by the agreement and marketed in Denmark.

According to the agreement, the target is a take-back rate of at least 80 per cent.

From 1 April 2000 the scheme was extended to cover tyres from all types of motor vehicles. This accounts for the leap in data between 1998 and 2000 in Table 11.

The table shows that the collection rate for waste tyres surpassed 100 per cent in 2002. According to reports from the Danish Tyre Trade Environmental Foundation, this is

presumably due to the fact that waste tyres have been imported from Germany, as well as to the fact that some waste tyres have been collected and stored for several years.

Table 11. Collection and reuse of car, van and motorcycle tyres. Stated in tonnes.							
	1996	1998	2000	2002	2003	2004	2005
Waste tyres covered by the scheme	16,705	19,378	34,776	41,126	40,886	43,538	45,544
Tyres collected	12,670	19,926	34,418	43,452	40,867	42,607	41,068
Of which for:							
<i>Retreading and continued use</i>	5,477	5,472	6,690	4,085	3,660	3,121	3,845
<i>Temporary storage</i>	1,133	0	0	0	0	0	0
<i>Rubber powder or incineration</i>	6,060	11,454	27,728	39,367	37,252	37,488	37,223
Collection in per cent of tyres covered by the scheme	75.8	87.3	98.9	105.7	99.9	97.9	90.2

Source: reports from the Danish Tyre Trade Environmental Foundation in 1996, 1998, 2000, 2002, 2003, 2004 and 2005.

3 Hazardous waste

Table 12 shows treatment of hazardous waste in 2004 and 2005 by main group. The calculation covers the amount of treated hazardous waste. A more detailed statement of hazardous waste, analysed by ISAG fractions is available in Annex 4. Table 12 has been changed somewhat from previous years to make it more comprehensible. This means that certain fractions are now only found in Annex 4.

Waste from secondary sources, such as waste from incineration plants, is not included in total waste generation, cf. Table 1. This is because the waste would otherwise be counted twice in the statistics: the first time upon receipt at the primary treatment plant and the second time as a residue. However, it may be reasonable to include waste from both primary and secondary sources when estimating capacity needs for hazardous waste management.

Table 12. Treatment of hazardous waste from primary sources in 2004 and 2005, in tonnes.

Waste fraction	Reprocessing		Incineration		Landfilling		Special treatment		Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Animal and vegetable fats	1	0	2,641	2,692	1	59	45	20	2,688	2,771
Halogen-containing organic compounds	3	1	958	863	0	8	22	11	982	883
Halogen-free organic compounds	569	460	29,633	26,977	282	276	2,468	2,495	32,952	30,208
Inorganic compounds	4,166	2,727	7,924	7,115	1,803	1,533	6,380	7,681	20,273	19,056
Other hazardous waste	2,569	2,506	27,179	26,734	2,105	1,585	1,800	1,786	33,653	32,611
Waste oil	47,802	18,272	20,745	16,190	1	5	1,532	1,666	70,079	36,132
Health-care risk waste	0	0	1,520	1,809	0	0	2,745	3,186	4,265	4,995
Fly ash	0	0	0	0	1,994	1,982	0	0	1,994	1,982
Other flue-gas waste	33,403	38,819	0	0	0	0	0	0	33,403	38,819
Asbestos	0	0	0	0	16,666	21,862	0	0	16,666	21,862
Batteries*	209	2,936	0	0	0	0	0	0	209	2,936
Lead batteries (1)	17,118	17,127							17,118	17,127
Hermetic Ni-Cd batteries (2)	100	118							100	118
CFC cooling agents	1	0	0	0	0	0	16	9	18	10
Shredder waste	0	0	0	0	107,626	130,985	0	0	107,626	130,985
Total	105,941	82,967	90,599	82,381	130,477	158,293	15,009	16,854	342,025	340,495
Secondary sources										0
Flue-gas waste (1)	0	0								0
Fly ash and flue-gas cleaning products from waste incineration (4)					86,834	82,964			86,834	82,964
Secondary sources in total	0	0	0	0	86,834	82,964	0	0	86,834	82,964
Total	105,941	82,967	90,599	82,381	304,145	324,221	15,009	16,854	416,485	428,960

Source: ISAG reports 2004 and 2005, and (1) Registrations under the EU regulation on shipments of waste. (2) Danish EPA calculations. Double reporting may have occurred, because some of the hermetically sealed Ni-Cd batteries may have been included in the amount of batteries reported to the ISAG. (3) Elsam and Energi E2. (4) Based on the ISAG. It is expected that waste from secondary sources will be exported and landfilled abroad.

Shredder waste is included as a separate waste fraction in the table. Since shredder waste is reported as landfilled waste exempted from tax, the ISAG leaves no other option than including it under "other hazardous waste". This waste fraction, however, is so large that this year we chose to include shredder waste in the statistics separately.

*There is some uncertainty about this figure as lead accumulators could have been registered under this item.

The table shows that hazardous waste from primary sources amounted to 340,495 tonnes in 2005. This is similar to last year. The three fractions which have gone down the most are: waste oil, organic and inorganic halogen-containing compounds. The drop in the amount of waste oil is attributable to a greater proportion being exported for recycling abroad. On the other hand, the amount of shredder waste has increased.

Hazardous waste from secondary sources amounted to 82,964 tonnes in 2005, which is 3,870 tonnes less than in 2004.

Tables 13, 14, 15 and 16 show the amounts of waste generated by the four sectors: households, service, industry, and building and construction.

Waste fraction	Processing		Incineration		Landfilling		Special treatment	
	2004	2005	2004	2005	2004	2005	2004	2005
Animal and vegetable fats	0	0	52	24	0	0	0.8	0
Halogen-containing organic compounds	0	0	61	65	0	0	0.56	0.59
Halogen-free organic compounds	0.3	0.14	4,878	5,502	0	1	2165.19	2162.91
Inorganic compounds	6.6	8.855	490	1,274	19	28	85.27	75.76
Other hazardous waste	138.365	548.899	2,092	2,274	292	206	1176.67	1206.87
Waste oil	212.99	302.3	12,593	6,631	0	0	1464.29	1489.62
Health-care risk waste	0	0	0	0	0	0	18.72	36.87
Fly ash	0	0	0	0	1	11	0	0
Asbestos	0	0	0	0	2,334	2,826	0	0
Batteries	43.286	252.124	0	0	0	0	0	0
CFC cooling agents	0.08	0.18	0	0	0	0	4.39	3.75
Total	402	1,112	20,166	15,770	2,646	3,072	4,916	4,976

Source: ISAG 2004 and 2005.

Waste fraction	Processing		Incineration		Landfilling		Special treatment	
	2004	2005	2004	2005	2004	2005	2004	2005
Animal and vegetable fats	1	0	647	575	0	23	7	2
Halogen-containing organic compounds	1	0	269	168	0	0	20	10
Halogen-free organic compounds	205	168	3,009	2,698	1	3	13	17
Inorganic compounds	285	176	2,788	2,417	125	14	305	225
Other hazardous waste	117	311	2,281	2,774	209	251	127	81
Waste oil	21,931	16,804	3,843	2,805	0	1	49	167
Health-care risk waste	0	0	1,495	1,456	0	0	2,668	2,928
Fly ash	0	0	0	0	11	27	0	0
Asbestos	0	0	0	0	195	758	0	0
Batteries	142	2,228	0	0	0	0	0	0
CFC cooling agents	1	0	0	0	0	0	10	4
Shredder waste	0	0	0	0	0	11	0	0
Total	22,682	19,686	14,333	12,894	541	1,088	3,198	3,433

Source: ISAG 2004 and 2005.

Waste fraction	Processing		Incineration		Landfilling		Special treatment	
	2004	2005	2004	2005	2004	2005	2004	2005
Animal and vegetable fats	0	0	1,940	2,093	1	36	37	18
Halogen-containing organic compounds	2	1	623	620	0	8	2	0
Halogen-free organic compounds	362	292	21,419	17,451	262	266	290	234
Inorganic compounds	3,870	2,538	4,632	3,410	1,632	1,475	5,979	7,377
Other hazardous waste	1,502	1,424	21,040	21,118	221	1,074	484	487
Waste oil	25,651	487	3,022	3,076	1	3	19	2
Health-care risk waste	0	0	25	0	0	0	59	221
Fly ash	0	0	0	0	1,758	1,665	0	0
Other flue-gas waste	33,403	38,819	0	0	0	0	0	0
Asbestos	0	0	0	0	216	645	0	0
Batteries	23	422	0	0	0	0	0	0
CFC cooling agents	0	0	0	0	0	0	2	2
Shredder waste	0	0	0	0	107,626	130,974	0	0
Total	64,814	43,983	52,701	47,766	111,718	136,147	6,872	8,340

Source: ISAG 2004 and 2005.

Waste fraction	Processing		Incineration		Landfilling		Special treatment	
	2004	2005	2004	2005	2004	2005	2004	2005
Animal and vegetable fats	0	0	2	0	0	0	0	0
Halogen-containing organic compounds	0	0	4	7	0	0	0	0
Halogen-free organic compounds	2	0	257	235	18	6	0	82
Inorganic compounds	4	4	7	10	14	8	8	3
Other hazardous waste	804	218	1,735	225	1,382	46	11	11
Waste oil	5	673	695	664	0	0	0	7
Health-care risk waste	0	0	0	353	0	0	0	1
Fly ash	0	0	0	0	7	21	0	0
Asbestos	0	0	0	0	13,027	16,486	0	0
Batteries	0	33	0	0	0	0	0	0
Total	814	928	2,699	1,494	14,448	16,566	19	103

Source: ISAG 2004 and 2005.

The total amount of hazardous waste from industry is 236,236 tonnes, whereas the total amount from the service sector is 37,101 tonnes, the total amount from households is 24,930 tonnes, and the total amount from building and construction is 17,091 tonnes. A comparison of the total amounts of hazardous waste from the four sectors shows that industry generated almost three times as much hazardous waste as the three remaining sectors put together.

The building and construction sector, which generates least hazardous waste, has one primary source of hazardous waste, namely asbestos. Asbestos is also present in other sectors, however in significantly smaller quantities.

Healthcare risk waste from the service sector, or more precisely from hospitals, is another hazardous waste fraction primarily originating from one sector.

The three fractions waste oil, halogen-free organic compounds, and other hazardous waste occur in the largest amounts in industry, the service sector, and households. Organic compounds without halogens include e.g. solvents, dye/varnish/paint and tar, and rust-preventing oils.

Inorganic compounds are found in significant amounts in both industry and the service sector. This fraction is found only in small amounts in both households and the building and construction sector.

4 Imports and exports of waste

4.1 Imports

Table 17 shows the amount of waste imported to Denmark in 2004 and 2005 by waste fraction and treatment option. In 2005, 486,098 tonnes of waste were imported, which is 25,035 tonnes less than in 2004.

The amount of waste imported in 2005 corresponds to around 6 per cent of total waste generated in Denmark. This is somewhat more than in 2004 when the amount imported was about 4 per cent.

Fraction	Recycling		Incineration		Landfilling		Special treatment		Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Glass (2)	125,300	79,123							125,300	79,123
Paper and cardboard (2)	88,300	93,262							88,300	93,262
Plastic (2)	59,500	56,392							59,500	56,392
Ferrous metal (3)	74,000	54,442							74,000	54,442
Other combustible waste (4)			74,700	102,942					74,700	102,942
Special hospital waste (1)							0	0	0	0
Food waste/other organic waste (1)	10,900	18,186							10,900	18,186
Other recyclable waste (1)	28,600	37,416							28,600	37,416
Sludge (4)	33	0							33	0
Other reported waste (4)	49,600	43,193			0	0	200	1,142	49,800	44,335
Total	436,233	382,014	74,700	102,942	0	0	200	1,142	511,133	486,098

Source: (1) ISAG reports; (2) Statistics Denmark; (3) Association of Danish Recycling Industries and other large scrap dealers; (4) registrations under the EU regulation on shipments of waste: Council Regulation No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community.

Around 62 per cent of imported waste is categorised pursuant to the EU regulation on shipments of waste¹³ as so-called green waste for recovery. Green waste covers primarily glass, paper and cardboard, plastic and ferrous metal. Green waste is not subject to mandatory notification under the EU regulation on shipments of waste.

Waste imported belonging to the category "other combustible waste" is destined for incineration with energy recovery, and comprises different types of waste oil. This is waste subject to mandatory notification and it is therefore also included in Table 19.

4.2 Exports

Table 18 shows the amount of waste exported from Denmark in 2004 and 2005. The amount of waste exported from Denmark in 2005 corresponded to around 11 per cent of the total waste generated in Denmark.

In 2005, waste exports amounted to 1,557,682 tonnes, or 61,988 tonnes less than in 2004. The fall can be attributed to a smaller amount of ferrous metal, namely 77,000 tonnes, and residues from coal-fired power plants, namely 50,000 tonnes. A detailed statement of the amount of exported waste subject to mandatory notification is found in Table 19.

¹³ Council Regulation No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community

Around 69 per cent of waste exported from Denmark in 2005 belongs to the category "green waste for recovery". This category includes the fractions glass, paper and cardboard, plastic, and ferrous metal.

Table 18. Exports of waste in 2004 and 2005 by fraction and in tonnes.		
	2004	2005
Glass (2)	18,964	13,899
Paper and cardboard (2)	493,200	520,226
Plastic (2)	36,700	43,995
Ferrous metal (3)	571,000	494,114
Other combustible waste (4)	114,200	101,222
Fly ash and slag from coal-fired power plants (5)	70,700	21,134
Sulphuric acid from coal-fired power plants (5)	0	0
Slag and flue-gas cleaning products from iron production (4)	0	0
Lead batteries (4)	16,000	17,726
Ni-Cd batteries and other batteries (4 and 6)	106	121
Residues from waste incineration plants (4)	158,500	171,299
Iron residues from waste incineration plants (4)	4,900	4,553
Other waste subject to mandatory notification (4)	135,400	169,393
Total	1,619,670	1557682

Source: (1) ISAG reports; (2) Statistics Denmark; (3) Association of Danish Recycling Industries and other large scrap dealers; (4) registrations under the EU regulation on shipments of waste: Council Regulation No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community, (5) Elsam and Energi E2, (6) Registrations by the Danish EPA.

4.3 Imports and exports of waste subject to mandatory notification

Table 19 shows the countries to and from which Denmark has exports and imports of waste subject to mandatory notification. Waste subject to mandatory notification means waste that must be notified to the competent authorities of dispatch and the competent authorities of destination according to Council Regulation No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community.

As can be seen from the table, in 2005 Denmark imported 1,043 tonnes of waste for disposal, which is about 800 tonnes more than in 2004. This waste originated primarily from the Netherlands and consisted mainly of acidic solutions.

In 2005, Denmark imported around 146,000 tonnes of waste for recovery. Most of this waste originated from Norway and Sweden and consisted primarily of unlisted waste and mixtures of waste oil emulsions.

The amount of imported waste in 2003 destined for recovery rose by 21,751 tonnes compared to 2004, when around 124,000 tonnes of waste were imported.

Waste subject to mandatory notification exported for disposal amounted to 231,408 tonnes in 2005, which is 8,726 tonnes more than in 2004. This waste was exported to Norway and Germany and primarily consisted of residues from waste incineration plants.

In addition, Denmark exported 232,923 tonnes of waste subject to mandatory notification destined for recovery. This is 26,606 tonnes more than in 2004. Countries of destination were primarily Sweden and Germany. The waste types concerned were primarily unlisted waste, wood waste, lead batteries and waste oil.

Table 19. Imports and exports of waste subject to mandatory notification, 2005.
Stated in tonnes.

Country	OECD code	Disposal		Recovery	
		Export from Denmark to X	Import from X to Denmark	Export from Denmark to X	Import from X to Denmark
Belgium					
	AC070	0.00	0.00	74.09	0.00
	AA040	0.00	0.00	200.41	0.00
	AA100	0.00	0.00	108.56	0.00
	AA130	0.00	0.00	1,880.90	0.00
Total:		0.00	0.00	2,263.96	0.00
England					
	RX100	0.00	0.00	6,524.36	0.00
	AA060	0.00	0.00	37.83	0.00
	AA160	0.00	0.00	5.35	0.00
	AA162	0.00	0.00	13.09	0.00
Total:		0.00	0.00	6,580.63	0.00
Finland					
	AB030	0.00	0.00	26.50	0.00
	AA070	0.00	0.00	2.80	0.00
Total:		0.00	0.00	29.30	0.00
France					
	AA180	0.00	0.00	25.00	0.00
Total:		0.00	0.00	25.00	0.00
The Netherlands					
	AB010	0.00	0.00	0.00	657.15
	AB040	0.00	0.00	772.36	0.00
	AC220	0.00	8.76	0.00	0.00
	AD020	0.00	4.24	0.00	0.00
	AD060	0.00	0.00	1,566.59	0.00
	AD070	0.00	0.00	287.95	0.00
	AD110	0.00	918.14	0.00	0.00
	RX100	0.00	71.07	930.43	0.00
	AA040	0.00	0.00	198.42	0.00
	AA070	0.00	0.00	15.66	0.00
	AA100	21.92	0.00	0.00	0.00
Total:		21.92	1,002.21	3,771.41	657.15
Ireland					
	AC030	0.00	0.00	0.00	3.23
	AC090	0.00	2.20	0.00	440.86
	AC210	0.00	0.00	0.00	11,286.34
	AC220	0.00	0.00	0.00	316.46
	AD010	0.00	11.34	0.00	876.60
	AD020	0.00	0.00	0.00	27.52
	AD070	0.00	0.00	0.00	322.16
	RX100	0.00	1.80	0.00	768.76
Total:		0.00	15.34	0.00	14,041.93
Iceland					
	AC150	0.00	0.00	0.00	131.88
	AC220	0.00	0.00	0.00	7.06
	AD010	0.00	0.00	0.00	2.71
	AD020	0.00	0.00	0.00	0.71
	AD060	0.00	0.00	0.00	5.69
	AD070	0.00	0.00	0.00	149.03
	AD110	0.00	0.41	0.00	0.00
	RA010	0.00	2.22	0.00	0.00
	RC040	0.00	0.00	0.00	0.46
	RX100	0.00	0.00	0.00	133.69
	AA170	0.00	0.00	0.00	270.45
	AA180	0.00	0.00	0.00	0.24
Total:		0.00	2.63	0.00	701.92

Cont.

Country	OECD code	Disposal		Recovery	
		Export from Denmark to X	Import from X to Denmark	Export from Denmark to X	Import from X to Denmark
Israel					
	RX100	0.00	0.00	0.00	69.58
Total:		0.00	0.00	0.00	69.58
Latvia					
	AB030	0.00	23.37	0.00	0.00
Total:		0.00	23.37	0.00	0.00
Norway					
	AB010	1,517.42	0.00	0.00	0.00
	AB020	169,586.05	0.00	0.00	0.00
	AB110	0.00	0.00	0.00	4,200.03
	AC010	0.00	0.00	0.00	1,857.15
	AC030	0.00	0.00	1,492.31	2,494.69
	AC090	0.00	0.00	0.00	0.06
	AC210	0.00	0.00	0.00	747.55
	AC250	0.00	0.00	0.00	12.55
	AD020	37,976.72	0.00	0.00	4.39
	AD060	0.00	0.00	0.00	13,558.15
	AD070	0.00	0.00	0.00	2,425.64
	AD090	0.00	0.00	0.00	616.92
	AD140	84.21	0.00	0.00	0.00
	AD160	0.00	0.00	0.00	535.81
	RX100	0.00	0.00	0.00	28,957.88
	AA020	0.00	0.00	456.45	0.00
	AA050	861.41	0.00	0.00	0.00
	AA070	30.00	0.00	0.00	0.00
Total:		210,055.81	0.00	1,948.76	55,410.82
Poland					
	RX100	0.00	0.00	1,862.82	0.00
Total:		0.00	0.00	1,862.82	0.00
Scotland					
	RX100	0.00	0.00	0.00	1,500.00
Total:		0.00	0.00	0.00	1,500.00
Sweden					
	AB070	0.00	0.00	1,341.13	0.00
	AB080	0.00	0.00	207.64	4.38
	AC030	0.00	0.00	0.00	6,566.07
	AC090	0.00	0.00	0.00	246.10
	AC150	0.00	0.00	0.00	17.69
	AC170	0.00	0.00	13,424.25	0.00
	AC220	0.00	0.00	0.00	498.08
	AC270	0.00	0.00	0.00	65.46
	AD020	0.00	0.00	0.00	38.29
	AD040	0.00	0.00	0.00	113.72
	AD060	0.00	0.00	0.00	24,444.66
	AD070	0.00	0.00	0.00	8,180.28
	AD090	0.00	0.00	53.84	765.04
	AD160	0.00	0.00	0.00	130.32
	RX100	0.00	0.00	16,465.01	15,162.51
	AA030	0.00	0.00	40.62	0.00
	AA100	0.00	0.00	1.99	404.69
	AA170	0.00	0.00	17,444.96	0.00
	AA180	0.00	0.00	96.11	0.00
Total:		0.00	0.00	49,075.55	56,637.29

Cont.

Country	OECD code	Disposal		Recovery	
		Export from Denmark to X	Import from X to Denmark	Export from Denmark to X	Import from X to Denmark
Turkey					
	AB020	0.00	0.00	1,815.26	0.00
Total:		0.00	0.00	1,815.26	0.00
Germany					
	AB010	0.00	0.00	110.34	0.00
	AB020	21,275.97	0.00	20,709.68	0.00
	AB040	0.00	0.00	2,938.29	0.00
	AB070	0.00	0.00	3,688.30	0.00
	AB080	0.00	0.00	202.15	0.00
	AB110	0.00	0.00	9.87	0.00
	AB150	0.00	0.00	10,440.00	0.00
	AC030	0.00	0.00	13,377.71	0.00
	AC070	0.00	0.00	43.52	0.00
	AC090	0.00	0.00	8.16	0.00
	AC170	0.00	0.00	7,388.98	0.00
	AC220	23.26	0.00	918.91	0.00
	AC270	0.00	0.00	7,337.58	1,087.24
	AD010	15.19	0.00	0.00	0.00
	AD020	0.00	0.00	0.00	1,562.50
	AD040	0.00	0.00	1.45	0.00
	AD060	0.00	0.00	0.00	1,308.78
	AD070	0.00	0.00	6,215.98	0.00
	AD110	0.00	0.00	62.68	0.00
	AD140	0.00	0.00	17.50	0.00
	AD160	0.00	0.00	1,683.80	0.00
	AD170	0.00	0.00	71.12	0.00
	RX100	0.00	0.00	67,630.53	13,161.33
	AA010	0.00	0.00	3,848.29	0.00
	AA020	0.00	0.00	709.76	0.00
	AA050	0.00	0.00	5,914.48	0.00
	AA070	0.00	0.00	10,600.79	0.00
	AA100	16.31	0.00	239.48	0.00
	AA120	0.00	0.00	720.17	0.00
	AA130	0.00	0.00	186.36	0.00
	AA170	0.00	0.00	280.50	0.00
Total:		21,330.73	0.00	165,356.38	17,119.85
Austria					
	AB080	0.00	0.00	193.90	0.00
Total:		0.00	0.00	193.90	0.00
Total all countries		231,408.46	1,043.55	232,922.97	146,138.54

Source: Danish EPA Transport Database. The reporting is based on reporting of shipments completed under the EU regulation on shipments of waste (Council Regulation No 259/93). The competent authorities of destination must submit copies of the completed consignment note to the competent authorities involved no later than 3 days from receipt of the waste. No later than 180 days after receipt of the waste, the consignee must send proof that the waste has been recovered. OECD waste codes are described in detail in Commission Decision of 21 October 1994 (OJ 1994 L288/36).

4.4 OECD codes

AA010	Dross, scalings and other wastes from the manufacture of iron and steel.
AA020	Zinc ashes and residues.
AA030	Lead ashes and residues.
AA040	Copper ashes and residues.
AA050	Aluminium ashes and residues.
AA060	Vanadium ashes and residues
AA070	Ashes and residues containing metals or metal compounds not elsewhere specified or included.
AA080	Thallium waste and residues.
AA090	Arsenic waste and residues.
AA100	Mercury waste and residues.
AA110	Residues from alumina production not elsewhere specified or included.
AA120	Galvanic sludge.
AA130	Liquors from the pickling of metals.
AA140	Leaching residues from zinc processing, dusts and sludge such as jarosite, hematite, goethite, etc.
AA150	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
AA160	Leaching residues from zinc processing, dusts and sludge such as jarosite, hematite, goethite, etc:
AA161	Ash from incineration of printed circuit boards
AA162	Photographic film ash.
AA170	Lead-acid batteries, whole or crushed.
AA180	Used batteries or accumulators, whole or crushed, other than lead-acid batteries and waste and scrap arising from the production of batteries and accumulators, not otherwise specified or included.
AA190	Magnesium waste and scrap that is flammable, pyrophoric or emits, upon contact with water, flammable gases in dangerous quantities.
AB010	Slag, ash and residues, not elsewhere specified or included.
AB020	Residues arising from the combustion of municipal/household wastes.
AB030	Waste from non-cyanide based systems which arise from surface treatment of metals.
AB040	Glass waste from cathode-ray tubes and other activated glasses.
AB050	Calcium fluoride sludge.
AB060	Other inorganic fluorine compounds in the form of liquids or sludge.
AB070	Sands used in foundry operations.
AB080	Waste catalysts not on the green list.
AB090	Waste hydrates of aluminium.
AB100	Waste alumina.
AB110	Basic solutions.
AB120	Inorganic halide compounds, not elsewhere specified or included.
AB130	Used blasting grit.
AB140	Gypsum arising from chemical industry processes.
AB150	Unrefined calcium sulphite and calcium sulphate from flue gas desulphurization (FGD).
AC010	Waste from the production/processing of petroleum coke and bitumen, excluding anode butts.
AC020	Asphalt cement wastes.
AC030	Waste oils unfit for their originally intended use.
AC040	Leaded petrol (gasoline) sludge.
AC050	Thermal (heat transfer) fluids.
AC060	Hydraulic fluids.
AC070	Brake fluids.

AC080	Antifreeze fluids.
AC090	Waste from production, formulation and use of resins, latex, plasticisers, glues and adhesives.
AC100	Nitrocellulose.
AC110	Phenols, phenol compounds including chlorophenol in the form of liquids or sludge.
AC120	Polychlorinated naphthalenes.
AC130	Ethers.
AC140	Triethylamine catalyst for setting foundry sands.
AC150	Chlorofluorocarbons.
AC160	Halons.
AC170	Treated cork and wood wastes.
AC180	Leather dust, ash, sludge and flours.
AC190	Fluff light fraction from automobile shredding.
AC200	Organic phosphorous compounds.
AC210	Non-halogenated solvents.
AC220	Halogenated solvents.
AC230	Halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
AC240	Wastes arising from the production of aliphatic halogenated hydrocarbons.
AC250	Surface active agents (surfactants).
AC260	Liquid pig manure; faeces.
AC270	Sewage sludge.
AD010	Wastes from the production and preparation of pharmaceutical products.
AD020	Wastes from the production, formulation and use of biocides and phytopharmaceuticals.
AD030	Wastes from the manufacture, formulation and use of wood preserving chemicals.
AD040	Inorganic cyanides, excepting precious metal-bearing residues in solid form containing traces of inorganic cyanides.
AD050	Organic cyanides.
AD060	Waste oils/water, hydrocarbons/water mixtures, emulsions.
AD070	Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish.
AD080	Wastes of an explosive nature, when not subject to specific other legislation.
AD090	Wastes from production, formulation and use of reprographic and photographic chemicals and materials not elsewhere specified or included.
AD100	Wastes from non-cyanide based systems which arise from surface treatment of plastics.
AD110	Acidic solutions.
AD120	Ion exchange resins.
AD130	Single-use cameras with batteries.
AD140	Wastes from industrial pollution control devices for cleaning of industrial off-gases, not elsewhere specified or included.
AD150	Naturally occurring organic material used as a filter medium (such as bio-filters).
AD160	Municipal/household wastes.
AD170	Spent activated carbon having hazardous characteristics and resulting from its use in the inorganic chemical, organic chemical and pharmaceutical industries, waste water treatment, gas/air cleaning processes and similar applications.
RA010	Wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyl (PCB) and/or polychlorinated terphenyl (PCT) and/or polybrominated biphenyl (PBB), including any other polybrominated analogues of these compounds, at a concentration level of 50 mg/kg or more.

- RA020 Waste tarry residues (excluding asphalt cements) arising from refining, distillation and any pyrolytic treatment.
- RB010 Asbestos (dusts and fibres).
- RB020 Ceramic-based fibres of physico-chemical characteristics similar to those of asbestos.
- RC010 Wastes that contain, consist of or are contaminated with any congener of polychlorinated dibenzo-furan
- RC020 Wastes that contain, consist of or are contaminated with any congener of polychlorinated dibenzo-dioxin
- RC030 Leaded anti-knock compounds sludge.
- RC040 Peroxides other than hydrogen peroxide.
- RX100 Other wastes not specified with an OECD code.

5 Individual waste sources and status in relation to targets for 2008

5.1 Waste from households

Waste from households covers the waste types domestic waste, bulky waste, and garden waste, which in turn are divided into individual fractions, e.g. paper and cardboard, bottles and glass, and food waste/other organic waste. Table 20 shows waste arisings by mixed and separately collected fractions to the extent it has been possible to register these individually.

This means, for example, that the amount of paper and cardboard stated does not show the complete potential in household waste arisings but only the amount which has been separated and collected for recycling. The rest of the paper is part of the fraction various combustible.

Waste arisings from households in 2005 amounted to around 3,338,000 tonnes, which constitutes a 6 per cent increase from 2004. The increase in the total amount of household waste can be tracked for the major part to the fractions various non-combustible and ferrous metal separated for recycling. These two fractions went up by 23 per cent and 21 per cent respectively.

The fraction various combustible, however, still makes up the largest part of total household waste arisings, namely around 61 per cent.

Table 20. Waste generation by households. Stated by fraction and in tonnes.	1994	1996	1998	2000	2002	2004	2005	Change in % 2004-2005
Various combustible waste	1,797,717	1,800,752	1,775,930	1,985,975	1,956,486	1,959,363	2,039,395	4%
Various non-combustible waste	203,430	164,356	146,707	154,482	162,562	150,696	185,538	23%
Paper and cardboard separated for recycling	142,668	160,469	208,486	181,315	204,059	220,739	249,869	13%
Bottles and glass separated for recycling	69,064	64,903	83,033	82,351	110,758	87,599	99,053	13%
Food waste/other organic waste separated for recycling	32,907	45,905	51,926	44,672	37,072	52,805	44,656	-15%
Branches, leaves, grass etc. separated for recycling	258,574	386,874	408,877	505,113	512,199	495,129	557,268	13%
Hazardous waste (1)	-	16,214	14,395	27,548	19,840	28,130	24,931	-11%
Ferrous metal (2) separated for recycling	-	-	11,926	16,768	24,596	25,028	30,225	21%
Other waste	83,456	129,479	94,569	85,362	92,992	144,038	107,133	-26%
Total	2,587,816	2,768,952	2,795,849	3,083,586	3,120,564	3,163,527	3,338,068	6%

Source: ISAG reports. (1) For the year 1996, waste from the fraction ferrous metal is included under "Other waste".

Table 20 shows shifts between the different household waste fractions, so that various combustible, various non-combustible, paper and cardboard separated for recycling, bottles and glass separated for recycling, branches, leaves, grass etc. and ferrous metal separated for recycling have increased by 4 per cent, 23 per cent, 13 per cent, 13 per cent, 13 per cent and 21 per cent respectively, compared to 2004. Food waste/other organic waste separated for recycling, hazardous waste and other waste, on the other hand, went down by 15 per cent, 11 per cent and 26 per cent respectively relative to 2004.

5.1.1 Household waste per capita and per household

In Table 21, household waste arisings are stated per capita and per household. Furthermore, the Table shows total arisings analysed between selected waste types and separately collected waste fractions.

Total household waste generation per capita amounted to 617 kg in 2005, which is 31 kg more than in 2004. Household waste per household was 1336 kg in 2005.

Of these, domestic waste per capita and per household was 316 kg and 685 kg respectively in 2005. Compared to 2004, this means a slight increase of 3 kg per capita, while the amount per household grew similarly by 3 kg.

The table shows that bulky waste is the main contributor to the increase in waste arisings in the period. Bulky waste thus increased from 126 kg per capita in 2004 to 146 kg per capita in 2005. The reason for the increase must be ascribed to the fact that people have more disposable income and therefore the number refurbishments and procurement of new furniture have gone up.

	2002		2003		2004		2005	
	Per capita	Per household	Per capita	Per household	Per capita	Per household	Per capita	Per household
Household waste in total	581	1271	559	1220	586	1275	617	1336
Domestic waste in total	317	692	312	680	313	682	316	685
<i>Of these, separately collected:</i>								
Domestic waste /paper	31	69	35	75	36	78	41	88
Domestic waste/glass	21	45	14	31	16	35	18	40
Domestic waste/food waste	7	15	7	15	10	21	8	17
Hazardous waste from households	5	10	5	10	5	11	5	10
Garden waste from households	96	210	93	203	93	202	104	225
Bulky waste from households	122	267	118	257	126	275	146	316
<i>Of these:</i>								
Paper separated for recycling	7	15	7	14	5	11	6	12
Glass separated for recycling	0	0	0	0	0	0	0	0

Source: ISAG reports. Statistics Denmark's statement of population growth and number of households has been used. Note that Tables 20 and 21 are not readily comparable, as Table 20 concerns waste generation stated by fraction while Table 21 also includes waste types.

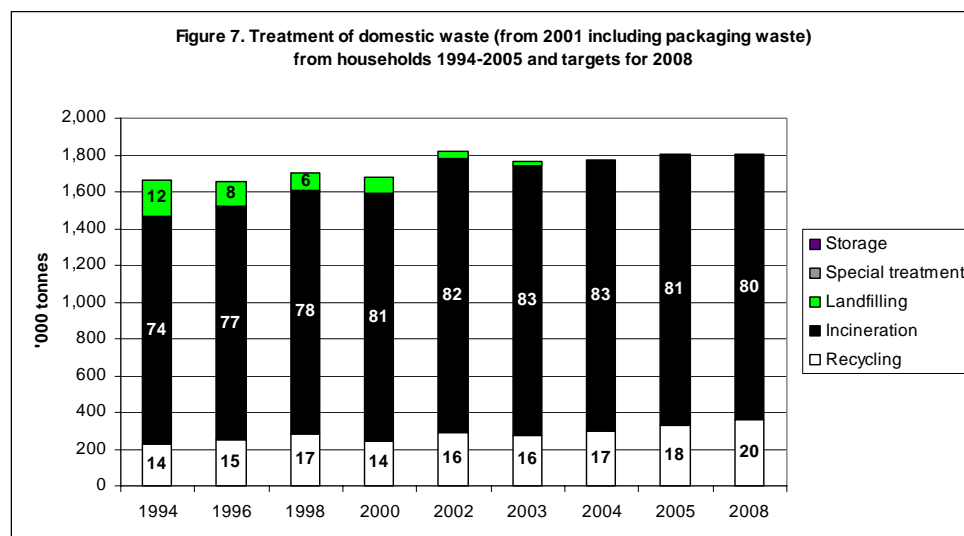
5.1.2 Domestic waste

Domestic waste from households covers ordinary waste from private household consumption. This includes paper, bottles, glass, organic food waste and other waste. Usually, domestic waste is collected from households at regular intervals, once a week or once every other week.

As mentioned in Chapter 1, domestic waste amounted to 1,711,000 tonnes in 2005, which is 19,000 tonnes more than in 2004. Since 1994, the amount of domestic waste has varied slightly from year to year, however, without showing any clear trend. The amount has increased by 3 per cent over the entire period, cf. Table 3.

In 2005, 18 per cent of domestic waste was recycled, whereas 81 per cent was incinerated and about 1 per cent landfilled. The breakdown by treatment option therefore shows slight changes from 2004 when 17 per cent was recycled, 83 per cent was incinerated and around 1 per cent landfilled.

For the early years, packaging waste is included as part of the waste type domestic waste. To make comparison with these early years possible, packaging waste from households in 2001, 2002, 2003, 2004 and 2005 of 107,000, 117,000, 85,000, 84,000 and 96,000 tonnes respectively has been included in Figure 7.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

Figure 7 shows that the relative distribution in the period 1994 to 2005 among treatment options has varied only little. From 1994 over the entire period the trend has been that 80 per cent of domestic waste is incinerated. Recycling is 16 per cent and landfilling 5 per cent. At the same time, the figures show that the amount of waste led to landfills has gone down.

Even though the targets in Waste Strategy 2005-2008 are close to being met, too much domestic waste is still being incinerated and landfilled relative to the targets, and too little recycled.

One of the measures which can help ensure greater recycling of domestic waste is the requirement that, from August 2006, Danish municipalities are obliged to separate plastic and metal packaging waste from households for recycling. Waste, which so far has been led to incineration.

It should be noted that domestic waste is considered suitable for incineration and it is therefore not to be landfilled. If not recycled, domestic waste is to be incinerated. However, islands that are not connected by land to an incineration plant are exempt from this obligation.

Table 22. Treatment of domestic waste 1994-2005, stated in '000 tonnes. Illustrated in Figure 7

Domestic waste	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	226	249	281	240	290	275	295	328	361
Incineration	1,237	1,274	1,324	1,352	1,491	1,463	1,470	1,467	1,445
Landfilling	198	132	98	85	37	24	11	12	0
Special treatment	0	0	0	0	0	0	0	0	0
Storage					0	0	0	0	0

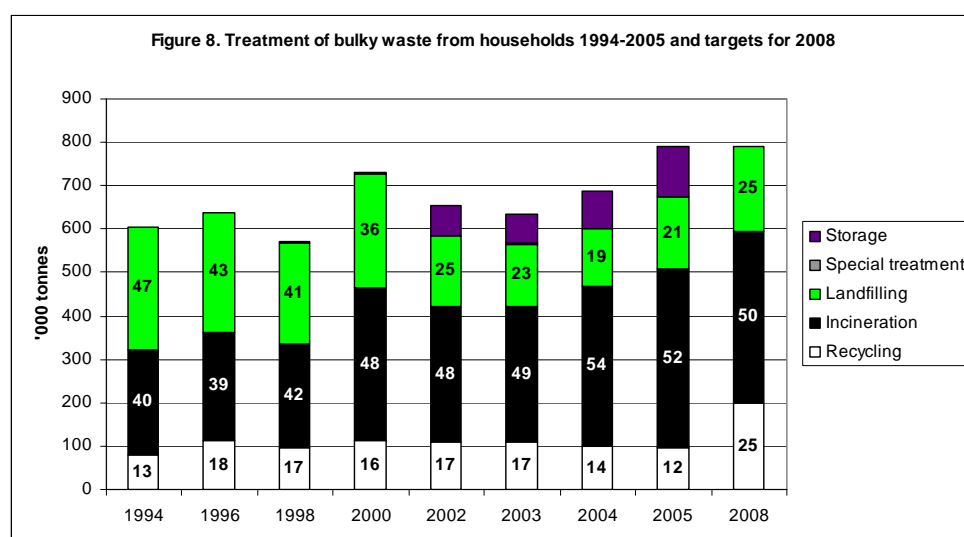
Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

5.1.3 Bulky waste

Bulky waste generated by Danish households amounted to 791,000 tonnes in 2005. This is 104,000 tonnes more than in 2004. In other words, there has been an increase of 15 per cent.

During the period from 1994 to 2005 bulky waste increased by 31 per cent. The increase in bulky waste amounts is due to a real increase but also very much to the implementation of pick-up and bring schemes for this waste type.

Figure 8 shows bulky waste analysed between three treatment options: landfilling, incineration, and recycling for the period 1994 to 2005. The general trend for the period is that a larger proportion of bulky waste is being incinerated, whereas decreasing amounts are being landfilled. For recycling the percentage rate is stable but showing a slight downward trend in 2005. Furthermore, there is an upward trend in the amount being stored.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

In 2005, 52 per cent of bulky waste was incinerated, the rate for landfilling was 21 per cent, and the rate for recycling 12 per cent. The remaining 15 per cent, however, was led to temporary storage; i.e. temporary landfilling of waste suitable for incineration. This means that the waste is stored until it can be incinerated for the purpose of energy/heat generation¹⁴. Therefore, the real incineration rate for bulky waste is higher than 52 per cent. At the same time, the figures show that the amount of waste led to landfills has gone down considerably since 1994.

The target of a maximum landfilling rate of 25 per cent has thus been met. However, too much bulky waste is still being incinerated and not enough is being recycled.

If targets for recycling in 2008 are to be met, considerable efforts are required to separate and collect more of the different waste fractions in bulky waste. A number of initiatives covering e.g. cardboard, waste electrical and electronic equipment have been, or are in the process of being, implemented.

Table 23. Treatment of bulky waste from households 1994-2005, stated in '000 tonnes

Bulky waste	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	80	114	96	113	111	108	98	97	198
Incineration	241	250	239	351	311	314	369	412	395
Landfilling	284	275	234	264	161	143	132	165	198
Special treatment	0	1	4	2	1	3	1	1	0
Storage					71	66	86	116	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

¹⁴ Exemption clause in Section 37(3), Danish Statutory Order on Waste (Statutory Order No. 619 of 27 June 2000).

Storage means that the waste in question has been assigned to temporary storage by local authorities (the local council), cf. section 37(3) of the Statutory Order on Waste. Denmark has excess incineration capacity, but storage can be due to e.g. repairs or shut down of operations at plants.

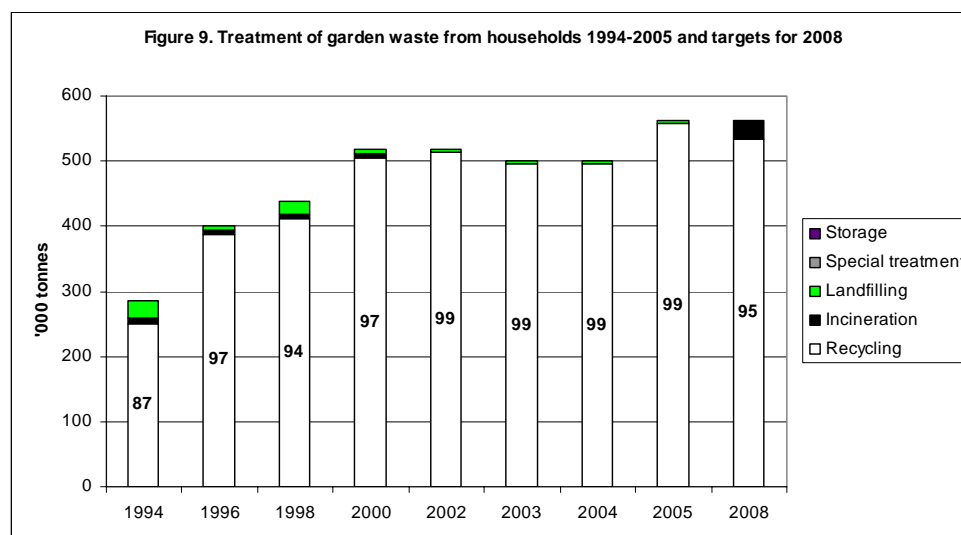
5.1.4 Garden waste

The amount of garden waste collected from households in 2005 came to 563,000 tonnes. This is an increase of 63.000 tonnes from 2004.

Throughout the 1990s the amount of garden waste increased steadily. From 1994 to 2005 there has thus been a 96 per cent increase.

This increase does not reflect a real increase in garden waste. It is rather the result of increasing opportunities for householders to dispose of garden waste at municipal waste treatment plants at the expense of home-composting. This means larger waste volumes to be treated in the municipal waste treatment system.

Treatment of garden waste is presented in Figure 9. In 2005, 99 per cent of garden waste was recycled, and around 1 per cent was landfilled.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

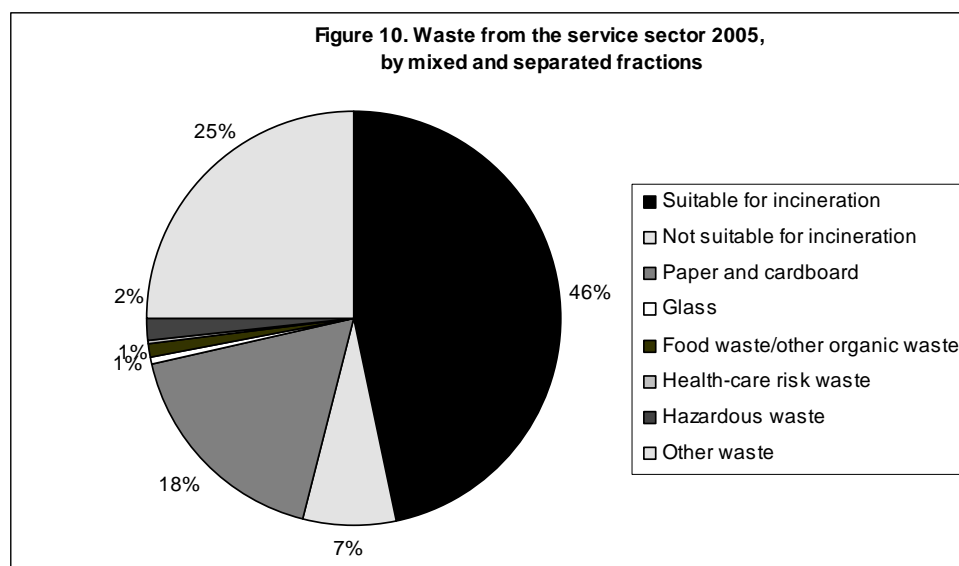
Table 24. Treatment of garden waste from households 1994-2005, stated in '000 tonnes. Illustrated in Figure 9									
Garden waste	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	250	388	411	505	513	496	495	557	535
Incineration	9	6	8	7	0	0	0	0	28
Landfilling	27	6	20	7	4	4	5	5	0
Special treatment	0	0	0	0	0	0	0	0	0
Storage					0	0	0	0	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

So, the targets for recycling and incineration of garden waste from households have been met by a good margin. Estimates indicate that it is impossible to increase the recycling rate any further.

5.2 Waste from the service sector

Waste from the service sector¹⁵ amounted to 1,841,000 tonnes in 2005. This is up by 8,000 tonnes, or about the same as in 2004. As mentioned in Chapter 1, there has been a dramatic increase in waste arisings from the service sector since 2001 and the increase should therefore be regarded with some caution. However, the waste arisings appear to have stabilised over recent years.



Source: ISAG reports 2005. The key is listed clockwise beginning at "12 o'clock".

Waste from the service sector is analysed by mixed and separated fractions in Figure 10. There is no great change in the percentage distribution of fractions from 2004 to 2005. Changes are between 0 and 1 per cent. Where waste suitable for incineration has dropped by 1 per cent, paper and cardboard has gone up by 1 per cent. For the remaining waste there have not been any changes. Waste suitable for incineration, paper and cardboard, and other waste are the three largest waste fractions from the service sector with 46 per cent, 18 per cent, and 25 per cent respectively.

Service/trade and offices	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	203	317	338	449	485	736	807	825	921
Incineration	280	380	438	515	669	760	859	833	828
Landfilling	152	135	161	152	137	131	140	152	92
Special treatment	21	19	18	4	4	4	3	3	0
Storage					62	24	23	28	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

Storage means that the waste in question has been assigned to temporary storage by local authorities (the local council), cf. section 37(3) of the Statutory Order on Waste. Denmark has excess incineration capacity, but storage can be due to e.g. repairs or shut down of operations at installations.

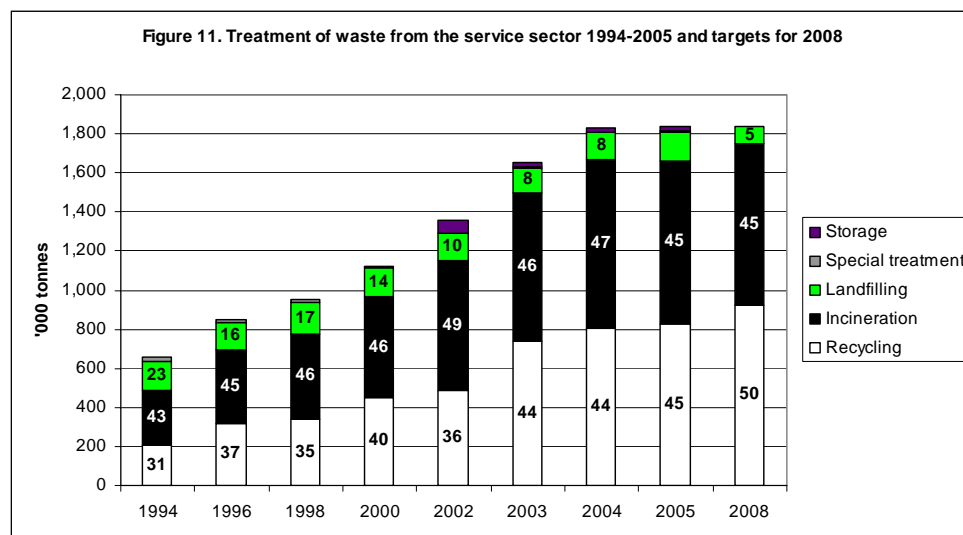
Table 26 shows the development in waste generation from the service sector in the period 2004 to 2005, analysed by fractions. It is apparent that most of the increase in the amount of waste from the service sector is to be found in the fractions various non-combustible and paper and cardboard. On the other hand, the fraction bottles and glass has gone down by as much as 29 per cent.

¹⁵ The service sector covers the commercial source: institutions, trade and offices.

Table 26. Waste from the service sector by fraction. Stated in tonnes.	2004	2005	Change in %
Various combustible	875,944	856,805	-2
Various non-combustible	120,241	133,020	11
Paper and cardboard separated for recycling	309,079	326,814	6
Bottles and glass separated for recycling	14,587	10,354	-29
Food waste/other organic waste separated for recycling	18,013	17,654	-2
Health-care risk waste	4,163	4,384	5
Hazardous waste	36,592	32,716	-11
Other waste	454,298	459,308	1
Total	1832917	1841055	0

Source: ISAG 2004 and 2005.

Of the 1,841,000 tonnes of waste which the service sector generated in 2005, 45 per cent was recycled, another 45 per cent was incinerated, while 8 per cent was landfilled and 1 per cent placed in temporary storage, cf. Figure 11. The amount of waste that was recycled has thus gone up some, while the amount that is led to incineration has gone down compared to 2004. The waste put in temporary storage will be incinerated when incineration capacity becomes available¹⁶. In other words, the incineration rate is actually higher than the 45 per cent. Figure 11 shows that a still greater proportion of waste from the service sector is being recycled. This means there has been a diversion of waste volumes from incineration to recycling.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

As stressed in Chapter 1, the increase in waste arisings from the service sector from 2001 should be regarded with some caution.

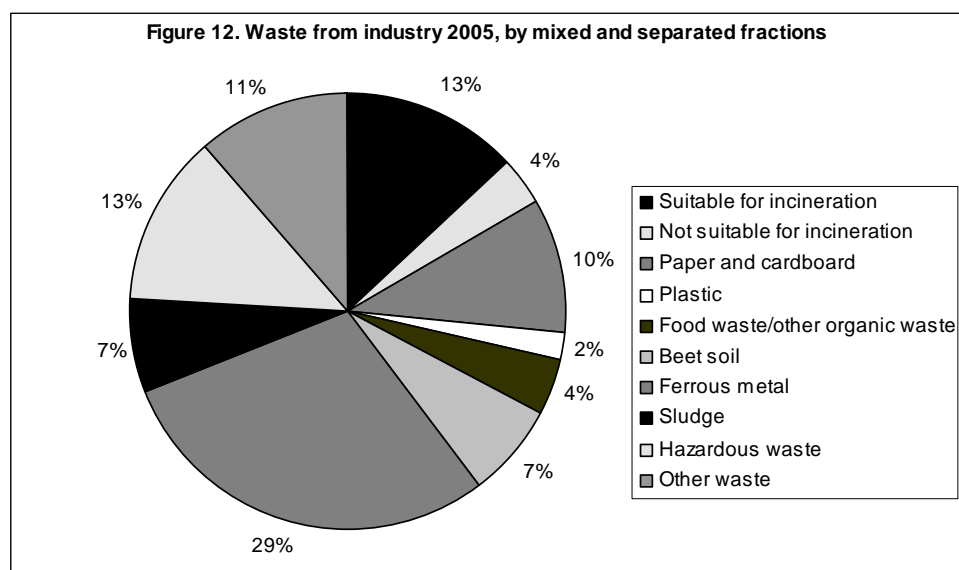
In relation to the targets for treatment in 2008 set out in Waste Strategy 2005-2008, too little waste from the service sector was still recycled and too much landfilled in 2005. If the 2008 targets are to be met, separation and collection of waste must be improved so that a larger proportion of recyclable materials can be recycled, and so that environmentally harmful waste types can be separated and treated separately.

5.3 Waste from industry

Waste generation from industry amounted to 1,855,000 tonnes in 2005, which is the same as in 2004. As mentioned in Chapter 1, since 2001 there has been a drop in the

¹⁶ Exemption clause in Section 37(3), Danish Statutory Order on Waste (Statutory Order No. 619 of 27 June 2000).

amount of waste from industry. However, the amount seems to have stabilised over recent years.



Source: ISAG reports 2005. The key is listed clockwise beginning at "12 o'clock".

Figure 12 shows a breakdown of waste from industry by mixed and separated fractions. As can be seen, ferrous metal is by far the largest single fraction, followed by the mixed fraction waste suitable for incineration, hazardous waste and other waste.

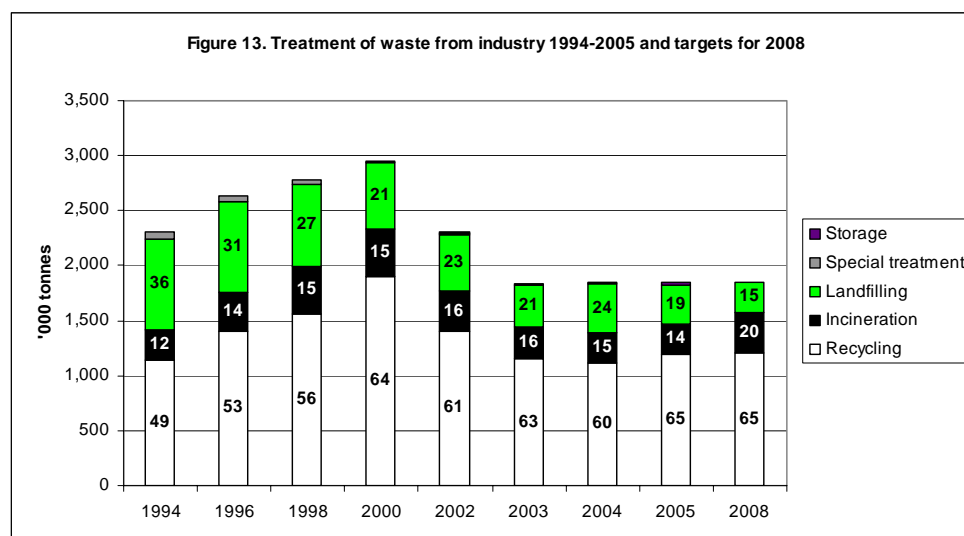
The individual fractions' percentage shares of total industrial waste are more or less unchanged from 2004. The greatest change is in ferrous metal which increased from 25 per cent in 2004 to 29 per cent in 2005, whereas the amount of beet soil and waste not suitable for incineration went down by 3 per cent. The remaining fractions show changes within 0-2 percentage points.

Table 27 shows the development in waste generation by industry in the period 2004 to 2005, analysed by fractions. As can be seen, the amount of paper and cardboard has gone up 27 per cent, while ferrous metal has gone up 18 per cent. Various non-combustible, on the other hand, has gone down 45 per cent and beet soil 34 per cent.

Stated in tonnes.	2004	2005	Change in %
Various combustible	230,314	243,384	6
Various non-combustible	123,092	67,278	-45
Paper and cardboard separated for recycling	144,425	183,094	27
Plastic separated for recycling	32,835	35,010	7
Food waste/other organic waste separated for recycling	90,798	77,537	-15
Beet soil	194,666	128,996	-34
Ferrous metal separated for recycling	461,652	543,632	18
Sludge	137,410	128,996	-6
Hazardous waste	236,104	236,236	0
Other waste	203,559	210,596	3
Total	1854855	1854759	0

Source: ISAG 2004 and 2005.

Treatment of waste from industry is shown in Figure 13. In 2005, 65 per cent of the waste from this sector was recycled.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings. As stressed in Chapter 1, the fall in waste arisings from industry from 2001 should be regarded with some caution.

Table 26. Treatment of waste from industry 1994-2005, stated in '000 tonnes. Illustrated in Figure 13

Manufacturing	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	1,140	1,397	1,564	1,896	1,403	1,157	1,111	1,199	1205
Incineration	271	361	425	431	363	290	276	268	371
Landfilling	830	822	746	611	520	379	452	352	278
Special treatment	69	52	47	9	10	7	7	8	0
Storage					15	8	9	27	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings. Storage means that the waste in question has been assigned to temporary storage by local authorities (the local council), cf. section 37(3) of the Statutory Order on Waste. Denmark has excess incineration capacity, but storage can be due to e.g. repairs or shut down of operations at installations.

The proportion of industrial waste led to incineration in 2005 was 14 per cent. The landfilling rate dropped by 5 per cent from 2004 to 2005, ending at 19 per cent in 2005.

This means that the 2008 target of landfilling a maximum of 15 per cent of industrial waste has not been met. Denmark still landfills far too much industrial waste. Even if the rate of landfilling has taken a positive direction since 1994, there is still some way to go before the 2008 target for this treatment option is met, cf. Figure 13.

The volumes and composition of waste from industry vary according to the sector generating the waste, as well as size and number of enterprises. Possibilities of waste prevention or recycling will therefore differ from one waste fraction and sector to another.

In order to meet the targets in the Waste Strategy 2005-2008, the Danish EPA has selected a number of waste types from industry to come into focus. These waste types include waste from foundries and shredder waste, which are to be diverted from landfilling to recycling whenever environmentally and economically efficient.

With the latest amendment to the Statutory Order on Waste the Danish EPA has implemented a number of changes to the ISAG system, so that since 2001 it has been possible to analyse waste from industry between eleven different sectors.

Waste generation in industry stated by sector and treatment option can be seen in Table 29.

Industry	Processing	Incineration	Landfilling	Temporary storage	Special treatment	Total
Manufacturing etc. (old fraction)	478	2	13	0	0	493
Food, beverages and tobacco	181,609	25,377	7,725	1,040	8	215,759
Textiles, clothing and leather goods	8,610	3,017	570	681	0	12,879
Wood-working and furniture	11,490	8,705	2,322	1,625	1	24,142
Paper and graphical production	209,921	11,831	5,740	3,344	374	231,210
Chemicals etc.	6,621	34,441	4,111	66	435	45,674
Rubber and plastics	41,487	12,557	3,568	4,071	124	61,807
Stone-working, pottery and glass	31,830	6,525	5,826	322	41	44,545
Ferrous metals	116,052	11,961	135,267	11,372	6,426	281,080
Other manufacturing	48,719	137,795	26,686	3,612	667	217,480
Utilities	101,863	9,705	26,024	246	247	138,085
Agriculture, forestry and fisheries etc.	18,887	5,649	5,918	568	18	31,042
Total	777,568	267,566	223,772	26,946	8,342	1,304,195

Source: ISAG reports 2005. The Table does not cover beet soil and ferrous metal reported by large scrap dealers.

As apparent from the table, food, beverages, and tobacco; the ferrous metal industry; other manufacturing; the paper and graphical production industry; and utilities contributed around 70 per cent of waste from industry in 2005. The amount of waste from manufacturing etc. was 493 tonnes. In 2002, waste generation from this source amounted to 238,815 tonnes, which means that reporting enterprises have improved their reporting on the new commercial sources (cf. as the commercial source manufacturing industries etc. was discontinued in 2001).

5.4 Waste from building and construction activities

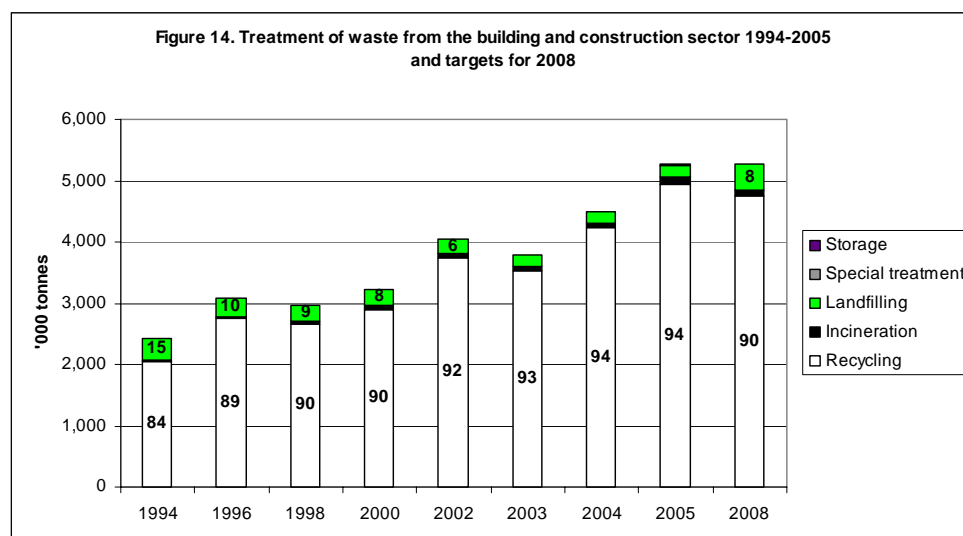
The generation of waste by the building and construction sector increased from 2004 to 2005. Volumes of construction and demolition waste amounted to 5,270,000 tonnes in 2005, which is 775,000 tonnes, or 17 per cent, more than in 2004. This increase can be attributed e.g. to greater activity in the building and construction sector in general.

As is apparent from Table 30, which shows the development in waste arisings in the building and construction sector, the greatest increase in total arisings stems from the fraction soil and stone, which increased by 565,000 tonnes or 41 per cent. Also in the fraction various non-combustible and other waste, the increase is substantial, at 22 and 21 per cent respectively. There is an 11-per-cent drop in arisings of other construction/demolition waste. By far the major part, or 94 per cent, of waste generated by the building and construction sector is recycled.

	2004	2005	Change in %
Various non-combustible	124,476	151,742	22
Concrete	1,046,921	1,179,374	13
Tile	247,210	241,749	-2
Other construction/demolition waste	536,456	478,614	-11
Asphalt	716,481	736,603	3
Soil and stone	1,367,194	1,932,476	41
Other recyclable waste	140,760	165,984	18
Other waste	316,072	383,810	21
Total	4495570	5270352	17

Source: ISAG 2004 and 2005.

Figure 14 shows that the rate of waste which is recycled in 2005 remained the same as 2004. This also applies to incineration and landfilling.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

As the figure also shows the recycling rate for construction and demolition waste increased by 10 per cent in the period 1994 to 2005. At the same time the landfilling rate went down by 11 per cent. The figure also shows that the distribution of waste between the different treatment options has been in line with targets for 2008 since 2000.

Table 31. Treatment of waste from the building and construction sector 1994-2005, stated in '000 tonnes

Building and construction	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	2,052	2,748	2,664	2,889	3,735	3,531	4,231	4,943	4743
Incineration	16	17	32	65	72	77	81	106	105
Landfilling	363	317	266	269	229	170	172	208	422
Special treatment	2	6	1	0	0	0	0	0	0
Storage					8	8	11	14	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

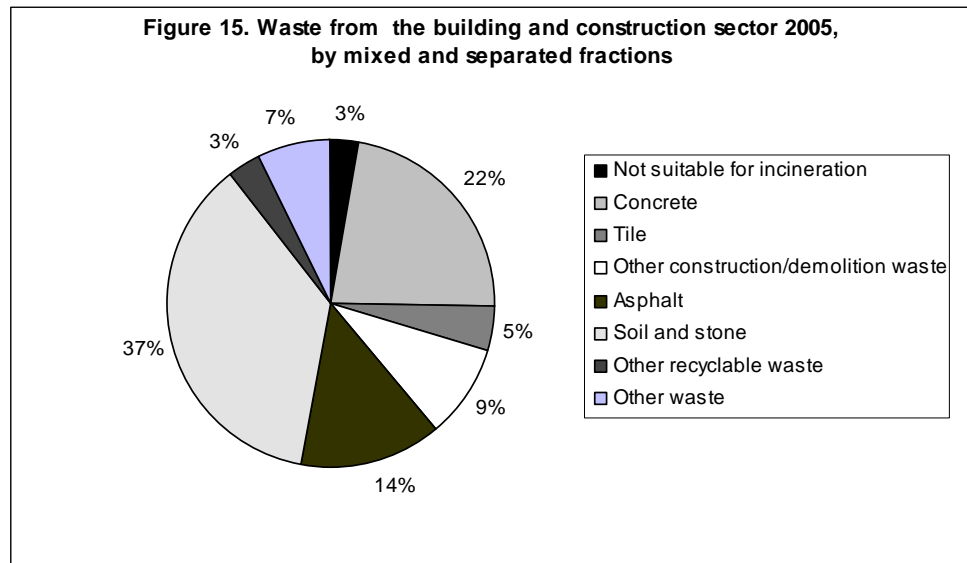
Storage means that the waste in question has been assigned to temporary storage by local authorities (the local council), cf. section 37(3) of the Statutory Order on Waste. Denmark has excess incineration capacity, but storage can be due to e.g. repairs or shut down of operations at installations.

The high recycling rate for construction and demolition waste is due partly to the fact that recycled waste, unlike landfilled or incinerated waste, is exempt from taxation, and partly due to a 1995 departmental circular on municipal regulation concerning the separation of construction and demolition waste intended for recycling¹⁷. In addition, the Ministry of the Environment and the Danish Contractors' Association have entered an agreement on selective demolition of buildings.

Figure 15 shows construction and demolition waste analysed by mixed and separated fractions for 2005. It can be seen that the bulk of building waste consists of concrete, asphalt, and soil and stone.

Relative to 2004, the share of soil and stone has gone up, from 31 per cent in 2003 to 37 per cent in 2005. This is due to greater activity in the building and construction sector, resulting in more soil being sent to some of the treatment plants. Otherwise, there have not been great changes in the spread between fractions from 2004 to 2005. Changes are between 0 and 3 percentage points.

¹⁷ Circular No. 94 of 21 June 1995.



Source: ISAG reports 2005. The key is listed clockwise beginning at "12 o'clock".

A large part of the waste from the building and construction sector is reprocessed at mobile crushing plants which are used for different assignments at different locations throughout Denmark.

The owner of the mobile crushing plant is responsible for the ISAG reports to the Danish EPA, but sometimes the entrepreneur also reports the waste. The Danish EPA is very much aware of this possible source of double reporting, and great efforts are being made, in co-operation with the providers of the reports, to ensure quality control and avoid double reporting.

5.5 Residues from coal-fired power plants

The generation of residues at coal-fired power plants varies from one year to the next due to variations in Danish imports/exports of electricity to and from Sweden and Norway. Imports/exports of electricity to and from Sweden and Norway depend largely on precipitation in these countries - if there is much precipitation, much electricity is generated from hydropower in Sweden and Norway, and Danish exports will be correspondingly lower.

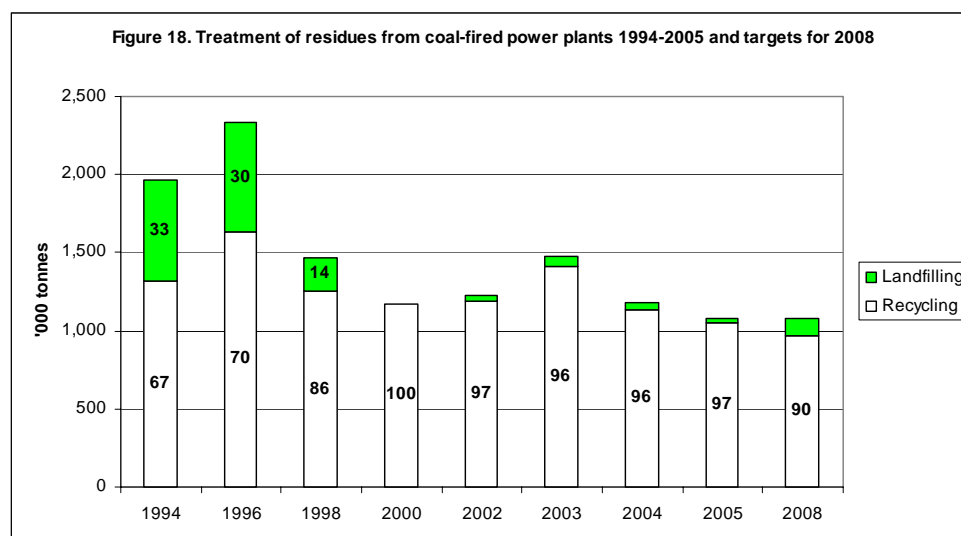
For example, in 1996 exports of power were particularly high, which is reflected in amounts of residues in this year, cf. Figure 16. In 2000, there was high precipitation in Sweden, which resulted in so much cheap hydroelectricity on the market that power stations in both Denmark and Norway had to cease operation temporarily.

Amounts of residues have decreased steadily since 1996, but show an increase from 2002 to 2003. This fall stems for a great part from the fact that, over time, coal has been supplanted by natural gas and renewables, including biofuels. Energy statistics¹⁸ reflect that a still smaller share of electricity generation is based on coal. Also in future, the phase-out of coal will result in a decrease in residues from coal-based energy generation, whereas there will be an increase in fly ash and bottom ash from bio-fuels.

Residues from coal-fired power plants amounted to around 1,081,000 tonnes in 2005, which is a fall of 8 per cent from 2004. As Figure 16 shows, 97 per cent of residues was recycled and 3 per cent was landfilled. The fall in the amount of residues is due

¹⁸ The latest Energy Statistics are found on www.ens.dk, the Danish Energy Authority's website.

e.g. to falling exports of electricity to, for example, Sweden, Norway, and Germany. Thus, net exports fell by 148 per cent from 2004 to 2005.¹⁹



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

Power plants	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	1,319	1,629	1,259	1,176	1,190	1,413	1,134	1,053	973
Landfilling	643	703	210	0	38	60	46	28	108

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

The recovery of residues in 2005 is stated in more detail in Table 33. More than 90 per cent of residues is used as raw materials in industrial manufacture of, for example, cement, concrete and plasterboard, whereas the remaining part is primarily used as backfilling, either in accordance with the provisions of Statutory Order no. 655 of 27 June 2001 from the Ministry of the Environment, or as backfilling with special approval under the Danish Environmental Protection Act.

	Fly ash (1)	Slag/bottom ash (2)	Plaster	Tasp	Sulphuric acid	Total
Cement	185528		39939			225467
Concrete	188357					188357
Light concrete						0
Asphalt	821					821
Roofing felt/concrete block		29482				29482
Filling material according to Statutory Order no. 568						0
Filling material according to Part-5 approvals						0
Granulate				0		0
Fertilizer		5711		8891		14602
Filling material						0
Plaster board			74275			74275
Various	265588		39484	111221		416293
Exported for recycling	21134					21134
Desulphurising					52635	52635
Refining						0
Landfilled	7461	1420	64	1811		10756
Sent to storage						0
Total	668889	76097	225499	63337	0	1033822

Source: Reports from Elsam and Energi E2.

5.6 Sludge from municipal wastewater treatment plants

The statement for 2005 from municipal wastewater treatment plants of amounts of sludge applied to farmland and incineration of sludge at sludge incineration plants is

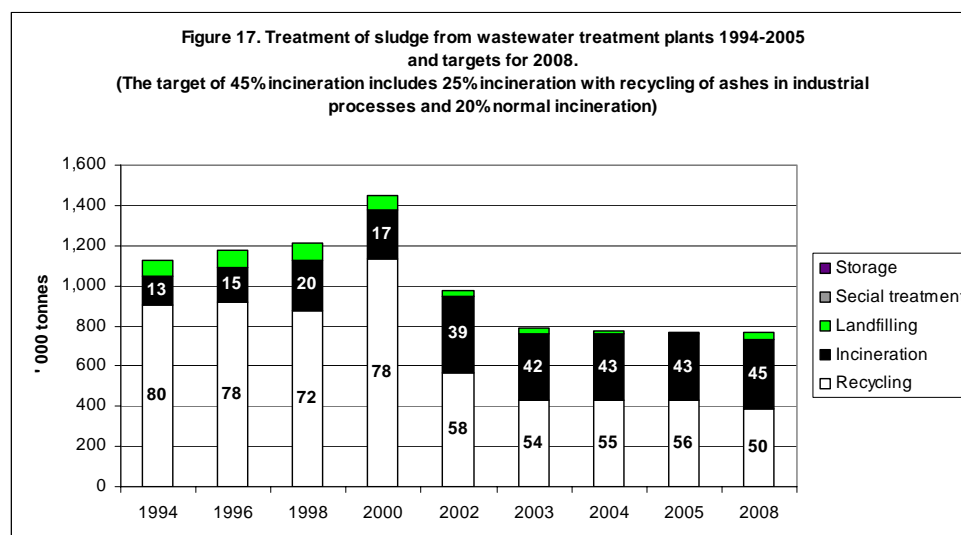
¹⁹ Danish Energy Authority Monthly Electricity Statistics. Available at www.ens.dk.

not yet available due to a reorganisation of the electronic reporting system.²⁰ For recycling and incineration, 2002 figures from the Danish EPA's sludge statistics have been used.²¹

As mentioned in Chapter 1, it was decided to state amounts of sludge for mineralisation with a dry matter content of 20 per cent, so that sludge for mineralisation would be stated with the same dry matter content as other sludge. In the treatment in sludge mineralisation plants (long-term storage) sludge is reported with around 0.5 - 1 per cent dry matter content, whereas alternatives typically contain 20 per cent.

Treatment of sludge from municipal wastewater treatment plants is shown in Figure 17. According to the Figure, 56 per cent of sludge is recycled, 43 per cent is incinerated, and 2 per cent is landfilled.

The figures for recycling include 45,600 tonnes of sludge with a dry matter content of 20 per cent, corresponding to 607,922 tonnes sludge in wet weight, which are being treated in long-term storage with the objective of further mineralisation. This amount has been included in the amounts for recycling because the sludge will be recycled after a number of years in storage.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings. The figure shown for 2005 is based on 2002 figures. The method of calculation of sludge for mineralisation has been changed with effect from 2001. The figures for recycling include 45,600 tonnes of sludge with a dry matter content of 20 per cent, corresponding to 607,922 tonnes when stated in wet weight. Long-term storage and incineration amounts include 221,730 tonnes for other uses (Carbogrit and production of concrete).

Sludge	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	902	918	875	1,132	568	429	429	429	385
Incineration	144	174	248	244	382	332	332	332	347
Landfilling	81	83	90	71	27	31	16	9	39
Social treatment	0	0	0	0	0	0	0	0	0
Storage					0	1	0	0	0

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings. The figures for recycling 2003 to 2005 are 2002 figures.

²⁰ According to the EU Directive on sludge, sludge has to be reported only every third year. Denmark will therefore be requesting data on sewage sludge from the municipalities only every third year.

²¹ See "Sewage sludge from municipal and private wastewater treatment plants in 2002". Environmental Review No. 5, 2004, Danish EPA. Landfilling figures are from ISAG, figures for 2004. The statement for 2005 is not yet available.

Sewage sludge is mainly recovered as fertiliser on farmland. In recent years, the requirements regarding contents of certain organic and chemical substances in sludge applied to farmland have been made stricter. In the short term, the rate of recycling is therefore expected to decrease. In the long term, it is expected the general phase-out policy for xenobiotic substances will improve the quality of sludge further.

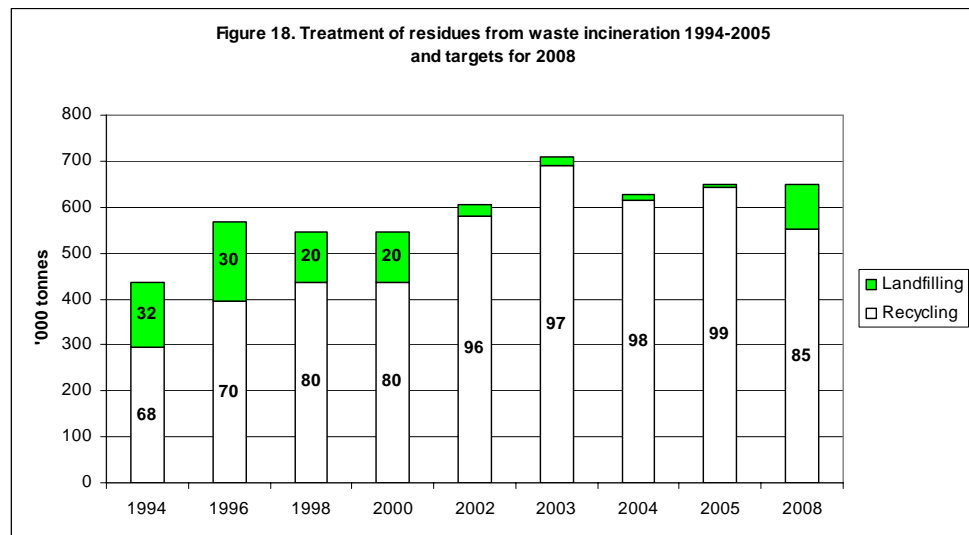
Finally, it appears that alternative methods of sludge recovery are being discovered to an ever greater extent. After sludge incineration, the inorganic residue is recovered in the production of e.g. sand blasting agents, or cement. Sludge recovered by such alternative methods in 2002 amounted to around 220,000 tonnes²². In Figure 17, this amount has been included in incineration because it is recovery, not recycling.

5.7 Residues from waste incineration plants

Figure 18 shows amounts of residues (slag, fly ash, and flue-gas cleaning products) from waste incineration plants 1994 to 2005 in tonnes, including treatment option.

Residues from waste incineration plants have not been included in calculations of total waste generation, since the waste would then be counted twice in the statistics. However, residues are a large waste fraction and to secure adequate capacity for their treatment, a calculation of amounts is required.

By far the major part of residues is recycled. The recycling rate was 99 per cent in 2005, which is 1 percentage point up from 2004. Residues, however, are not recyclable when containing large quantities of heavy metals, which may leach into the soil, groundwater and surface water. In such cases landfilling is required.



Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

Note that Figure 18 is not comparable with Table 33 and Figure 19, because Figure 18 is exclusive of exported residues.

Residues	1994	1996	1998	2000	2002	2003	2004	2005	2008
Recycling	295	396	435	436	581	691	615	642	552
Landfilling	140	171.6	110	110	23	19	11	7	97

Source: same as Tables 1 and 2. Note that arisings in 2008 have been set to correspond to arisings in 2005. The figures are not projections of developments in waste arisings.

²² The statement for 2004 is not yet available. The figure "Other, etc." is from Annex 4.4 of the sludge statistics ("Sewage sludge from municipal and private wastewater treatment plants in 2002").

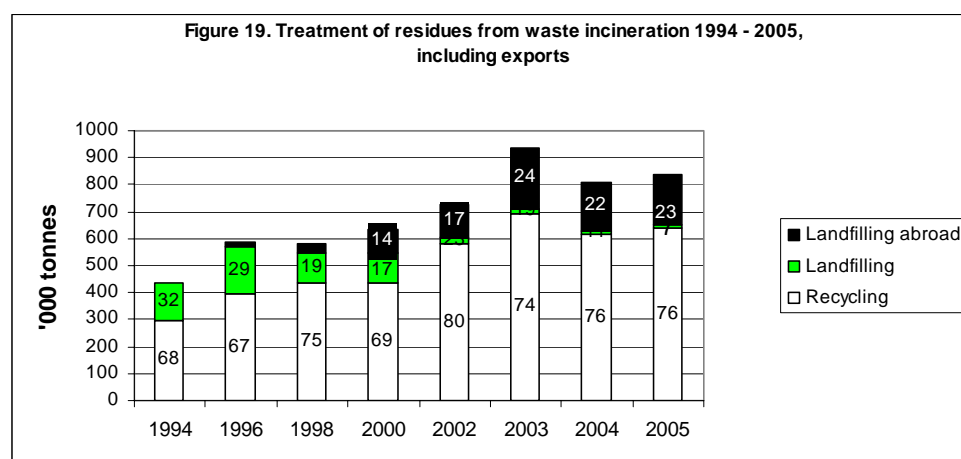
Contaminated fractions such as PVC, impregnated wood, and electric and electronic products, are not to be incinerated. This means that contents of heavy metals in slag will be reduced significantly. However, requirements for recycling of slag were tightened in 2000 to take account of the groundwater. The 2008 target of 85 per cent recycling has already been met.

Table 36 shows the treatment of residues from waste incineration. Naturally, amounts of residues depend on the amount of waste incinerated. Slag and flue-gas cleaning products typically comprise around 20 per cent and 5 per cent, respectively, of the waste amount led to incineration.

	1996	1998	2000	2002	2004	2005
Slag removed	509200	468500	494,055	543,254	564,313	595,272
Fly ash and flue-gas cleaning products removed/exported	71900	82500	68,018	84,531	86,834	82,964
Removed in total from waste incineration plants	581100	551000	562073	627785	651147	678236
Landfilled slag	126300	76400	106,265	19,365	10,644	6,918
Landfilled fly ash and flue-gas cleaning products	45300	33300	3,478	3,623	446	260
Fly ash and flue-gas cleaning products landfilled abroad	21103	37900	85,700	124,820	180,937	190,862
Landfilled in total from waste incineration plants	192703	147600	195443	147808	192027	198040
Slag reported as sent to reprocessing plants	101800	115200	131,201	88,351	96,818	102,432
Removed slag assessed to have been led directly to recycling	281100	276900	256589	435538	456851	485922
Recycled in total from waste incineration plants	382900	392100	387790	523889	553669	588354
Removed fly ash and flue-gas cleaning products assessed to have been put in storage	5497	11300	-21160	-43912	-94549	-108158

Source: Calculations are based on ISAG reports and registrations under the EU regulation on shipments of waste. Note that Table 36 and Figure 18 are not comparable. This is because Figure 18 does not include exports.

Table 36 shows that residues from waste incineration amounted to around 678,000 tonnes in 2005. This is 27,000 tonnes more than in 2004. Out of the 678,000 tonnes of residues removed from waste incineration plants, around 198,000 tonnes were landfilled, while around 588,000 tonnes were recycled. This means that, in reality, the stored amounts of fly ash and flue-gas cleaning products have been reduced by about 108,000 tonnes.



Source: ISAG reports and registrations under the EU regulation on shipments of waste.

As is evident in Figure 19, the amount of residues exported for landfilling abroad has been increasing since 1996. The amount of residues exported for landfilling went up from 21,000 tonnes in 1996 to 191,000 tonnes in 2005. Relative to 2004, there has been an increase of 10,000 tonnes in landfilled volumes. The main part of these was excavated from landfills in Denmark, as can be seen from Table 36.

From 1996 to 2005, amounts of landfilled residues have gone up by about 3 per cent and recycling has increased by 54 per cent.

6 Incineration plants and landfills

6.1 Incineration plants

In 2005, total waste incineration capacity was around 3,380,000 tonnes, distributed between 29 plants, cf. Table 37. This is an increase in capacity of 682,000 tonnes compared to the 1999 capacity.

In the early 1990s, an extensive conversion of waste incineration plants from heating generation to combined heat and power took place. In this connection, capacity adjustments were effected in relation to expected waste volumes for incineration in the future.

As a result of the ban on landfilling of combustible waste that took effect on 1 January 1997, there is now increasing pressure on incineration capacity. Volumes of non-recyclable waste suitable for incineration will be surveyed regularly in order to ensure the necessary incineration capacity.

Table 37. Number of incineration plants and available incineration capacity in:	1989	1993	1994/95	1996	1999	2003	2005
Number of incineration plants	38	31	31	31	31	32	29
Theoretic capacity, '000 tonnes	2164	2329	DH: 1217 CHP: 1315	DH: 1060 CHP: 1413	DH: 915 CHP: 1783	338 9	3380
Nominal capacity, tonnes/hour	313	335	DH: 174 CHP: 188	DH: 171 CHP: 194	DH: 166 CHP: 271		

Source: Rambøll & Hannemann 1990: Analysis of data for energy plants based on waste, for the Danish EPA and the Danish Energy Authority. The Danish EPA and the Danish Energy Authority 1994: Waste resources for waste incineration 1993 and 2000. The Danish EPA and the Danish Energy Authority 1997: Waste for incineration year 2000. The Danish EPA and the Danish Energy Authority 2001: Waste incineration in 2004 and 2008. Volumes and capacities. Environmental Review No. 11, 2001. Figures for 1989 and 1995 are calculated on the basis of nominal capacity at 7,000 hours/year. The figures for 1996 and 1999 are based on the actual hours of operation of the plants. District heating capacity (DH) may be subject to restrictions under the Danish Act on Heating Supply. CHP = combined power and heating. In figures for 1999 the nominal capacity includes plants erected in 1999. This gives a larger nominal capacity as furnaces were not in full operation in 1999. The figure for 2003 was calculated by the Danish EPA.

6.2 Landfills

In the Statutory Order on landfills²³, a landfill is defined as waste disposal facilities on land for the landfill of waste covered by K1b, K3a, K3b or K3c in Annex 1 of the Statutory Order on Approval of Listed Activities²⁴. This definition includes landfills (including controlled landfills), inert waste landfills and mono-landfills.

²³ Statutory Order no. 650 of 29 June 2001 on landfills.

²⁴ Statutory Order no. 652 of 3 July 2003 on approval of listed activities.

Today, there are 134 landfill facilities in Denmark with an environmental approval, according to a questionnaire study conducted by the Danish EPA in February/March 2001, cf. Table 38.

Of these, 100 facilities are owned by public authorities, whereas 34 are under private ownership. The 100 public facilities cover 51 landfills, 25 inert waste landfills, and 24 mono-landfills.

The privately owned facilities cover 3 landfills, 10 inert waste landfills and 21 mono-landfills.

	Landfills			Inert waste landfills			Mono-landfills	
	1992	1994	2001	1992	1994	2001	1994	2001
Number of sites	60	64	54	70	49	35	63	45

Source: Danish EPA: Working Report No. 54, Landfill Capacity 1992. Danish EPA 1997: Working Report no. 33, Landfills in Denmark, plus own calculations. Questionnaire study carried out by the Danish EPA in February/March 2001.

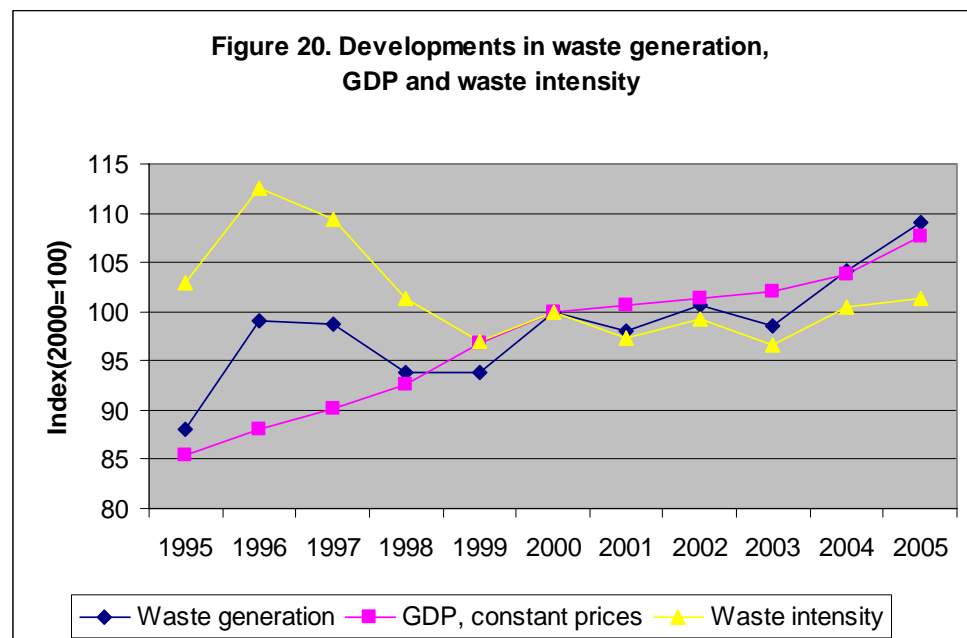
7 Economic development and projection of waste arisings for incineration

7.1 Waste arisings and economic development

Waste generation is a result of all activities in society. The challenge is to decouple the increase in waste volumes from general economic growth. Responsibility for solving the problem of increasing volumes of waste is shared by all sectors of society. The initial goal is thus to ensure that the increase in waste generation does not occur at the same rate as the increase in economic development.

Figure 20 shows that total waste arisings increased faster than economic growth in the period 1995 to 1996. This was followed by a decline in arisings, and yet another increase during 1999 to 2000. Danish waste arisings remained fairly stable in the period 2000 to 2003, but increased dramatically in 2004 and 2005, e.g. due to increased amounts of construction and demolition waste.

If total waste generation is shown in proportion to gross domestic product (GDP), it provides an indication of the waste intensity in society.



The figure shows the relative development of gross domestic product in constant prices²⁵ (GDP) and waste production and waste intensity, illustrating the ratio between the relative development of waste production and the relative development of GDP. As can be seen from the figure, waste intensity declined until 1999 (decoupling) and has subsequently remained relatively constant, apart from slight increases in 2004 and 2005. This means that, by and large, the growth in waste arisings has corresponded

²⁵ Constant prices are prices for the year adjusted for inflation, and are thus an indicator of real growth.

to the growth in GDP since 1999, however with a slight upward trend in waste intensity. This development, therefore, does not indicate a decoupling; rather it indicates a fairly stable relationship between growth in waste volumes and economic growth, stated as GDP.

Since waste arisings in a number of sectors are increasing, it is important to continue to work towards reducing the volumes of waste. Forecasts for future waste generation show that waste volumes will increase, unless active efforts are made to reduce them. This can be seen, for example, in the European Environment Agency's report, "Environment in EU at the turn of the century".

As the basis for future waste planning, it is therefore necessary to have an idea of the increase in waste arisings in future. A model projection of waste arisings up to 2020 is presented in the following.

7.2 Projection of waste arisings

The following is a baseline projection of waste arisings up to 2020. The so-called FRIDA model has been used for this projection²⁶.

The projection is based on the Ministry of Finance's projection of economic growth Finansredegørelse 2006 (budget statement 2006), the Danish Energy Authority's most recent projection of coal consumption from 2005²⁷, and waste data from ISAG for the period 1994 to 2004.

FRIDA describes the trend in waste arisings for the individual fractions and sources in ISAG in relation to economic development. FRIDA is therefore a hybrid of a scenario model and an econometric model. For the large waste streams, the relationship between economic development and developments in waste arisings is identified by performing an econometric analysis of the period 1994 to 2003. This means that for these waste streams, an analysis is performed which determines the connection between trends in waste arisings and economic activity in society. Subsequently, the development in waste arisings is projected on the basis of the assumption that the relationship between the economy and waste arisings will remain the same in future as in the period 1994 to 2003. The analysis thus takes into account the fact that production technologies may have changed over time, as may the relationship between consumption and production. Other factors may also be of significance. The large waste fractions include:

- Various combustible
- Various non-combustible
- Paper and cardboard
- Organic waste
- Ferrous metal
- Construction waste

For the other waste streams, developments are described in a scenario model which assumes constant waste coefficients. That is, the model assumes a constant relationship between waste arisings and economic development.

The FRIDA model is used to project waste arisings up to 2020.

²⁶ En model til FREmskrivning af ISAG DAta. FRIDA (FRIDA, a model for projection of ISAG), Working Report No.35, 2006, from the Danish EPA.

²⁷ Energy Strategy 2025, the Danish Ministry of Transport and Energy.

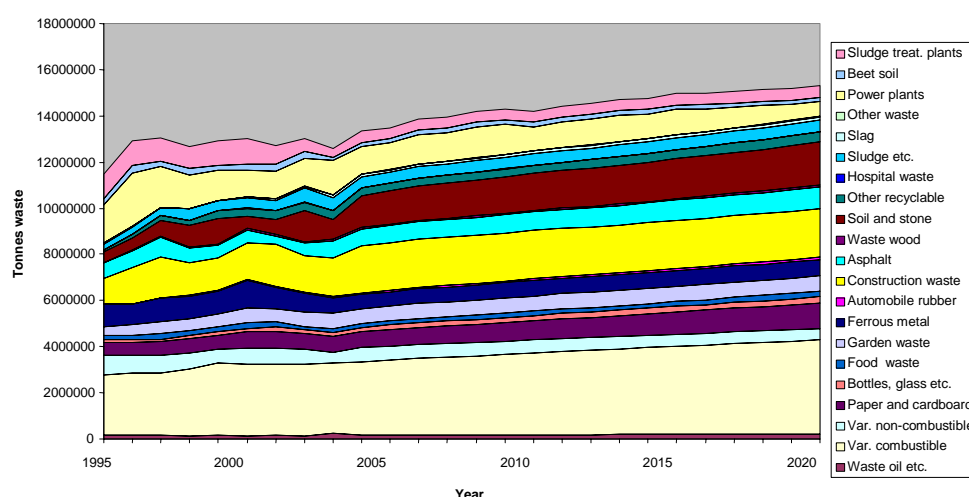
7.3 Baseline projection of waste arisings 1994 to 2020

The waste prognosis is based on the Ministry of Finance's ADAM projection from 2006. In the period 2004 to 2020, total production (in constant prices) is expected to increase by about 29 per cent, and private consumption is expected to increase by about 37 per cent. Figures on coal consumption by industry and power plants from the Energy Authority are on the assumption that consumption by power plants will drop towards 2020, while consumption by industry will go up.

Actual waste arisings increased from 1994 to 2004 by around 20 per cent (see Table 1). A projection of primary waste amounts 2004 to 2020 gives an increase in arisings of around 14 per cent, from around 13.4 million tonnes of waste in 2004 to an overall waste volume of around 15.3 million tonnes in 2020, cf. Figure 2128.

A comparison of the increase in waste arisings with the increase in production and consumption respectively gives a projection in which waste arisings will increase less than the economic growth. One important reason for the smaller increase in waste arisings is falling coal consumption by power plants, which means that the amount of slag and ashes etc. from the power plants is at least expected to halve.

Figure 21 Trends in primary waste arisings



As can be seen from Figure 21, the baseline projection shows a significant increase in the amounts of various combustible, paper and cardboard, construction and demolition waste and soil and stone. The most important reason for this increase can primarily be traced to the projection of private consumption, which is expected to increase by around 37 per cent up to 2020. In contrast, a drop in the amount of non-combustible waste from power plants is anticipated.

About 50 per cent of combustible waste originates from households. This rate has been decreasing over recent years, whereas there has been a dramatic increase in the amount of combustible waste from the service sector. The amount of combustible waste from industry has shown a downward trend. However, there is uncertainty as to the development of waste arisings from industry and the service sector in particular (cf. Chapter 1). In the projection it is therefore assumed that the increase in service-sector waste volumes is unlikely to continue at the same pace, but that it will increase in step with economic growth. Amounts of waste from industry are assumed to continue in

28 Note that e.g. amounts of paper and cardboard are not an expression of the total potential of this fraction, but merely state the amount of paper and cardboard separated for recycling. The fraction combustible waste thus may also contain paper and cardboard and other recyclable fractions.

step with economic growth. The amount of combustible waste from households, on the other hand, is not assumed to increase in step with economic growth; here a decoupling from the economic development is expected.

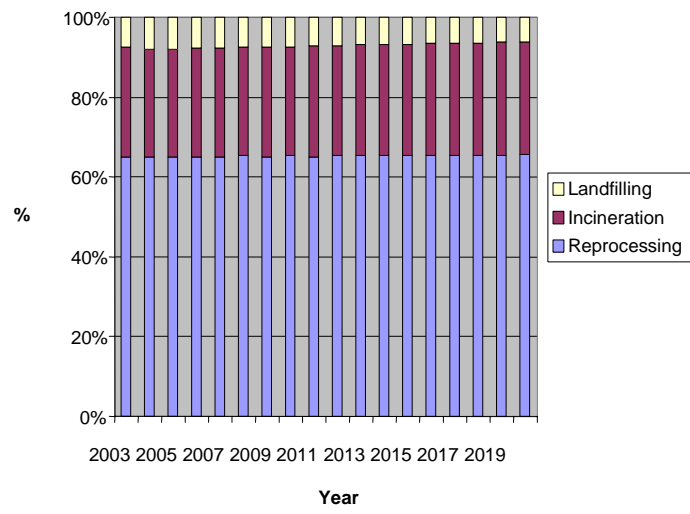
From 1994 to 2004 the total amount of collected waste paper and cardboard will increase by about 92 per cent, amongst other things due to expansion of the collection scheme (see Table 5). It is however assumed that the consumption of paper and cardboard by households, the service sector and industry will follow the economic development.

Amounts of construction and demolition waste have fluctuated over time. From 1994 to 2004, amounts increased by 85 per cent, however (see Table 3). As can be seen from Figure 21, construction and demolition waste volumes are expected to increase up to 2020. The main reason for this increase is that building and construction activities are assumed to follow the economic development. With expected greater consumption, construction and demolition waste must be expected to increase as well.

The amount of various non-combustible waste decreased significantly from 1994 to 2004. This is due e.g. to increased source separation and, consequently, an increased amount of waste being recycled. It is uncertain whether this trend will continue or whether there is actually a saturation point for how much can be separated for recycling etc. However, in the model this trend is assumed to continue up to 2020.

As can be seen from Figure 22, no great changes are expected in the amount of waste for recycling. Where about 65 per cent was recycled in 2004, it is expected that 65.5 per cent will be recycled in 2020. Where 26 per cent was incinerated in 2004, it is expected that about 28.3 per cent will be incinerated in 2020. The rate of waste led to landfill is expected to drop from 8 per cent in 2004 to 6.2 per cent in 2020.

Figure 22. Trends in the breakdown of treatment options



Annex 1. Tables of waste generation

Table 1. Waste generation in Denmark in 2003, 2004 and 2005, and targets for 2008, stated by source and treatment option. Stated in '000 tonnes and in per cent.

Source: ISAG reports, the Danish government's Waste Strategy 2005-2008, Danisco, the Association of Danish Recycling Industries and other large scrap dealers, reports to the Danish EPA on sludge applied to farmland etc. and incineration of sludge at sludge incineration plants (figures from 2001). Waste from wastewater treatment plants includes sand and screenings.

ALL DENMARK	Recycling						Incineration						Landfilling						Special treatment						Storage						Total																	
	2003		2004		2005		Mål		2003		2004		2005		Mål		2003		2004		2005		Mål		2003		2004		2005		Mål		2003		2004		2005											
Source	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%												
Households	937	31	1,019	32	1,080	32	-	1,816	60	1,880	59	1,926	58	-	180	6	165	5	202	6	-	9	0	6	0	6	0	-	68	2	93	3	122	4	-	3,009	24	3,164	24	3,337	23							
Domestic waste	190	11	211	12	233	14	20	1,463	87	1,470	87	1,467	86	80	24	1	11	1	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,677	13	1,692	13	1,711	12			
Bulky waste	108	17	98	14	97	12	25	314	49	369	54	412	52	50	143	23	132	19	165	21	25	3	1	1	0	1	0	0	66	10	86	13	116	15	0	634	5	687	5	791	6							
Garden waste	496	99	495	99	557	99	95	0	0	0	0	0	0	5	4	1	5	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	500	4	500	4	563	4		
Packaging waste	85	100	84	100	96	100	*)	0	0	0	0	0	0	*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	1	84	1	96	1	
Other waste	58	51	130	65	97	55	-	39	34	41	21	47	27	-	9	8	17	8	21	12	-	5	5	5	2	5	3	-	2	2	7	3	7	4	-	113	1	200	1	177	1							
Service	736	44	807	44	825	45	50	760	46	859	47	833	45	45	131	8	140	8	152	8	5	4	0	3	0	3	0	0	24	1	23	1	28	2	0	1,655	13	1,833	14	1,841	13							
Industry	1,157	63	1,111	60	1,199	65	65	290	16	276	15	268	14	20	379	21	452	24	352	19	15	7	0	7	0	8	0	0	8	0	9	0	27	1	0	1,841	15	1,855	14	1,854	13							
Building and construction	3,531	93	4,231	94	4,943	94	90	77	2	81	2	106	2	2	170	4	172	4	208	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,785	30	4,496	34	5,270	37
Waster water treatment plants	441	53	440	54	442	54	50	340	41	336	41	339	42	45	55	7	42	5	35	4	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	836	7	819	6	816	6	
Slag, fly ash etc. (coal)	1,413	96	1,134	96	1,053	97	90	0	0	0	0	0	0	-	60	4	46	4	28	3	10	0	0	0	0	0	0	-	0	0	0	0	0	-	1,473	12	1,180	9	1,081	8								
Other waste	4	29	3	24	3	31	-	5	32	5	34	2	17	-	6	39	6	42	6	51	-	0	0	0	0	0	0	-	0	0	0	0	0	-	15	0	14	0	11	0								
Total	8,218	65	8,746	65	9,545	67	65	3,287	26	3,437	26	3,473	24	26	981	8	1,024	8	983	7	9	20	0	16	0	18	0	0	108	1	136	1	191	1	0	12,614	100	13,359	100	14,210	100							

Table 2. Waste treatment in Denmark in 2003, 2004, and 2005 stated by waste type and treatment option. Stated in '000 tonnes and in per cent.

Source: ISAG reports, the Danish government's Waste Strategy 2005-2008, Danisco, the Association of Danish Recycling Industries and other large scrap dealers, reports to the Danish EPA on sludge applied to farmland etc. and incineration of sludge at sludge incineration plants (figures from 2001). Waste from wastewater treatment plants includes sand and screenings.

ALL DENMARK	Recycling						Incineration						Landfilling						Special treatment						Storage						Total																	
	2003		2004		2005		2003		2004		2005		2003		2004		2005		2003		2004		2005		2003		2004		2005		2003		2004		2005													
Source	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%												
Domestic waste	227	13	252	14	252	14	1,516	86	1,527	85	1,566	85	28	2	14	1	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,771	14	1,793	13	1,833	13			
Treatment residues	1,960	76	1,679	72	1,595	74	339	13	341	15	336	16	279	11	314	13	217	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,578	20	2,334	17	2,148	15
Bulky waste	109	17	99	14	98	12	314	49	369	54	412	52	143	23	132	19	165	21	3	1	1	0	1	0	66	10	87	13	116	15	0	635	5	688	5	791	6											
Garden waste	677	98	664	97	726	99	1	0	1	0	1	0	15	2	20	3	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	694	5	685	5	737	5	
Industrial waste	4,998	77	5,808	78	6,595	80	1,027	16	1,099	15	1,069	13	426	7	450	6	479	6	1	0	0	0	0	0	41	1	49	1	75	1	0	6,493	51	7,407	55	8,219	58											
Hazardous waste	49	21	52	20	22	10	85	36	95	38	83	38	87	37	92	36	97	45	16	7	15	6	17	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	238	2	254	2	218	2	
Health-care risk waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Packaging waste	195	99	192	99	256	100	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	196	2	193	1	257	2	
Not available	2	27	0	9	2	28	3	42	4	90	5	71	2	31	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0	
Total	8,218	65	8,746	65	9,545	67	3,287	26	3,437	26	3,473	24	981	8	1,024	8	983	7	20	0	16	0	18	0	108	1	136	1	191	1	0	12,614	100	13,359	100	14,210	100											

Annex 2. Principles for distribution of waste received at recycling centres and transfer stations

Reported as				Changed to		
Source	Waste type	First year	Fraction	Per cent	Source	Waste type
Households	All	2001	Glass	100	Unchanged	Packaging waste
Institutions Manufacturing Building	Bulky waste	All *)	All	100	Unchanged	Industrial waste
Container centres	Domestic waste	All	All	100	Households	Unchanged
	Bulky waste	All	Concrete, Tiles, Other building waste, Asphalt, Wood, Soil and stone, Asbestos	100	Building	Industrial waste
			Paper and cardboard, Glass	100	Households	Domestic waste
			Remaining	100	Households	Unchanged
	Garden waste	All	All	100	Households	Unchanged
	Industrial waste	2001	Paper and cardboard	25	Institutions	Unchanged
				75	Households	Domestic waste
			Glass	100	Households	Packaging waste
		All	Concrete, Tiles, Other building waste, Asphalt, Wood, Soil and stone, Asbestos	100	Building	Unchanged
	Remaining		100	Institutions	Unchanged	
	Packaging waste	2001	All	100	Other	Unchanged
		2002	Paper and cardboard	25	Institutions	Unchanged
				75	Households	Unchanged
			Plastic	50	Institutions	Unchanged
				50	Households	Unchanged
			Remaining	100	Households	Unchanged
	Hazardous waste	All	All	100	Households	Unchanged
	Other	All	All	100	Other	Unchanged

*) Not applied to the new sources codes 20-30 in 2001

Appendix 3. Statement of organic waste for composting, wood chipping and biogasification

Wastes from the following plants have been included under the various categories:

Reprocessing of organic waste (53.00) from all sources into animal foodstuff.
PNA 83 ApS. DAKA

Reprocessing of organic domestic waste (53.00) from households (source 1) for composting.
Østdeponi Amba. I/S Amagerforbrænding. Fredericia Municipality. Fangel Miljø & Energiselskab
amba. Klintholm I/S. Marius Pedersen Kolding. Solum. Køstrup Komposteringsanlæg.

Reprocessing of organic domestic waste (53.00) from households (source 1) for biogasification.
Hashøj Biogas. Grindsted Municipality. AFAV I/S. Solum.

Reprocessing of organic waste (53.00) from remaining sources for composting.
Østdeponi Amba. Renoflex. Klintholm I/S. Fredericia Municipality. Komtek Miljø A/S.
Grindsted Municipality.

Reprocessing of organic waste (53.00) from remaining sources for biogasification.
Fangel Miljø og Energiselskab. Thorsø Miljø og Biogas. AFAV I/S. Hashøj Biogas.

Reprocessing of sludge (83.00) for composting.
RGS 90. Odense Magistrat. Affaldsselskab Vest. I/S Fællesforbrænding. BN Industrirenovation.
Affaldsselskabet Vendsyssel Vest I/S. I/S Reno Syd. Komtek Miljø A/S. H.J. Hansen Genvinding
A/S.

Reprocessing of sludge (83.00) for biogasification.
Linkogas. Lemvig Biogasanlæg. Hashøj Biogas. Aarhus Kommunale Værker.

Branches, leaves, grass (54.00) for composting/wood chipping.
All plants which have received fraction 54.00 for reprocessing.

Annex 4. Hazardous waste generation

Treatment of hazardous waste 2004 and 2005, stated in tonnes.	Processing		Incineration		Landfilling		Special treatment		Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Washing and cleaning agents	1	0	2,641	2,692	1	59	45	20	2,688	2,771
Organic solvents with organically bound compounds	2	0	317	225	0	0	19	11	338	236
Inflammable organic solvents with organically bound compounds	0	0	311	271	0	0	0	0	311	271
Organic solvents with halogens/sulphur compounds	0	0	76	56	0	0	0	0	77	56
PCB and PCT waste	0	0	4	17	0	0	3	0	7	18
Liquid residues from organic synthesis containing toxic substances and halogens/sulphur	0	0	11	16	0	0	0	0	11	16
Liquid residues from organic synthesis with halogens/sulphur	0	0	103	114	0	0	0	0	103	114
PVC sludge from plastic coating with organic solvents	0	0	19	19	0	0	0	0	19	19
Solid residues from recovery of halogen-containing solvents	0	0	1	3	0	0	0	0	1	3
Solid residues from organic synthesis containing toxic substances and halogens/sulphur	0	0	2	1	0	0	0	0	2	1
Solid residues from organic synthesis with halogens/sulphur	0	0	113	142	0	8	0	0	113	151
Aromatic organic solvents without halogens/sulphur	16	7	8,387	7,921	0	0	7	98	8,409	8,026
Organic solvents without aromatic solvents or halogens/sulphur	6	7	6,466	3,489	0	0	0	0	6,472	3,497
Printing ink/varnish/paint with organic solvents	25	28	5,978	6,831	0	0	1,846	1,677	7,848	8,536
Printing ink/varnish/paint without organic solvents	4	1	6,187	6,281	279	272	0	7	6,471	6,560
Tar and rust-protecting oils	161	130	164	459	0	0	0	0	324	589
Alcohol/water mixtures from nylon plates	31	0	31	10	0	0	0	0	62	10
Residues from distillation of mixtures with acetone/styrene/unhardened polyester	1	0	85	49	0	0	0	0	86	49
Metal organic compounds without mercury	0	0	50	41	0	0	0	0	50	41
Liquid organic residues from distillation without halogens/sulphur	0	0	719	637	0	0	0	0	719	637
Formaldehyde solvents < 30 %	0	0	52	58	0	0	0	0	52	58
Phenol and formaldehyde emulsions	0	0	19	32	0	0	0	0	19	32
Di-isocyanates	0	0	74	138	0	0	1	0	76	138
Anti-freeze liquids	306	274	567	305	0	0	611	713	1,483	1,292
Latex/rubber sludge with organic solvents	0	1	19	16	0	0	3	0	22	17
Acidic sludge from re-refining used lubricant oils	0	0	18	21	0	0	0	0	18	21
Waste glue with organic solvents/2-component glues	19	11	456	362	0	0	0	0	474	373
Solid residues from organic synthesis without halogens/sulphur	1	2	354	316	0	0	0	0	355	318
Swarf with asbestos/metals	0	0	6	12	2	3	0	0	8	15
Acidic aqueous solutions with chromium compounds	1	1	36	25	4	6	241	192	281	224
Acidic aqueous solutions with nitric acid but without hydrofluoric acid	0	0	13	41	1	0	326	493	341	534
Acidic aqueous solutions with hydrofluoric acid/fluorides	1	0	72	21	2	0	359	301	434	323
Acidic aqueous solutions with nitric/sulphuric/phosphoric acid	18	27	551	549	6	6	4,804	5,258	5,378	5,840
Photographic developing baths	2,026	825	4,216	3,239	0	0	0	307	6,243	4,371
Chromium-containing photograph processing baths	0	0	8	1	0	0	0	0	8	1
Fixing baths	1,232	885	16	5	0	0	85	71	1,333	961
Basic, aqueous solutions without cyanide	63	65	1,459	1,850	11	11	184	173	1,717	2,100
Basic, aqueous solutions with cyanide	0	0	32	44	0	0	46	57	78	101
Metal hydroxide and oxide sludge	489	718	1,368	1,199	1,509	1,390	52	69	3,418	3,376
Flue-gas sludge and flue-gas dust from iron and metal foundries	0	0	51	50	269	118	259	727	579	895
Dye wastes	0	0	3	17	0	0	0	0	3	17
Aqueous sludge from wood impregnating	0	0	17	10	0	0	0	0	17	10
Hardening salts	0	0	10	18	0	0	1	6	12	24
Mercury waste	336	206	70	46	0	1	24	26	430	279
Other hazardous wastes	1	0	0	0	0	0	0	0	1	0
Cloths containing organic solvents	64	17	106	55	0	0	0	0	169	72
Waste from production and distribution of chemical pesticides	261	161	3,260	3,012	5	4	112	328	3,636	3,505
Waste from medicinal products	0	0	917	5,235	0	0	626	598	1,544	5,834
Chemicals from laboratories etc.	17	31	597	651	3	1	15	13	632	696
Glass/mineral wool waste with phenols	0	0	8	5	53	143	0	0	61	148
Other hazardous wastes	2,227	2,298	22,292	17,776	2,044	1,436	1,047	846	27,610	22,356
Waste oil	25,156	0	0	0	0	0	0	0	25,156	0
Motor oil	5,864	6,585	8,272	6,636	0	0	22	24	14,158	13,245
Gear or hydraulic oil	48	45	144	99	0	0	0	0	192	143
Heat transfer oils	0	1	58	81	0	0	0	0	58	82
Other lubricant oils	54	27	1,301	400	0	0	4	9	1,359	437
Oil and petrol separators	374	1,053	1,437	1,793	0	0	0	0	1,811	2,845
Drilling/cutting oils, unthinned	69	91	2	1	0	0	0	0	71	92
Oil emulsions	0	0	503	718	0	0	0	0	503	718
Lubricant greases	1	0	14	17	0	0	0	0	15	18
Petrol	5	7	15	16	0	0	0	0	20	22
Petroleum	0	0	76	66	0	0	0	0	76	66
Diesel oil	0	0	46	17	0	0	43	172	89	189
Gas oil	0	0	14	4	0	0	0	0	14	4
Fuel oil	0	0	133	43	0	0	0	1,398	133	1,441
Other oil-containing products	16,231	10,463	8,530	6,120	1	4	1,463	63	26,224	16,650
Cutting oils	0	0	55	60	0	0	0	0	55	60
Cutting fluids	0	0	2	1	0	0	0	0	2	1
Mineral drilling/cutting oils in water	0	0	107	90	0	1	0	0	107	90
Synthetic drilling/cutting fluids in water	0	0	37	28	0	0	0	0	37	28
Health-care risk waste	0	0	1,520	1,809	0	0	2,745	3,186	4,265	4,995
Fly ash	0	0	0	0	1,994	1,982	0	0	1,994	1,982
Other flue-gas waste	33,403	38,819	0	0	0	0	0	0	33,403	38,819
Asbestos	0	0	0	0	16,666	21,862	0	0	16,666	21,862
Batteries	209	2,936	0	0	0	0	0	0	209	2,936
CFC cooling agents	1	0	0	0	0	0	16	9	18	10
Shredder waste	0	0	0	0	26,019	48,739	0	0	26,019	48,739
Other hazardous wastes	0	0	0	0	81,607	82,246	0	0	81,607	82,246
ISAG total, primary sources	88,723	65,722	90,599	82,381	130,477	158,293	15,009	16,854	324,807	323,250

Cont.

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Treatment of hazardous waste 2004 and 2005, stated in tonnes.	Processing		Incineration		Landfilling		Special treatment		Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Lead batteries (1)	17,118	17,127							17,118	17,127
Hermetically sealed Ni-Cd batteries (2)	100	118							100	118
Primary sources total	107,945	84,972	92,603	84,386	132,481	160,298	17,013	18,859	344,029	342,500
Flue-gas waste (1)	0	0							0	0
Fly ash and flue-gas cleaning products from waste incineration (4)					86,834	82,964			86,834	82,964
From waste incineration plants total	0	0	0	0	86,834	82,964	0	0	86,834	82,964
Hazardous waste, primary and secondary sources total	107,945	84,972	92,603	84,386	219,315	243,262	17,013	18,859	430,863	425,464

The table has been changed relative to the first Waste Statistics publicatio

