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Preface

With a few exemptions Waste Statistics 2013 are based on data reported to the Waste Data System (Affaldsdatasystemet - ADS) in the period 2011 to 2013.

The statistics give a detailed description of the quantity of waste generated in Denmark in 2013 broken down on waste types and treatment options. Waste Statistics 2013 contain detailed information about the sources generating the waste. The statistics also present information about quantities of waste imported and exported. In addition, at the end of the publication a section provides the status for compliance at the national and regional levels with the 2022 objectives of the Danish Resource Strategy regarding recycling of waste from households (50% objective).

Waste data from the period 2011-2013 as reported to ADS form the basis of Waste Statistics 2013. Waste data are in some cases adapted and supplemented with external waste data sources. For example, this has been the case in connection with the statement for sewage sludge.

The Danish Environmental Protection Agency is the main responsible for quality assurance of waste data reported to ADS. Data quality has improved significantly since Waste Statistics 2012 and generally since the system was introduced in 2010; improvements will continue in the coming years.

Significant main results in Waste Statistics 2013:

- The overall rate of recycling[1] has increased from 62% to 66%. (See section 2)
- The overall rate of recycling of waste from households has increased from 37% in 2011 to 41% in 2013. (See section 3)
- The rate of recycling in relation to the Resource Strategy's 50% objective in 2022 for selected waste fractions from households was 28% in 2013, which is an increase from 25% in 2011 and 26% in 2012. (See section 5)
- The quantity of so-called primary waste generated in Denmark and going to incineration, i.e. waste not originating from other waste actors[2], decreased in the period 2011 to 2013. This is primarily due to the progress in recycling of waste from households in the same period. (See sections 2, 3 and 5)
- Imports of waste for incineration increased in the period from 2011 to 2013. (See section 4)
- 66% of sewage sludge from the wastewater treatment plants was recycled on agricultural land in 2013. (See section 3)
- Detailed data on waste from the service sector are presented for the first time ever. The overall rate of recycling of this sector attained 54% in 2013. (See section 3)
- Waste generation in industry is almost unchanged in the period 2011 to 2013, but the rate of recycling increased by 16 percentage points; this is primarily due to the fact that is has become possible to divert waste in the form of beet soil from landfill to recovery. (See section 3)

[1] Excluding soil

[2] A waste actor is a waste management company collecting and/or receiving waste and subsequently reporting it to the Waste Data System. Read more about waste actors and primary/secondary quantities in Appendix 1.

1. Introduction

Waste Statistics 2013 are based on data on primary waste generated in Denmark as reported to the Waste Data System (Affaldsdatasystemet - ADS) in the period 2011 to 2013, unless otherwise stated. Primary waste generated is waste not originating from other waste actors.

The Danish Environmental Protection Agency is the main responsible for quality assurance of waste data reported to ADS. Quality assurance of 2013 waste data has also improved the quality of waste data reported to ADS before 2013; this means that Waste Statistics 2013 contain updated waste data for 2011 and 2012. Waste data are in some cases adapted and supplemented with external waste data sources. For example, this has been the case in connection with the statements for sewage sludge and residues from coal-fired power plants. Waste data for 2011 made up the first whole reporting year under ADS, and since then the quality and precision of reports have increased year by year. It should be noted in this context that when the composition of waste is presented at a more detailed level, the annual reports may show variations that would not appear if the waste composition was presented in more general categories. In these statistics a comment will be made when this type of variation is believed to be significant. More details on ADS, the difference between primary and secondary waste generated, collection, quality assurance and adaptation of waste data can be found in Appendix 1.

The statistics give a detailed description of the quantity of waste generated in Denmark in 2013 broken down on waste types and treatment options. The statistics 2013 contain detailed information about the sources generating the waste. Waste Statistics 2013 also present information about quantities of waste imported and exported.

Finally, Waste Statistics 2013 give in section 5 the status for compliance at the national and regional levels with the 2022 objectives of the Danish Resource Strategy regarding recycling of waste from households (50% objective).

In the appendices, the definition of primary waste sources forming the basis of these waste statistics is given.

Waste Statistics 2013 are different from the waste statistics of the two previous years in that they have a higher degree of detail in the different sections; the purpose of this is to increase the level of information among readers. This means that Waste Statistics 2013 exploit the potential for detailing given in ADS to a higher extent.

Raw data adapted from ADS and used in the preparation of these waste statistics can be found on the website of the Danish Environmental Protection Agency under Waste Statistics 2013 (in Danish)[3].

[3] Waste statistics (in Danish): http://mst.dk/virksomhed-myndighed/affald/affaldsdatasystemet/tal-fra-affaldsdatasystemet/affaldsstatistikker/

2. Waste generation in Denmark

Total Danish waste arisings (excl. soil) corresponding to primary waste generated in Denmark were in 2013 stated at approximately 11 million tonnes. It appears from Table 2.1 that total waste arisings are slightly lower in 2012 compared with 2011 and 2013. One of the main reasons for this result is the storage of residues from coal-fired power plants in 2012 that were not treated and thereby not reported until 2013.

Total	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling[4]	6,851	62%	6,862	64%	7,314	66%
Incineration	3,288	30%	3,102	29%	3,044	27%
Landfilling	725	7%	558	5%	537	5%
Temporary storage[5]	87	1%	67	1%	135	1%
Special treatment[6]	139	1%	141	1%	117	1%
Total	11,090	100%	10,729	100%	11,149	100%

Table 2.1. Primary waste generated (excl. soil) in Denmark broken down on treatment form.

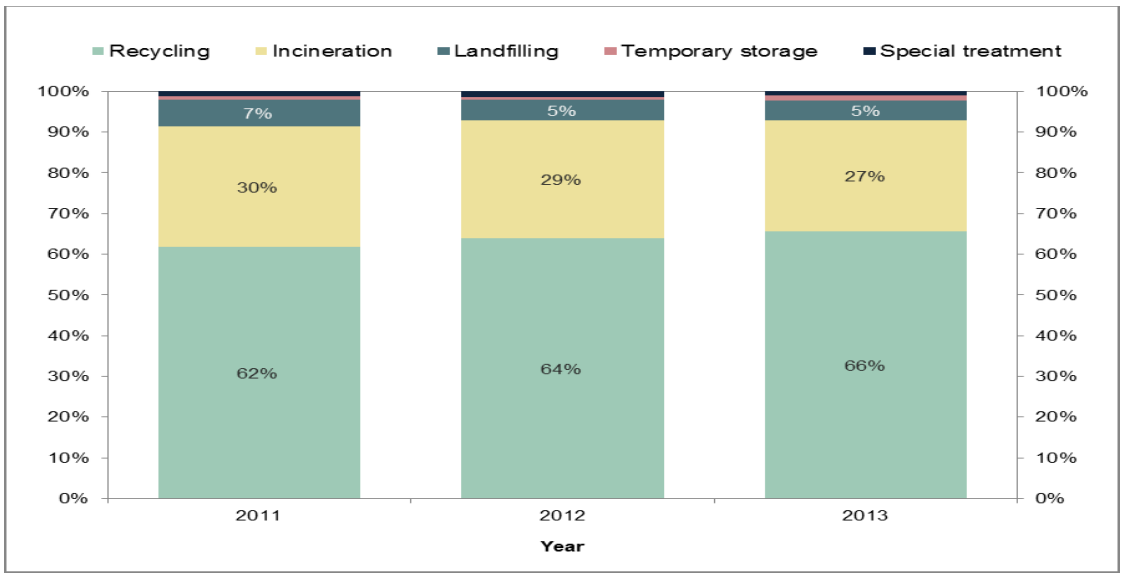

FIGURE 2.1. PRIMARY WASTE GENERATED (EXCL. SOIL) IN DENMARK BROKEN DOWN ON TREATMENT FORM.

[4] In the following, *recycling* means *quantities collected for recycling*. After sorting and reprocessing of this waste a minor part goes to incineration and/or landfilling in the form of so-called secondary waste. Read more about primary and secondary waste in Appendix 1.
[5] In Statutory Order on the Waste Data System (Order no. 1306 of 17 December 2012) temporary storage is defined as waste for incineration (including pretreatment), which is assigned for temporary storage. This treatment form exclusively covers waste that will go to incineration at a later stage.
[6] In Statutory Order on the Waste Data System (Order no. 1306 of 17 December 2012) special treatment is defined as waste treated separately in a special treatment form or as waste expected to be treated separately in a special treatment form. Special treatment exclusively covers hazardous waste, including health-care risk waste.

The share of total Danish waste arisings (excl. soil) going to recycling has increased since 2011 by 4 percentage points; among other things, this is due to an increase in quantities of household waste and construction waste going to recycling. Waste for other final material recovery, i.e. mainly crushed construction waste for recovery in construction projects, is included in quantities of recycled waste.

By contrast to the primary Danish waste generation (excl. soil) going to recycling waste quantities going to incineration have decreased since 2011 by approximately 140,000 tonnes; again, this is primarily explained by quantities of household waste diverted from incineration to recycling.

It should be noted that the primary Danish waste generation (excl. soil) going to incineration is not equal to total waste quantities incinerated at Danish incineration plants. The difference is found, among others, in the fact that waste quantities for incineration received at Danish incineration plants comprise imports of waste from abroad, waste in temporary storage and waste that goes to incineration after various sorting processes[7]. In Table 2.2 the difference between primary waste generated in Denmark and total quantities of waste received for incineration at Danish incineration plants is shown.

Total - Incineration of waste	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Incineration - received[8]	3,665	3,596	3,700
Incineration - received without imports[9]	3,520	3,358	3,350
Incineration - Primary waste generated[10]	3,390	3,204	3,206

Table 2.2. Incineration of waste (excl. soil)

The above Table 2.2 shows an almost constant quantity of waste received for incineration at the Danish incineration plants along with an increase in imports of waste for incineration and a decrease in the amounts of primary waste incinerated (excl. soil) in Denmark.

As to primary Danish waste going to landfill (excl. soil) a decreasing trend in quantities is seen, as shown in Table 2.1. One of the main reasons for this decreasing trend is that since 2012 beet soil[11] has been increasingly recovered at the expense of landfilling.

Just as for incineration, it should be mentioned that there may be differences between the primary Danish waste generation (excl. soil) going to landfill and the actual quantities of waste received for landfilling at the Danish landfills. The difference is primarily found in the fact that waste quantities received at Danish landfills comprise waste that goes to landfill after various sorting processes[12]. This difference is shown in Table 2.3.

[7] Waste originating from a waste pretreatment plant will be secondary waste, since a waste pretreatment plant is a waste actor receiving waste. A detailed description of primary and secondary waste generated is given in Appendix 1.
[8] Waste received for incineration/temporary storage at Danish incineration plants that cover dedicated (24 plants), multi-fuel firing units (3 plants) and special plants (3 plants). Source: ADS.
[9] Imports of waste received for incineration/temporary storage at Danish incineration plants that cover dedicated (24 plants), multi-fuel firing units (3 plants) and special plants (3 plants). Source: ADS.
[10] This quantity covers primary waste going to incineration, temporary storage and special treatment (if used in combination with R1, R13 or D10).
[11] Beet soil in Waste Statistics 2011 and 2012 was categorised under waste fraction E20 uncontaminated soil. In Waste Statistics 2013 this has been changed to E31 other wastes, as it cannot be considered as similar to soil from construction activities.
[12] Waste originating from a waste pretreatment plant will be secondary waste, since a waste pretreatment plant is a waste actor receiving waste. A detailed description of primary and secondary waste generated is given in Appendix 1.

Total - Landfilling of waste	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Landfilling - Received[13]	844	642	573
Landfilling - Primary waste generated	725	558	537

Table 2.3. Landfilling of waste (excl. soil)

Just as for primary waste landfilled a decrease is seen in the period 2011 to 2013 in total quantities of waste received for landfilling at Danish landfills. Again, one of the main reasons for this decreasing trend is that since 2012 beet soil[14] has been increasingly recovered at the expense of landfilling.

Finally, Table 2.1 shows that the share of primary Danish waste generation (excl. soil) that goes to special treatment and temporary storage is at the same level in the years 2011-2013. As to the treatment option special treatment, which can only be used in connection with hazardous waste, it should be noted that primary hazardous waste generated can also be categorised under other treatment forms.

[13] Waste received for landfilling at the 41 Danish landfills that have an environmental approval for receiving waste for landfilling. Source: BEATE report, in which waste in the form of beet soil has been added.
[14] Beet soil in Waste Statistics 2011 and 2012 was categorised under waste fraction E20 uncontaminated soil. This has been changed to E31 other wastes, as it cannot be considered as similar to soil from construction activities.

2.1 Waste fractions

Table 2.4 shows total Danish waste arisings (excl. soil) corresponding to primary waste generated in Denmark and distributed on level of waste fraction[15].

Waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	1,505	1,441	1.440
Waste suitable for incineration	1,583	1,451	1,409
Organic waste	313	317	404
Paper incl. newsprint and packaging paper	397	369	328
Packaging cardboard and other cardboard	279	289	328
Packaging glass	114	114	113
Glass	40	34	39
Packaging wood	1	1	19
Wood	224	240	253
Packaging plastics	27	27	30
Plastics	46	64	44
Packaging metal	7	7	8
Ferrous and non-ferrous metals	1,042	1,016	953
Electronics	52	61	73
Refrigerators containing freon	5	7	16
Batteries	8	7	6
Garden waste	775	703	817
Sludge from wastewater treatment plants	133	131	129
Sludge - other	184	200	139
Tyres	19	24	23
Mixed construction and demolition waste	2,441	2,616	2,706
Impregnated wood	30	30	38
PVC	6	11	5
Gypsum	221	158	235
Waste suitable for landfill	272	283	272
Residues from coal and biomass fired energy plants	669	541	711
Other wastes	698	591	610
Total	11,090	10,732	11,149

Table 2.4. Primary waste generated (excl. soil) in Denmark distributed on level of waste fraction.

The table contains a number of broad waste fractions such as *waste suitable for incineration* and *mixed construction and demolition waste*, covering many different waste types. *Waste suitable for incineration*[16] and *mixed residual waste* are generally seen as waste going to incineration. In this connection, however, it should be mentioned that some waste quantities under the other waste

[15] Level of waste fraction in these waste statistics in some cases deviates from the waste fractions used in connection with ADS. This deviation is primarily caused by an aggregation of waste fractions for use in these statistics. For example, wood waste from households and industry, respectively, has been aggregated into one fraction *"wood"*.

[16] Small and large burnable items

fractions can also go to incineration; this is the case, e.g., for the waste fraction *sludge from wastewater treatment plants* that covers, among others, sewage sludge for incineration.
Developments in quantities among the waste fractions show a decrease of the quantities under *waste suitable for incineration*. This decrease is primarily due to more separation for recycling, including more separation of wood waste for recycling.

The increasing trend in the waste fraction *organic waste* is also due to more separation of food waste for recycling. Further to these remarks it should be added that the reports to ADS have become more precise over the years and it is assessed that particularly in the years 2011 and 2012 the waste fraction *sludge - other* contains waste that may be categorised as *organic waste*. This means that the increase from 2011 and 2012 to 2013 in the waste fraction *organic waste* is not as steep as shown in Table 2.4. When it comes to organic waste it is also assessed that a number of biogas plants do not yet report to ADS, so also for this reason the quantities of *organic waste* are expected to increase.

For packaging waste it is seen that quantities are at a relatively stable level for the fractions metal, plastics and glass. It is assessed that the primary waste quantities for packaging glass are around 10 % too low in the three years shown, which is primarily due to lack of reporting[17]. Quantities of packaging waste of cardboard and wood show an increase. For packaging of wood this is due to two factors: a clarification of reports in 2013 and an actual increase in the use of wood packaging in connection with the supply of biofuels.

Primary generated WEEE, which is primarily found under the waste fractions *electronics* and *refrigerators containing freon*, is discussed in more detail in section 2.3. Quantities of primary generated batteries are mainly categorised under the waste fractions *batteries* and *other wastes*. Quantities of lead accumulators in the primary quantities generated are assessed to be approximately 40% too low across the years and they are expected to increase during 2015.

The waste fraction *mixed construction and demolition waste* also covers concrete and tiles and accounts for the largest proportion of construction and demolition waste in Denmark. Construction and demolition waste in general, however, may also be categorised under other waste fractions such as *waste suitable for landfill, wood* and *gypsum*. Other waste fractions containing construction waste are *mixed construction and demolition waste*, *impregnated wood* and *PVC*. A more detailed discussion of construction and demolition waste and developments in this fraction is found in section 3.4.

Residues from coal and biomass fired energy plants in connection with primary waste generated should only be seen as residues such as bottom ash and fly ash from coal or biomass fired power plants. *Residues from coal and biomass fired energy plants* are considered secondary waste, which is not shown in Table 2.4, as this table only covers quantities of primary waste generated. In addition to the fraction *residues from coal and biomass fired energy plants,* in particular the waste fractions *waste suitable for landfill* and *gypsum* will contain residues from incineration processes. In section 3.5 developments for the most important waste arisings in the sector of power, gas and district heating supply are discussed.

The waste fraction *other wastes* generally covers waste types that cannot be categorised under other waste fractions. The largest share of *other wastes* consists of beet soil going to landfill and recycling, respectively. In addition to beet soil *other wastes* covers, among others, chemical waste and other hazardous wastes separated for *special treatment*.

[17] It is expected that the quantities of packaging glass are updated during autumn 2015 when outstanding reports are received.

2.2 Hazardous waste

The treatment form for all primary generated hazardous waste in Denmark is shown in the below table.

Hazardous waste	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	229	44%	198	43%	185	39%
Incineration	106	21%	99	21%	107	22%
Landfilling	92	18%	83	18%	97	20%
Temporary storage	5	1%	1	0%	3	1%
Special treatment	85	16%	79	17%	85	18%
Total	518	100%	459	100%	478	100%

Table 2.5. Primary hazardous waste generated (excl. soil) in Denmark distributed on treatment form.

The statement covers primary quantities generated and registered either under the waste fraction *hazardous waste*[18], or under others fractions with an European List of Waste (LOW) code[19] indicating that the waste is hazardous. This means that it is the combination of the two sets of codes that makes up total quantities of primary hazardous waste generated.

It should be noted that hazardous waste from the secondary waste generation is not contained in the statement of primary hazardous waste generated. Examples of secondary waste generation are residues from the incineration of waste or imported hazardous waste.

It appears from Table 2.5 that the generation of hazardous waste has decreased significantly from 2011 to 2012. This decrease in the quantities, which is primarily seen in combination with the treatment form of recycling, is particularly due to a decrease in hazardous construction and demolition waste. For Table 2.5 it should also be mentioned than less than 20% of primarily hazardous waste generated is stated under the treatment form *special treatment*.

In Table 2.6 the primary generation of hazardous waste in Denmark is shown at a detailed waste type level. The clarification of the waste types may place high requirements for those who report to ADS, and small variations in the reports may lead to large variations in the quantities of the different hazardous waste types.

The table shows that *other construction and demolition waste* accounts for up to 20% of the quantities of primary hazardous waste generated. Altogether, different forms of construction and demolition waste account for a large proportion of total quantities of hazardous waste. For example, *insulation materials and asbestos-containing construction materials* make up approximately 14% while various forms of *oil wastes* make up approximately 15% of total quantities.

[18] Categorised under *other wastes*
[19] See description of waste codes in Appendix 1

Hazardous waste	2011	2012	2013
	Tonnes	Tonnes	Tonnes
Wastes from mineral excavation and processing	3,666	870	691
Drilling muds and other drilling wastes	11,945	8,414	4,744
Sawdust, shavings etc. containing dangerous substances from wood processing and the production of panels and furniture	4,755	1,829	217
Wastes from petroleum refining	3,404	5,117	771
Wastes from the manufacture, formulation, supply and use of acids and bases	2,455	2,270	3,082
Wastes from the manufacture, formulation, supply and use of salts and their solutions and metallic oxides containing cyanides and heavy metals	256	119	66
Metal-containing wastes containing mercury	7	8	9
Metal-containing wastes containing others heavy metals	1,369	1,645	2,703
Organic halogenated wastes and other wastes from organic chemical processes	24,446	28,795	40,834
Wastes from the manufacture of paint and varnish	12,831	11,094	9,174
Wastes from the photographic industry	1,615	1,591	1,782
Acids and bases from chemical surface treatment	2,247	3,252	4,006
Phosphatising sludges from chemical surface treatment	209	259	391
Sludges and filter cakes from chemical surface treatment	1,051	1,126	1,421
Other hazardous wastes from chemical surface treatment	925	1,166	1,001
Wastes containing cyanide and other wastes from tempering processes	99	118	167
Machining oils, emulsions and solutions free of halogens	3,920	3,013	5,107
Wastes from hydraulic oils	826	1,134	758
Waste engine, gear and lubricating oils	16,567	20,336	23,216
Bilge oils	24,014	15,952	17,882
Oil, sludges and other wastes from oil/water separators	12,400	8,933	14,201
Other oil wastes	29,353	18,666	21,532
Waste organic solvents and refrigerants	4,350	6,818	5,151
Oil filters, brake fluids, antifreeze fluids and other hazardous waste from end-of-life vehicles	2,249	2,107	2,340
Waste electronics containing PCBs	51	533	110
Waste electronics containing CFC, HCFC or HFC	2,506	1,871	14,470
Other waste electronics	3,885	7,941	17,906
Fluorescent tubes and other mercury-containing waste	5,523	4,153	4,104
Discarded chemicals	4,250	3,260	5,272
Lead accumulators, Ni-Cd batteries and mercury-containing batteries[20]	10,659	11,160	10,812
Concrete, bricks, tiles and ceramics containing dangerous substances	26,653	14,798	25,194
Glass, plastic and wood containing or contaminated with dangerous substances	14,240	17,403	15,209
Cables containing oil, coal tar and other dangerous substances	3,426	551	554
Insulation materials and asbestos-containing materials	73,814	62,580	67,512
Construction and demolition wastes containing PCB	784	3,066	3,818
Other hazardous construction and demolition wastes	94,410	99,395	29,066
Wastes from hospitals, medicare, dental care and research	6,316	6,865	6,884
Solvents, acids, alkalines and photochemicals from households and the service sector	1,808	1,422	1,995
Pesticides from households and the service sector	250	256	244

[20] Outstanding reports and thereby no data for lead accumulators - see section 2.1

Paint, inks, adhesives and resins from households and the service sector	7,184	7,621	10,287
Medicines from households and the service sector	1,065	1,501	1,501
Wood containing dangerous substances from households and the service sector	12,673	16,381	17,071
Other	83,082	53,480	85,100
Total	517,538	458,867	478,355

Table 2.6. Primary hazardous waste generated (excl. soil) distributed on waste type.

2.3 Waste electronics (WEEE)

Waste electronics (WEEE[21]) covers waste from electrical and electronic equipment. The primary quantities of WEEE generated in Denmark can be related directly to the waste fractions *electronics* and *refrigerators with freon*. However, these waste fractions are not the only ones containing waste that can be categorised as WEEE. Waste fractions such as *ferrous and non-ferrous metals*, *other wastes* (e.g. waste containing dangerous substances) and *mixed construction and demolition waste* (e.g. cables) can be related to WEEE thanks to the combination with LOW codes[22]. Total primary quantities of WEEE generated are stated in Table 2.7 below.

Waste electronics - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
WEEE	73[23]	84	100

Table 2.7. Primary WEEE generated (Source: ADS)

As stated in the above table quantities of primary WEEE generated are increasing. In this context, however, it should be noted that quantities of WEEE are assessed to be underestimated, particularly in 2011 and 2012 due to non-reporting and incorrect reporting on waste categories; this should be borne in mind when making comparisons. The difference between the years is expected to be reduced in the near future through collection of outstanding reports.

In Denmark we have different sources of data on WEEE. DPA-System (Danish Producer Responsibility System)[24], in addition to ADS is one of these sources. DPA-System registers quantities of electrical and electronic equipment placed on the market. This information is used, among others, by the Danish Environmental Protection Agency in connection with the reporting to EUROSTAT, the statistical office of the European Union. Table 2.8 shows the quantities of WEEE collected as stated by DPA-System.

Categories of electrical and electronic equipment.	2011	2012	2013
	Tonnes	Tonnes	Tonnes
Large household appliances	36,516	32,121	32,890
Small household appliances	4,474	5,019	5,405
IT and telecommunications equipment	14,519	13,520	11,604
Consumer equipment and photovoltaic panels	25,972	22,881	17,195
Lighting equipment	716	708	1,662

[21] *Waste from Electrical and Electronic Equipment, EU directive 2012/19/EU*
[22] European Waste Code, read more in Appendix 1. Selected LoW codes: 16 02 **; 17 04 11; 20 01 21; 20 01 23; 20 01 35; 20 01 36. LoW 17 04 11 covers cables.
[23] Expected increase by some 15,000 tonnes in the near future further to reporting of outstanding quantities
[24] DPA-System is in charge of the national producer register and administrative tasks associated with the rules on producer responsibility under Danish environmental law regarding, among others, waste from electrical and electronic equipment

Electrical and electronic tools[25]	1,080	995	2,057
Toys, leisure and sports equipment	383	341	551
Medical devices	92	58	38
Monitoring and control instruments[26]	533	528	170
Automatic dispensers	34	29	1
Total	84,319	76,200	71,573

Table 2.8. WEEE collected (Source: DPA-System)

There are two significant differences between the two sources for statement of WEEE. DPA-System states WEEE at a more detailed level on a number of categories of waste in pursuance of EU rules, while ADS through its reporting from primary waste producers has a large quantity of WEEE from businesses in comparison with the quantities of WEEE collected as stated by DPA-System. In 2011 and 2012 quantities of primary waste are lower or marginally higher than collected quantities; this is due in particular, as mentioned above, to an underestimate of household appliances under the primary waste quantities generated and stated in ADS.

2.4 Soil

Just as in previous years' waste statistics it has been chosen to state quantities of soil waste separately from other primary waste generated. This is due to the fact that a few large construction works - such as the establishment of the Metro City Ring and the expansion of the Northern Harbour in Copenhagen - may lead to enormous variations in total waste arisings from one year to the next. Therefore, the variations in soil quantities risk overshadowing developments in quantities of other waste fractions, thus making it difficult to see trends and developments in quantities and treatment forms of this waste.

Table 2.9 shows the treatment of the uncontaminated[27] fraction of soil as well as that of contaminated soil.

Contaminated soil	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recovery[28]	881	43%	1,057	49%	1,418	55%
Disposal[29]	1,186	57%	1,083	51%	1,163	45%
Total	2,067	100%	2,139	100%	2,581	100%

Uncontaminated soil	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recovery	677	50%	1,143	60%	2,282	64%
Disposal	686	50%	763	40%	1,278	36%
Total	1,363	100%	1,906	100%	3,560	100%

Soil, total	2011	2012	2013

[25] With the exception of large-scale stationary industrial tools
[26] With the exception of all implanted and infected products
[27] Uncontaminated and slightly contaminated soil
[28] Recovery covers all R codes in the R/D set of codes – see Appendix 1
[29] Disposal covers all D codes in the R/D set of codes – see Appendix 1

	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recovery	1,558	45%	2,200	54%	3,700	60%
Disposal	1,872	55%	1,846	46%	2,441	40%
Total	3,430	100%	4,046	100%	6,140	100%

Table 2.9. Primary soil waste generated distributed on treatment form and soil waste type

In a given year there may be large variations in quantity and type of contaminated soil and uncontaminated soil. This is not only due to changes in economic activity, but even more so due to the type of construction activities. Construction projects such as the metro typically generate more soil waste than the construction of a bridge or residential buildings. In addition, some construction projects will be on sites that are contaminated, so soil must be removed before the construction can start.

The quantity of contaminated soil was largest in 2013, as approximately 2.5 million tonnes out of total soil quantities of approximately 6.1 million tonnes was contaminated. Even if soil is contaminated it may be recovered in construction projects depending on the contamination degree and based on a concrete assessment.

In 2012 and 2013 the quantity of uncontaminated soil was larger than the contaminated quantity, but still it was not possible to recover all this soil; therefore, a relatively large proportion was landfilled.

The quantity of contaminated soil for landfilling in the period 2011 to 2013 was on average approximately 1.1 million tonnes a year. This level is almost the same as the expected annual level of 1.2 million tonnes in the period 2013-2018 as seen in the Danish Environmental Protection Agency's projections of the need for landfilling of contaminated soil (Source: Guidelines from the Danish Environmental Protection Agency no. 4, 2014).

It should be mentioned that there may be differences between the primary Danish soil waste generation going to landfill/disposal and the actual quantities of waste received for landfilling at the Danish landfills. The difference is primarily found in the fact that total waste quantities for landfilling received at Danish landfills comprise quantities that are first registered as recovery in soil separation processes and then subsequently go to landfill[30]. This difference is shown in Table 2.10.

Soil – Landfilling/disposal of soil waste	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Landfilling - received[31]	1,827	2,370	2,900
Disposal - Primary soil waste generated	1,872	1,846	2,441

Table 2.10. Landfilling/disposal of soil waste

[30] Waste originating from a waste pretreatment plant will be secondary waste, since a waste pretreatment plant is a waste actor receiving waste. A detailed description of primary and secondary waste generated is given in Appendix 1.
[31] Soil waste received for landfilling at the 41 Danish landfills that have an environmental approval for receiving waste for landfilling. Source: BEATE Landfill report 2011, 2012 and 2013

3. Sources of waste in Denmark

Waste sources in this section are the primary waste producers in Denmark. Generally, these waste producers are divided into eight main sources as presented in Figure 3.1 and Table 3.1. In the following sections waste arisings are presented along with, where possible, subsectors of the different main sources. In addition to the main sources Figure 3.1 and Table 3.1 show a waste source *waste from commercial and industrial activities without sector*. This source is mainly waste from commercial and industrial activities that is not associated with a sector and therefore is a fraction of the seven main sources that are not *households*. The source *waste from commercial and industrial activities without sector* is discussed in section 3.9.

In comparison with previous waste statistics Waste Statistics 2013 include one significant change in relation to the waste contained in the different sources. The change is found in the statement of the main source *building and construction*; in addition to waste generated in this sector it also covers construction and demolition waste[32] generated by the other waste sources. This is a significant change from earlier practice and must be borne in mind when comparing these waste statistics with statistics from previous years.

Primary waste generated (excl. soil) distributed on main sources and treatment form is shown in Figure 3.1 and Table 3.1 below.

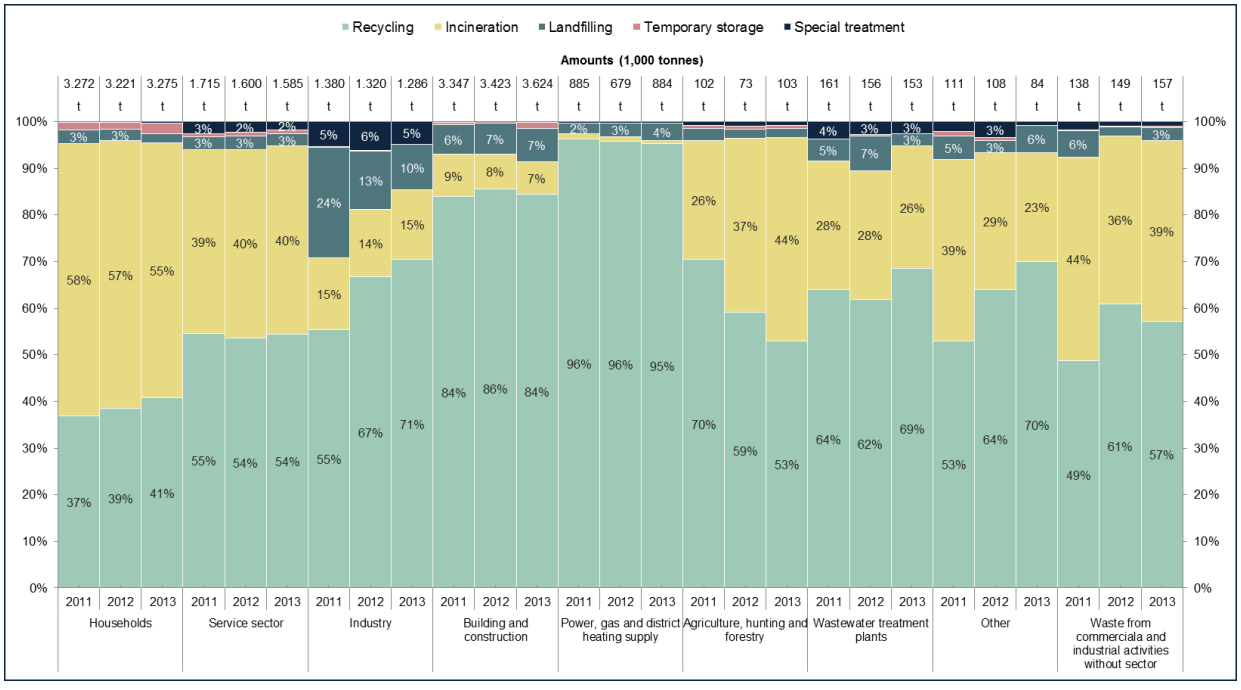

FIGURE 3.1. PRIMARY WASTE GENERATED (EXCL. SOIL) DISTRIBUTED ON TREATMENT FORM AND WASTE SOURCE

[32] Construction and demolition waste in this context is waste registered in LoW group 17 and/or waste fractions *Construction and demolition waste, Stone* and *Asphalt*.

Waste sources	Total			Recycling			Incineration			Landfilling			Temporary storage			Special treatment		
	Tonnes (1,000)			%			%			%			%			%		
	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
Households	3,272	3,221	3,275	37%	39%	41%	58%	57%	55%	3%	3%	2%	2%	1%	2%	0%	0%	0%
Service sector	1,715	1,600	1,585	55%	54%	54%	39%	40%	40%	3%	3%	3%	1%	1%	1%	3%	2%	2%
Industry	1,380	1,320	1,286	55%	67%	71%	15%	14%	15%	24%	13%	10%	0%	0%	0%	5%	6%	5%
Building and construction	3,345	3,423	3,624	84%	86%	84%	9%	8%	7%	6%	7%	7%	1%	0%	1%	0%	0%	0%
Power, gas and district heating supply	885	679	884	96%	96%	95%	1%	1%	1%	2%	3%	4%	0%	0%	0%	0%	0%	0%
Agriculture, hunting and forestry	83	73	103	64%	59%	53%	31%	37%	44%	3%	2%	2%	1%	1%	1%	1%	1%	1%
Wastewater treatment plants	161	156	153	64%	62%	69%	28%	28%	26%	5%	7%	3%	0%	0%	0%	4%	3%	3%
Other	111	108	84	53%	64%	70%	39%	29%	23%	5%	3%	6%	1%	1%	0%	2%	3%	1%
Waste from commercial and industrial activities without sector	138	149	157	49%	61%	57%	44%	36%	39%	6%	2%	3%	0%	0%	0%	2%	1%	1%
Total	11,090	10,729	11,149	62%	64%	66%	30%	29%	27%	7%	5%	5%	1%	1%	1%	1%	1%	1%

Table 3.1. Primary waste generated (excl. soil) distributed on treatment form and waste source

As it appears from Table 3.1 and Figure 3.1 the main source *building and construction* accounts for the largest proportion of waste for recycling in 2013 (84%); this is mainly due to the large quantity of crushed building waste and asphalt for recovery in building and construction projects. At the other end of the scale the source *households* is seen to have the lowest proportion of waste for recycling (41%); this is primarily due to the fact that *households* also have the largest share of waste for incineration (55%). In this connection it should be mentioned that *households* are moving in a positive direction in terms of increasing the share of waste for recycling, which has also meant a decrease by 3 percentage points in the share going to incineration in the period 2011 to 2013.

The largest increase in waste for recycling is seen in the main source *industry*; here, particularly beet soil [33] going to recycling instead of landfilling is decisive. The largest decrease in the share of waste for recycling is seen in the main source *agriculture, hunting and forestry*, which happens in parallel to increasing waste amounts from this source for incineration.

As to total waste arisings from all sources Figure 3.2 shows that the source *building and construction* generates most waste; it accounts for 33% of total waste generation without soil in 2013. Next are the sources *households, service sector, industry* and *power, gas and district heating supply*, accounting for 29%, 14%, 12%, and 8%, respectively, of total primary waste generated in Denmark. The waste source *waste from commercial and industrial activities without sector* accounts for approximately 1% of total primary waste generated without soil.

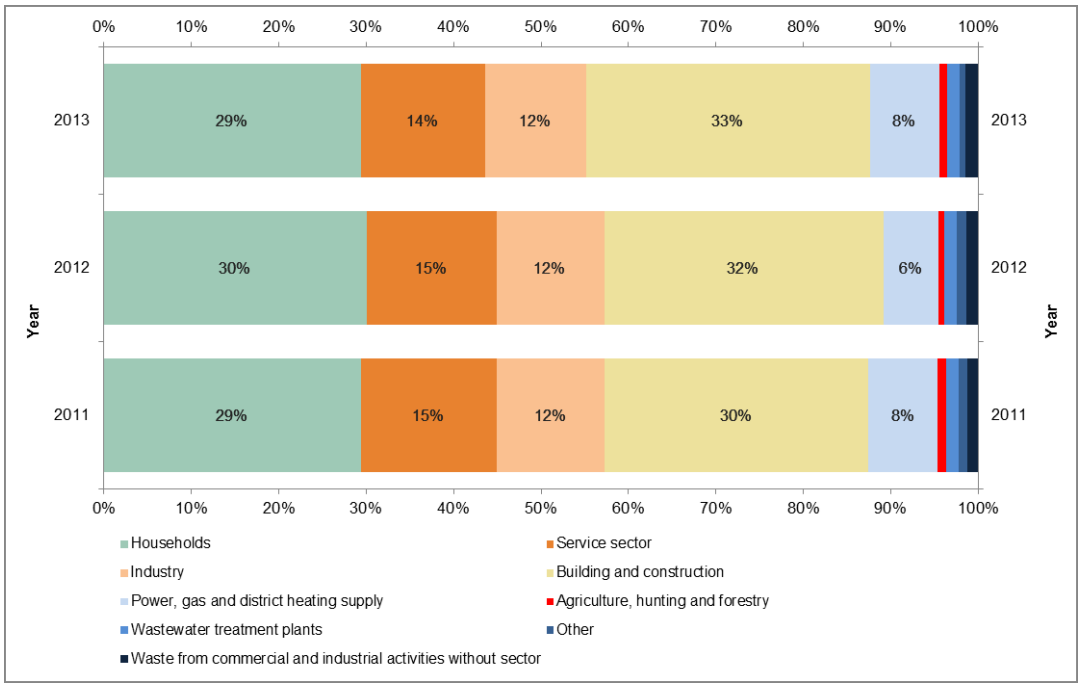

FIGURE 3.2. PRIMARY WASTE GENERATED (EXCL. SOIL) IN DENMARK IN 2012 DISTRIBUTED ON SOURCES BY ORDER OF MAGNITUDE.

[33] Beet soil in this context is considered as waste in line with other industrial waste, which means that this waste type is not considered as soil waste, which is stated separately.

3.1 Waste from households

Primary waste (excl. soil) from households is all waste generated in households, apart from construction and demolition waste. As described above, all construction and demolition waste is placed under the source building and construction.

Households are defined as primary and secondary residences as well as residential institutions (e.g. single-family homes, attached houses, flats, summer houses, student homes, nursing homes and other institutions where the residents have their official address). In addition, the source *households* covers all waste delivered at recycling centres[34]. The source households does not cover houses and residential rooms intended for limited stays as part of a commercial activity or a public service (e.g. hotels, schools and conference centres).

Table 3.2 shows that the quantity of primary waste generated from households is at a stable level over the years.

Households	2011	2012	2013
Total (1,000 tonnes)	3,272	3,221	3,275
Kg/cap.	588	577	584
Kg/household	1,266	1,242	1,256

Table 3.2. Annual primary waste quantity in households in kilograms per capita and kilograms per household (excl. soil).

As mentioned, the share of waste from households for recycling is increasing whereas waste for incineration is decreasing as shown in Table 3.3. The positive development for recycling in the period 2011 to 2013 is seen for total waste from households. Therefore, this level cannot be compared directly with the 50% objective for certain waste fractions from households as stated in the former government's Resource Strategy - Denmark without Waste from October 2013. Section 5 discusses the Resource Strategy and its impact goals in more detail[35]. The distribution of primary waste generated in households between the different treatment options of landfilling, temporary storage and special treatment is relatively constant.

Households	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	1,210	37%	1,241	39%	1,337	41%
Incineration	1,910	58%	1,847	57%	1,790	55%
Landfilling	96	3%	81	3%	62	2%
Temporary storage	53	2%	44	1%	75	2%
Special treatment	3	0%	7	0%	11	0%
Total	3,272	100%	3,221	100%	3,275	100%

Table 3.3. Primary waste generated (excl. soil) from households distributed on treatment form.

Developments in waste fractions from *households* are shown in Table 3.4. Noticeable facts are, among others, the decrease in the fractions *waste suitable for incineration* and *paper* as well as the

34 A minor share of waste delivered at recycling centres originates in commercial businesses. The share, which varies from one recycling centre to another, is assessed to be low; therefore, no adaptation has been made in Waste Statistics 2013.

35 "Denmark without waste" – the Resource Strategy - http://eng.mst.dk/topics/waste/denmark-without-waste/

increase in *organic waste* and *wood*. The decrease in the fraction ferrous and non-ferrous metals is believed to be primarily due to a clarification of this waste type for reports after 2011.

The primary reason for the decrease in *waste suitable for incineration* is the above-mentioned larger separation for recycling, which explains the increase in the waste fractions *organic waste* and *wood*. One of the main reasons for the decrease in *paper* is the general decrease in sales of printed media such as newspapers.

Households - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	1,440	1,382	1,354
Waste suitable for incineration[36]	491	469	456
Organic waste	56	54	65
Paper incl. newsprint and packaging paper	189	190	178
Packaging cardboard and other cardboard	34	38	45
Packaging glass	98	95	94
Glass	13	12	17
Packaging wood	0.4	0.4	7
Wood	76	98	117
Packaging plastics	17	15	17
Plastics	6	9	10
Packaging metal	6	6	8
Ferrous and non-ferrous metals	111	98	93
Electronics	39	40	49
Refrigerators containing freon	3	5	14
Batteries	2	1	1
Garden waste	534	551	569
Tyres	4	4	4
Impregnated wood	15	13	16
PVC	1	1	1
Gypsum	2	2	2
Waste suitable for landfill	72	69	50
Other wastes	63	66	106
Total	3,272	3,221	3,275

Table 3.4. Primary waste generated (excl. soil) from households in Denmark broken down on treatment form.

[36] Small and large burnable items

3.2 Waste from the service sector

Waste arisings in the service sector amounted to a total of approximately 1.6 million tonnes in 2013. The service sector covers both public and private service and it consists of different subgroups. ADS reporting makes it possible to break down the service sector sources on a very detailed level. In the past, it was not possible to have statistics at this detailed level. As a matter of clarity the subgroups are aggregated in some main sectors as stated in Table 3.5.

It appears from the table that the sources of *retail trade* and *communication, culture, financial services and private services* have by far the largest generation of waste. Both sources generated approximately 300,000 tonnes in 2013. Most of the subgroups have a relatively stable waste generation in the years 2011-2013; however, the two groups *wholesale of waste and scrap* and *public administration, education, human health and social work activities* have a significantly higher waste generation in 2011 compared with 2012-2013. It has not been possible to identify the reasons for this variation. It should be noted, however, that data quality is better for 2012 and 2013 than for 2011, all other things being equal. Finally, it should be noted that part of the waste from the service sector - *unspecified service sector waste* - has not been reported in a way that makes it possible to identify the subgroup source of this waste.

Service sector - main subgroups	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Retail trade	318	280	303
Wholesale and retail trade and repair of motor vehicles and motorcycles [37]	98	101	83
Wholesale of waste and scrap	115	117	92
Wholesale trade	159	164	169
Transporting and storage	259	251	277
Hotels and restaurants	57	51	58
Communication, culture, financial services and private services	291	270	293
Public administration, education, human health and social work activities	205	156	140
Unspecified service sector waste	213	211	171
Total	1,715	1,600	1,585

Table 3.5. Primary waste generated (excl. soil) in the service sector distributed on main subgroups.

With ADS the service sector waste generation can be divided into types of waste at a very detailed level. Table 3.6 shows some of the most significant waste types generated in the service sector. The most important waste type is *waste suitable for incineration*, which amounted to 540,000 tonnes in 2011, corresponding to approximately one third of total quantities. At a first glance, the reported quantity of *mixed residual waste* seems quite small; in 2013 it was at some 66,000 tonnes and this should be compared with the large quantity of *waste suitable for incineration*.

The quantity of *paper incl. newsprint* has decreased significantly in the period 2011 to 2013 from 117,000 tonnes to 71,000 tonnes. Part of the explanation for this development may be that the quantity reported in 2011 is not true and fair, but a more solid explanation is that the consumption of newspapers, writing paper and similar is on a rapid decrease these days. Evidently, this decrease is reflected in waste arisings. By contrast, the consumption of *packaging cardboard and other cardboard* is increasing although the consumption in 2012 is rather low.

[37] Outstanding reports and thereby no data for lead accumulators - see section 2.1

It is surprising that Table 3.6 does not show larger quantities of *packaging plastics* (7,000 tonnes) and *packaging metal* (300 tonnes). This may be due to imprecise reports from the waste collectors, but also to the fact that the service sector does not separate these packaging types for recycling to a sufficient degree. Also, quantities of *waste electronics* reported from the service sector are low: approximately 10,000 tonnes in 2013.

Service sector - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	50	45	66
Waste suitable for incineration	590	577	539
Organic waste	63	44	78
Paper incl. newsprint and packaging paper	117	86	71
Packaging cardboard and other cardboard	197	184	219
Packaging glass	5	10	7
Glass	4	4	4
Packaging wood	0.1	0.1	4
Wood	28	27	12
Packaging plastics	5	5	7
Plastics	10	10	8
Packaging metal	0.2	0.3	0.3
Ferrous and non-ferrous metals	285	299	222
Electronics	7	9	10
Refrigerators containing freon	1	1	2
Batteries	5	5	4
Garden waste	144	110	169
Sludge - other	33	37	14
Tyres	8	12	13
Impregnated wood	5	2	1
PVC	0	1	0
Waste suitable for landfill	36	29	33
Other wastes	121	102	100
Total	1,715	1,600	1,585

Table 3.6. Primary waste generated (excl. soil) in the service sector distributed on waste fractions.

3.2.1 Treatment of waste from the service sector

The rate of recycling of waste from the service sector reached a total of 54% to 55% in the period 2011 to 2013. Incineration varied from 39% to 41% and landfilling from 3% to 4%. There are, however, relatively large variations between the different main subgroups within the service sector.

Figure 3.3 shows how waste from the service sector is treated; it is shown for the main subgroups and the main treatment options. *Wholesale of waste and scrap* and *wholesale and retail trade and repair of motor vehicles and motorcycles* (also covering repair shops and tyre service) have a very high rate of recycling of approximately 80% of the generated waste. Evidently, the high rate of recycling reflects that ferrous metals in general have a positive value that has even increased for many

years; in recent years, however, metal prices have decreased. A substantial part of the recycling from sale and repair of motor vehicles and motorcycles consists of recycling of scrap tyres.

Retail trade; wholesale trade; transporting and storage; communication, culture, financial services and private services and *unspecified service sector waste* all have a lower rate of recycling between 45% and 58%. *Public administration, education, human health and social work activities* and *hotels and restaurants* have an even lower rate of recycling; it only attains between 28% and 43%. For all subgroups it is noticeable that much of the waste goes to incineration: between 39% and 69%; there is evidently much scope for improvement of the rate of recycling.

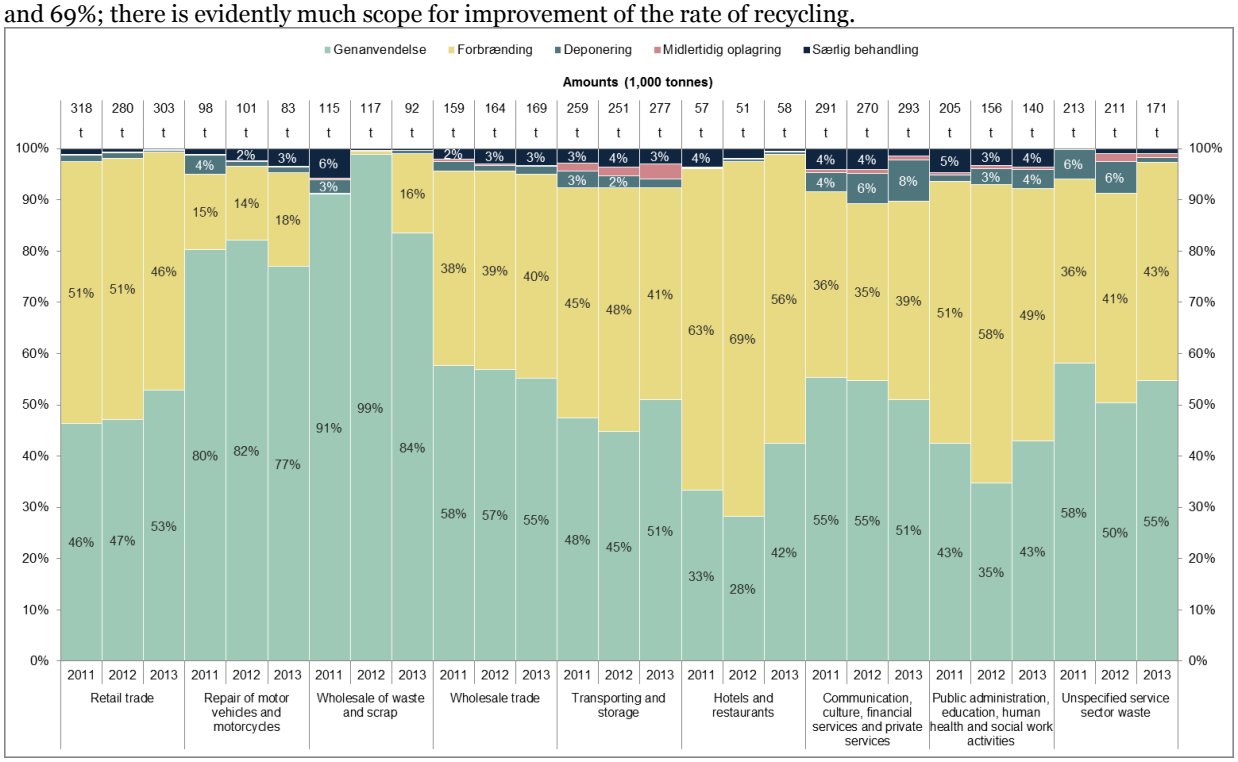

FIGURE 3.3. PRIMARY WASTE GENERATED (EXCL. SOIL) IN THE SERVICE SECTOR DISTRIBUTED ON MAIN SUBGROUPS AND MAIN TREATMENT OPTIONS.

3.3 Waste from industry

Generally, waste generation in industry has been on a decrease over the last 15 years. In 2000 waste generation attained approximately 3 million tonnes, in 2006 approximately 2 million tonnes, in 2008 approximately 1.7 million tonnes, in 2009 approximately 1.5 million tonnes and in 2013 it was at 1.3 million tonnes.

This general decrease in industry's waste generation since 2000 should be seen in connection with the development of industry's general importance for the Danish economy and the negative effect of the crisis from 2008. Thus, the number of full-time employed in industry in the same period has decreased from 420,000 in 2000 to 332,000 in 2008 and 300,000 in 2013[38]. The waste generation trend should, however, also be seen in connection with developments in the type of industrial production in Denmark and a higher focus in industry on the highest possible resource utilisation and the lowest possible waste generation.

With ADS it is possible to state precisely the sources of waste in industry. Table 3.7 shows waste generation distributed on selected main sectors. It appears that *manufacture of food products, beverages and tobacco products* is the largest waste producer within the manufacturing industry with approximately 40% of total quantities. In particular, the manufacture of food products generates much waste. Other major waste sources are *manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations, manufacture of basic metals, fabricated metal products, except machinery and equipment* and *manufacture of machinery and equipment*. Within *manufacture of paper and paper products, printing and reproduction of recorded media* there has been a decrease in waste generation of almost 20% in the period 2011-2013. This reflects the fact that the manufacture of paper and cardboard is on a continuous decrease in Denmark and that more and more printing assignments are carried out abroad.

Industry - main sectors	2011 Tonnes (1,000)	2012 Tonnes (1,000)	2013 Tonnes (1,000)
Manufacture of food products, beverages and tobacco products	567	550	516
Manufacture of paper and paper products, printing and reproduction of recorded media	121	145	99
Manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations	105	106	131
Manufacture of basic metals, fabricated metal products, except machinery and equipment	163	133	167
Manufacture of machinery and equipment n.e.c.	109	112	107
Raw material extraction	15	13	12
Other manufacturing industry	300	260	255
Total	1,380	1,320	1,286

Table 3.7. Primary waste generated (excl. soil) in industry distributed on main sectors.

Table 3.8 shows which waste types are generated in industry; the table uses Danish waste fraction codes. An even more detailed statement of industry's waste generation is stated using European waste codes. This detailed statement is found in the data appendix of these statistics.

Table 3.8 shows that the largest single fractions are *organic waste* and *ferrous and non-ferrous metals*, each amounting to almost one quarter of a million tonnes. Other major waste fractions are *sludge, paper and packaging cardboard and other cardboard, gypsum* and *wood*. The fractions

[38] Source: Industry development 2000-2012, Statistics Denmark and Statistical Yearbook 2015

waste suitable for incineration and *waste suitable for landfill* are also large. The quantity of *other wastes* is also substantial, fluctuating between 280,000 and 360,000 tonnes in the period 2011-2013; more than half of this is soil from cleaning and washing of sugar beets.

Industry - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	6	6	7
Waste suitable for incineration	144	121	104
Organic waste	187	211	246
Paper incl. newsprint and packaging paper	76	78	66
Packaging cardboard and other cardboard	34	35	39
Packaging glass	9	8	7
Glass	7	9	9
Packaging wood	0	0	5
Wood	55	50	37
Packaging plastics	5	6	6
Plastics	22	33	17
Ferrous and non-ferrous metals	262	222	249
Electronics	2	1	3
Refrigerators containing freon	0	0	1
Garden waste	2	2	11
Sludge - other	131	144	107
Tyres	1	3	2
PVC	1	7	0
Gypsum	23	27	49
Waste suitable for landfill	51	49	38
Residues from incineration	2	2	3
Other wastes	360	306	280
Total	1,380	1,320	1,286

Table 3.8. Primary waste generated (excl. soil) in industry distributed on waste fractions.

3.3.1 Treatment of waste from industry

Traditionally, industry has had a high rate of recycling of the waste generated. During the 1990s the rate of recycling attained between 50% and 60%. During the 2000s the rate of recycling attained between 60% and 65%. Table 3.9 shows the treatment of waste from industry in the period 2011 to 2013.

Table 3.9 shows that also in the period 2011 to 2013 the rate of recycling of waste from industry was between 55% and 71% and it even increased in 2013. The large increase in the recycling rate from 2012 to 2013 and the corresponding decrease in waste going to landfill are primarily due to the fact that beet soil from cleaning and washing of sugar beets could now be diverted from landfilling to recovery. The total quantity of waste for incineration remains largely at the same level in the entire period, while waste for landfilling decreased from 24% to 10% in the period 2011 to 2013 due to the above-mentioned new treatment of beet soil.

Industry including raw material extraction	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	766	55%	882	67%	907	71%
Incineration	211	15%	189	14%	191	15%
Landfilling	328	24%	165	13%	125	10%
Temporary storage	2	0%	2	0%	1	0%
Special treatment	73	5%	81	6%	62	5%
Total	1,380	100%	1,320	100%	1,286	100%

Table 3.9. Primary waste generated (excl. soil) in industry distributed on treatment form.

As to the distribution of treatment options in the main sectors of industry it is seen in Figure 3.4 that in particular *manufacture of food products, beverages and tobacco products*; *manufacture of paper and paper products and printing, manufacture of basic metals, fabricated metal products, except machinery and equipment* and *manufacture of machinery and equipment* have a high rate of recycling, attaining a level of more than 70%. *Other manufacturing industry* also has a high recycling level while *manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations* and *raw material extraction* attain a relatively low rate of recycling. *Manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations* is the only industrial sector with a high proportion of waste going to incineration (approximately 35%) and special treatment (approximately 25%). It should be noted that the high increase in the rate of recycling within *raw material extraction* from 2011 to 2013 is primarily due to the fact that this sector generated a low amount of waste so the increase from 22% to 45% only represents a quantity of some 2,000 tonnes.

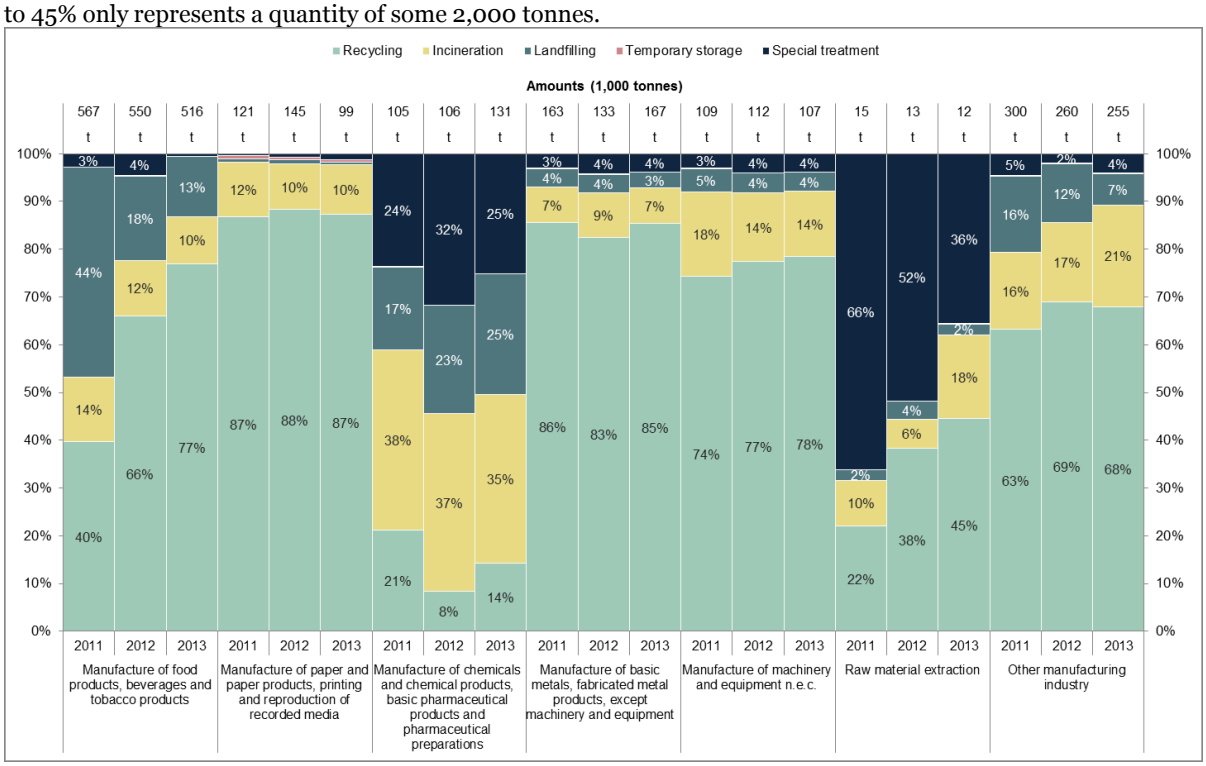

Figure 3.4. Primary waste generated (excl. soil) in industry's main subsectors distributed on treatment form.

3.4 Waste from building and construction sector

The building and construction sector accounts for around one third of waste generated in Denmark; this sector generated in 2013 approximately 3.6 million tonnes (excluding soil). If soil (see section 2.4) is included the quantity is even higher: approximately 9.7 million tonnes in 2013.

Waste generation from building and construction activities is traditionally very closely related to the economy. This is also seen in Figure 3.5, in which developments in construction and demolition waste arisings excluding soil are shown as an index in relation to the economic developments within the building and construction sector. There was a substantial decrease in waste amounts from 2008 to 2011 due to the financial crises that started in 2008. In the years 2011-2013 there was an increase in waste quantities, despite the fact that the economic activity remained relatively unchanged in the period 2010 to 2013.

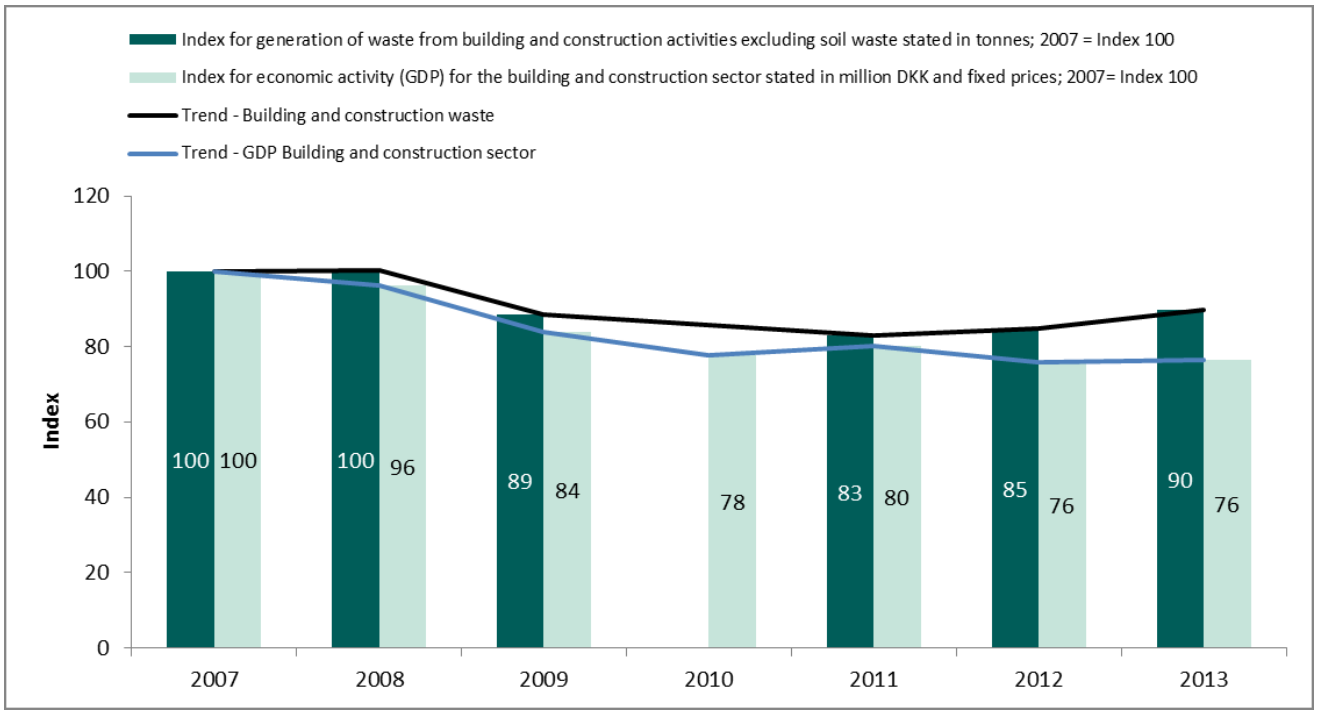

Figure 3.5. Generation of waste from building and construction activities (excl. soil) and economic activity (GDP) for the building and construction sector in the period 2007-2013. Stated as an index where 2007=100[39].

With ADS the generation of construction and demolition waste can be divided into types of waste at a very detailed level. All in all the reports to ADS are stated with 40 different European List of Waste codes (LoW codes) having to do directly with construction and demolition waste. In addition the building and construction sector also generates other types of waste than construction and demolition waste, for instance waste similar to household waste such as domestic waste. Table 3.10 shows some of the most significant waste types generated in the building and construction sector.

It appears from Table 3.10 that waste in the form of *asphalt* and *concrete* by far makes up the largest quantities, each accounting for 20% of total quantities. But also *iron and steel waste*, *bricks*, *track ballast, construction materials containing asbestos* and *gypsum-based construction materials* carry weight in the statement. Finally there are large quantities of mixed construction and demolition wastes in the form of approximately 300,000 tonnes *mixtures of concrete, bricks, tiles and ceramics* and 400,000 to 500,000 tonnes of *mixed construction and demolition wastes*.

[39] Source: ADS; Guidelines from the Danish Environmental Protection Agency no. 4, 2011; StatBank Denmark.

Building and construction - Waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Concrete	691	735	763
Bricks	140	96	99
Tiles and ceramics	63	43	52
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics	340	307	270
Wood	86	55	78
Glass	10	8	7
Plastics	6	8	5
Bituminous mixtures, coal tar and tarred products	682	908	879
Copper, bronze, brass, aluminium	18	16	16
Iron and steel	245	251	259
Lead, zinc, tin, mixed metals and other metals	34	34	30
Cables	11	9	9
Track ballast	39	46	86
Insulation materials	5	4	12
Construction materials containing asbestos	74	62	67
Gypsum-based construction materials	44	43	58
Construction and demolition wastes containing PCB	1	3	4
Mixed construction and demolition wastes	456	393	488
Domestic waste and waste similar to domestic waste	63	61	79
Other wastes from building and construction activities	339	341	363
Total	3,345	3,423	3,624

Table 3.10. Primary waste generated (excl. soil) in the building and construction sector distributed on waste fractions[40].

3.4.1 Treatment of building and construction waste

Traditionally, Denmark has had a high rate of recycling of construction and demolition waste. In the 1990s this rate attained up to 90% and increased further after 2000 to more than 95%. However, construction and demolition waste often contains contaminants that must be removed from the waste stream before recycling. Therefore, during the last 15 years different governments have had more focus on removing such substances of concern from the construction waste; these substances are, for instance, PCB and other contaminants contained in concrete. One of the consequences of this higher focus on environmental contaminants in the construction and demolition waste is that a certain decrease of the rate of recycling is to be expected. In other words, the objective is first and

[40] With ADS it is possible to have more detailed information on the type of construction and demolition waste, including the sectors generating the waste. In other words, does the construction waste, for instance, originate from building activity in the food manufacturing industry or from the metal manufacturing industry. However, if these quantities of construction waste were attributed to the waste generation in the food manufacturing industry it would not give a true and fair picture of the quantities of manufacturing waste actually generated in this sector. It has therefore been decided to attribute all construction and demolition waste to the building and construction sector, regardless of the source. This also applies to construction and demolition waste from households and recycling centres.

foremost to increase the quality of recycling instead of having a narrow focus on quantities. Therefore, the present objective is that the rate of recycling of construction and demolition waste excluding soil must only attain at least 70%.

Table 3.11 shows that the rate of recycling of construction and demolition waste excluding soil in the period 2011 to 2013 attained 84-86%, which is as expected somewhat lower than in the 2000s. Incineration and landfilling each account for approximately 7% to 9%.

Building and construction	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	2,805	84%	2,929	86%	3,059	84%
Incineration	306	9%	257	8%	254	7%
Landfilling	210	6%	228	7%	261	7%
Temporary storage	20	1%	6	0%	44	1%
Special treatment	3	0%	2	0%	6	0%
Total	3,345	100%	3,423	100%	3,624	100%

Table 3.11. Primary waste generated (excl. soil) in building and construction activities distributed on treatment form.

3.5 Power, gas and district heating supply

Energy plants generate waste in connection with the generation of heat and power. Waste comes in the form of slag and fly ash, but also waste - in particular gypsum waste - from the treatment of flue gas emitted from the energy plants. In addition, energy plants also generate other types of production waste such as oil waste and organic solvents. In the administrative part of the plants ordinary household waste is generated.

In the early 1990s the energy supply in Denmark was almost exclusively based on fossil fuels, in particular oil and coal. Fossil fuels accounted for 93% of the energy supply[41] while renewable energy (wind and biomass) and waste only accounted for 7%. Since the early 1990s a substantial change in the Danish energy supply has taken place. First of all, the share of fossil fuels has decreased to 73%, while renewable energy and waste have increased up to 27%. Also, the share made up by coal within the fossil fuels has decreased. In 1990 coal accounted for 40% of the energy supply, and this share was only 19% in 2013. The share of gas was 10% in 1990 and 18% in 2013.

Coal-based energy generation causes relatively large waste arisings; approximately 1/6 of the fuel consumption measured in tonnes ends up as waste. Therefore, waste generation from coal-fired power plants in the early 1990s was approximately 2 million tonnes a year. So in addition to reduced CO_2 emissions a lower consumption of coal as a fuel also means lower waste generation. The use of natural gas as a fuel does not cause much waste, and even if biomass-based fuels also generate waste, this type of fuel is less waste intensive than coal.

The change in the fuel composition over the last 25 years has therefore meant that waste arisings from our energy plants have decreased to less than half of what it used to be. Total waste quantities from energy plants (excl. waste incineration plants) in 2013 amounted to a total of 884,000 tonnes. This quantity covers all waste from energy plants as reported to ADS, i.e. waste from power, gas and district heating supply.

[41] Main figures from the Danish Energy Agency's preliminary energy statistics for 2014
http://www.ens.dk/sites/ens.dk/files/energistyrelsen/Nyheder/2015/foreloebigstat2014.pdf

Table 3.12 shows that the major part of waste from energy plants is fly ash from coal-fired plants[42] and gypsum waste from flue gas treatment at the energy plants[43]. The total reported quantity is assessed to be slightly below actual quantities, since there are outstanding reports on waste from some plants that exclusively use biomass fuels. The table shows a substantial decrease in waste arisings in 2012; this cannot, however, be explained with lower fuel consumption in 2012 compared with 2011 and 2013. The explanation to this decrease is assessed to lie in the fact that generated waste finds an outlet in larger batches and is therefore not reported to ADS until it is shipped off.

Power, gas and district heating supply	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Bottom ash, slag and boiler dust	91	74	101
Coal fly ash	578	459	548
Calcium-based reaction wastes from flue gas desulphurisation (gypsum waste)	170	104	156
Fly ash from co-incineration	3	2	25
Other wastes from gas cleaning	0	0	23
Other wastes	42	40	30
Total	885	679	884

Table 3.12. Primary waste generated (excl. soil) at Danish energy plants distributed on waste type and based on the European List of Waste code (LoW)

The major part of waste generated at the energy plants is recycled. Table 3.13 shows that the rate of recycling attains 95%-96% in the years 2011-2013. Coal fly ash is recycled in connection with the production of concrete and cement as well as in asphalt. Gypsum waste is used for the production of new plasterboard and is thereby a fine example of industrial symbiosis. This means that waste generated in one company can be used by another company as a secondary raw material in products, thus substituting virgin materials.

Power, gas and district heating supply	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	851	96%	651	96%	843	95%
Incineration	11	1%	6	1%	5	1%
Landfilling	20	2%	20	3%	34	4%
Temporary storage	1	0%	0	0%	0	0%
Special treatment	2	0%	2	0%	2	0%
Total	885	100%	679	100%	884	100%

Table 3.13. Primary waste generated (excl. soil) at Danish energy plants distributed on treatment form.

[42] European List of Waste code (LoW) 10 01 02
[43] European List of Waste code (LoW) 10 01 05 and 10 01 07

3.6 Agriculture, hunting and forestry

Waste from agriculture, hunting and forestry activities amounts to a good 100,000 tonnes in total. It should be noted that this figure does not include slurry for biogasification due to lack of reporting; according to the EU's waste definition this should be counted as waste.

In 2013 the major part of waste generated was waste suitable for incineration with 30,000 tonnes, garden waste with 19,000 tonnes, ferrous and non-ferrous metals with 17,000 tonnes, sludge with 9,000 tonnes and wood with 8,000 tonnes. Table 3.14 shows that between 53% and 64% of waste from agriculture, hunting and forestry activities was recycled in the period 2011-2013.

Agriculture, hunting and forestry	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	53	64%	43	59%	55	53%
Incineration	26	31%	27	37%	45	44%
Landfilling	3	3%	1	2%	2	2%
Temporary storage	1	1%	0	1%	1	1%
Special treatment	1	1%	1	1%	1	1%
Total	83	100%	73	100%	103	100%

Table 3.14. Primary waste generated (excl. soil) in agriculture, hunting and forestry distributed on treatment form.

Agriculture, hunting and forestry	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	1	2	1
Waste suitable for incineration	20	26	30
Organic waste	2	3	4
Paper and cardboard	1	1	1
Wood	14	8	8
Plastics	3	4	4
Ferrous and non-ferrous metals	10	11	17
Garden waste	11	6	19
Sludge - other	9	6	10
Tyres	5	4	4
Waste suitable for landfill	2	1	1
Other wastes	6	2	2
Total	83	73	103

Table 3.15. Primary waste generated (excl. soil) in agriculture, hunting and forestry distributed on waste fractions.

3.7 Wastewater treatment plants

The wastewater treatment plants of Danish sewage companies generate sludge in connection with the treatment; in addition, sand and screenings are generated. Furthermore, the wastewater treatment plants also generate other types of production waste such as oil waste, and in the administrative part of the plants ordinary household waste is generated.

Total quantities of waste from wastewater treatment plants – not only sludge, but also screenings and other waste were seen in Table 3.1 to amount to 146,000 tonnes in 2013. Thereby, this quantity contains all waste generated at wastewater treatment plants, i.e. companies collecting and treating wastewater. The major part of this waste is sludge, and in the following discussion focus is only on this fraction.

Before sludge can be recovered or disposed it must normally be dewatered and pretreated; this is done in dewatering, biogasification, and sludge mineralisation processes. Depending on the concentration of heavy metals and organic xenobiotic substances in the sludge it can go to final treatment or disposal. This takes place either by spreading sludge on agricultural land as a fertiliser, it is composted, incinerated with energy recovery or, rarely, taken to a landfill facility.

Sludge going to recovery or disposal will have different rates of dry matter depending on the pretreatment before final treatment. Therefore, to make figures for sludge comparable, quantities are stated in dry matter. In the reports to ADS it is voluntary to state precisely the rate of dry matter in the sludge. However, every year the Utility Secretariat of the Danish Competition and Consumer Authority receives reports from all sewage companies on quantities of treated sludge stated in dry weight which is why these figures are used in the following.

The latest study conducted by the Danish Environmental Protection Agency about final treatment of sludge from wastewater treatment plants covers the years 2008 and 2009. Table 3.16 shows sludge treatment in the period 2008-2009 and 2011-2013.

Sludge - wastewater treatment plants[44]	2008		2009		2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling on agricultural land	80	60%	75	58%	81	61%	80	61%	80	63%
Composting and other recycling	22	17%	22	17%	11	8%	12	9%	12	10%
Incineration	29	22%	31	24%	38	29%	38	29%	35	27%
Landfilling	1	1%	1	1%	3	2%	1	1%	1	0%
Total	133	100%	130	100%	133	100%	131	100%	129	100%

Table 3.16. Treatment of sludge from wastewater treatment plants 2008-2009 and 2011-2013 stated in tonnes of dry matter.[45]

The total quantity of sludge varies slightly over the years. The quantity is somewhat lower in 2013, especially for incineration. The lower quantity of sludge may be explained by the fact that the aver-

[44] Sources: Sewage sludge from municipal and private treatment plants 2008-2009 corrected for sludge for sludge mineralisation, Danish Environmental Protection Agency 2012; Utility Secretariat of the Danish Competition and Consumer Authority and ADS

[45] 2008 and 2009 figures are calculated from table 2.3 on page 12 and table 4.1 on page 15 in "Sewage sludge from municipal and private treatment plants 2008-2009". 2008 and 2009 figures for composting and other recycling are calculated as the difference between dry weight) and the other treatment options.

age precipitation in 2013 was only at approximately 670 mm against 730-820 mm in the other years.

Table 3.16 shows that sludge is widely recycled on agricultural land as a fertiliser. The rate varies between 58 and 63%. The level is somewhat lower than in the 1990s when up to 80% was recycled on agricultural land. This decrease is due to the fact that in 1997 and 2000 more stringent requirements were introduced for the content in sludge of xenobiotic substances when used on agricultural land. The enhancement concerned a number of tar compounds called PAHs, the detergent LAS, nonylphenols NPE and the plasticiser DEHP. Incineration of sludge with energy recovery is the second most important treatment form and accounts for 22-29% in the period.

3.8 Waste from others sources

The source *waste from others sources* consists of two subsectors: *water collection, treatment and supply* and *waste collection, treatment and disposal activities*.

Waste from others sources	**Waste collection, treatment and disposal activities**					
	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	51	52%	64	63%	53	69%
Incineration	42	42%	31	31%	19	24%
Landfilling	3	3%	2	1%	4	5%
Temporary storage	1	1%	1	1%	0	0%
Special treatment	1	1%	4	4%	1	1%
Total	98	100%	100	100%	76	100%

Waste from others sources	**Water collection, treatment and supply**					
	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	8	61%	5	71%	5	72%
Incineration	1	11%	1	10%	1	16%
Landfilling	3	22%	1	19%	1	12%
Temporary storage	0	0%	0	0%	0	0%
Special treatment	1	7%	0	0%	0	0%
Total	13	100%	7	100%	7	100%

Table 3.17 Primary waste generated (excl. soil) from the source ”Others sources” distributed on treatment form and subsectors.

With the exception of waste from ship dismantlers and scrap dealers quantities stated under *waste collection, treatment and disposal activities* do not cover waste generated by a waste treatment facility such as incineration plants, landfills or recycling facilities. The subgroup of *waste collection, treatment and disposal activities* covers waste originating from primary waste sources such as *the service sector*, *households* or *industry*. The reason why *waste collection, treatment and disposal activities* is stated as the producer of primary waste generated is mainly lack of reporting from

waste treatment companies regarding original waste producers. It is expected in the future that this primary waste quantity will be registered under the correct sources to a higher extent.

The distribution of treatment options under the two subsectors shows a clear majority of primary waste generated going to recycling. This is particularly the case for *water collection, treatment and supply*.

As it appears from Table 3.18 *waste suitable for incineration*, *ferrous and non-ferrous metals* and *other wastes* are the largest waste fractions in quantitative terms under the source *other*. A significant share of quantities placed under *ferrous and non-ferrous metals* and *other wastes* originates from ship dismantlers and scrap dealers.

Waste from others sources	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Mixed residual waste	2	3	3
Waste suitable for incineration	34	17	7
Organic waste	1	0	3
Paper incl. newsprint and packaging paper	2	2	1
Packaging cardboard and other cardboard	3	1	2
Packaging glass	2	1	2
Glass	3	0	0
Wood	5	11	11
Ferrous and non-ferrous metals	30	40	33
Electronics	0	1	0
Garden waste	2	1	5
Sludge from wastewater treatment plants	0	0	0
Sludge - other	6	8	2
Tyres	1	0	0
Waste suitable for landfill	4	1	1
Residues from incineration	0	0	3
Other wastes	16	20	11
Total	110	107	83

Table 3.18. Primary waste generated (excl. soil) by "Others sources" distributed on waste fractions.

3.9 Waste from commercial and industrial activities without sector

The waste source *waste from commercial and industrial activities without sector* comprises those commercial and industrial wastes for which it has not been possible to identify the sector due to lack of P number of the producer[46] in the reports; this means that waste from this source should be attributed to the other main sectors. In cooperation with the reporting companies the Danish Envi-

[46] A P number shows the geographical location of the commercial activity. A company with a CVR number may have more than one P unit if it carries out commercial activities at several locations. In addition to the address the P number indicates the commercial sector of the activity. More information can be found in Appendix 1.

ronmental Protection Agency has had focus on minimising the quantities under *waste from commercial and industrial activities without sector* as far as possible by finding P numbers for companies having been stated without such a number. It is expected that the waste source *waste from commercial and industrial activities without sector*, which accounts for around 1% of total primary waste generation in Denmark today (excl. soil), will be minimised in the future.

The quantities of the different waste fractions under the source *waste from commercial and industrial activities without sector* can be seen in Table 3.19.

Waste from commercial and industrial activities without sector	2011 Tonnes (1,000)	2012 Tonnes (1,000)	2013 Tonnes (1,000)
Mixed residual waste	1	1	6
Waste suitable for incineration	54	52	54
Organic waste	2	1	1
Paper incl. newsprint and packaging paper	10	9	10
Packaging cardboard and other cardboard	9	27	19
Packaging glass	0	1	2
Packaging wood	0	0	1
Wood	2	2	1
Plastics	3	2	4
Packaging metal	30	25	19
Ferrous and non-ferrous metals	1	5	5
Electronics	0	1	0
Refrigerators containing freon	8	8	6
Garden waste	0	1	1
Sludge - other	0	0	1
Waste suitable for landfill	4	2	4
Other wastes	14	12	22
Total	138	149	157

Table 3.19. Primary waste generated in commercial and industrial activities without sector (excl. soil) distributed on waste fractions.

It is assumed that much of the waste under the fraction *waste suitable for incineration* is attributable to the main sector *the service sector*. The same applies to the waste fraction *cardboard*.

As mentioned above, most of the waste under the source *waste from commercial and industrial activities without sector* goes to recycling; logically, this is due to the high proportion of separated waste in the waste fractions *ferrous and non-ferrous metals, cardboard, paper* and *garden waste*. In Table 3.20 the treatment options for primary waste generated in the source *waste from commercial and industrial activities without sector* are shown.

Waste from commercial and industrial activities without sector	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Recycling	67	49%	91	61%	90	57%
Incineration	60	44%	54	36%	61	39%
Landfilling	8	6%	3	2%	4	3%
Temporary storage	0	0%	0	0%	0	0%
Special treatment	2	2%	1	1%	2	1%
Total	138	100%	149	100%	157	100%

Table 3.20. Primary waste generated (excl. soil) in commercial and industrial activities without sector distributed on treatment form.

4. Imports and exports of waste

Figures for imports and exports of waste in this section are based exclusively on the Waste Data System (ADS)[47]. General developments in imports and exports of waste are presented in Figure 4.1 and Table 4.1. The trend of increasing imports and decreasing exports has continued in 2013.

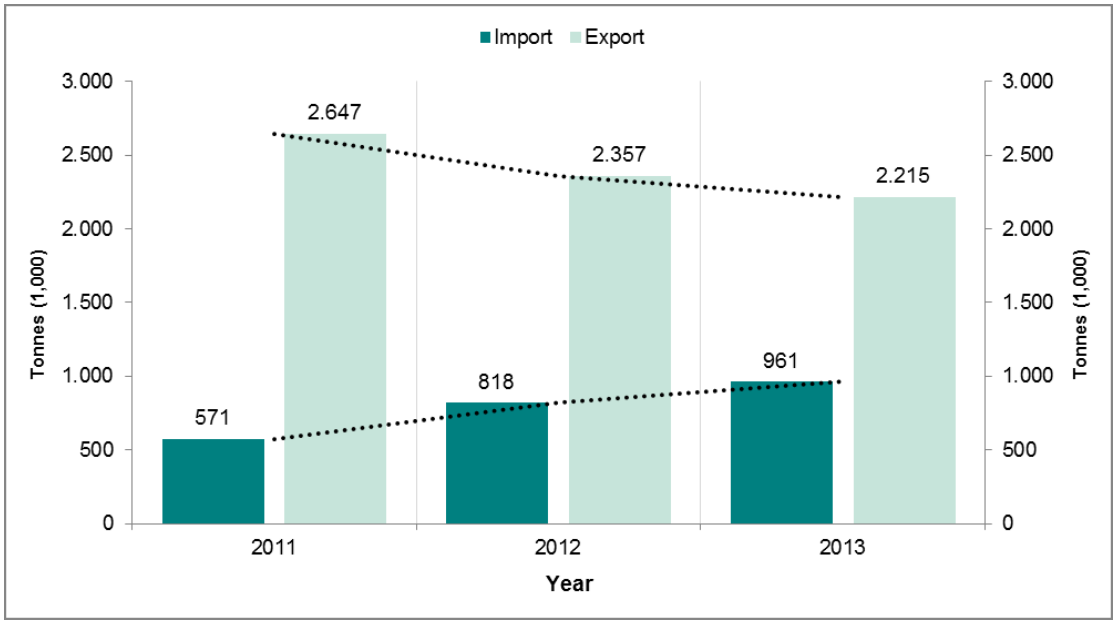

FIGURE 4.1. IMPORTS AND EXPORTS OF WASTE

Imports and exports	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Imports	562	802	929
Exports	2,647	2,360	2,215

Table 4.1. Imports and exports of waste

The main reasons for the increase in imports and the decrease in exports are found in an increase in imports of waste suitable for incineration and a decrease in exports of ferrous and non-ferrous metals, respectively. In the following, the trends in this field are discussed in more detail regarding waste fractions, countries and treatment options. In addition, focus will be on imports of waste to the incineration plants.

[47] Data cover both notifiable waste (amber list wastes, unlisted and certain green list wastes) and non-notifiable waste (green list wastes). The Danish Environmental Protection Agency has made a random comparison of data from ADS and the waste shipment database on notifiable hazardous waste, cf. the EU waste shipment regulation. This comparison shows as expected that in total there are larger quantities in ADS than in the waste shipment database. Furthermore, for by far the most waste types quantities are larger in ADS than in the waste shipment database. In a few cases, however, it seems that reporters do not include all green list wastes that are exported; this is expected to improve in the future.

4.1 Imports of waste

Imports of waste are presented at the level of waste fractions in Table 4.2.

Imports - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Waste suitable for incineration	63	163	234
Organic waste	28	42	47
Paper incl. newsprint and packaging paper	40	16	0
Packaging cardboard and other cardboard	1	14	1
Packaging glass	43	57	36
Glass	21	14	7
Packaging plastics	8	10	9
Plastics	5	2	1
Ferrous and non-ferrous metals	145	182	32[48]
Electronics	0	0	2
Refrigerators containing freon	0	1	0
Sludge - other	106	179	250
Tyres	0	6	1
Residues from incineration	0	0	145
Other wastes	102	116	165
Total	562	802	929

Table 4.2. Imports of waste by waste fraction

As described above, quantities of waste imported in the period 2011 to 2013 are increasing. In the above table it is seen that the increase in 2013 is primarily due to an increase in imports of sludge, mainly hazardous sludge, residues from incineration in the form of fly ash for recovery and waste suitable for incineration. Along with these increases it should be noted that imports of paper cease in 2013, which reflects the fact that the manufacture of paper and cardboard is on a continuous decrease in Denmark and that more and more printing assignments are carried out abroad.

As to the increases in 2013, in particular the increase in imports of waste suitable for incineration to the Danish waste incineration plants[49] can be related to the Danish increase in recycling, in particular for waste from households; this results in a corresponding decrease in national waste quantities going to incineration. This has meant that the Danish incineration plants have seen an increase in their excess capacity. Table 4.3 presents imports of waste suitable for incineration received at the Danish incineration plants and broken down on country of export.

[48] It is assessed that the stated quantity of imported ferrous and non-ferrous metal in 2013 is too low compared with actual quantities imported, which is primarily due to lack of reporting on imports of ferrous and non-ferrous metal by one major Danish player.

[49] Danish incineration plants cover dedicated plants (24 plants) and multi-fuel firing units (3 plants), respectively. This waste consists of RDF waste. Plants handling either special waste by incineration (e.g. Nordgroup), or using waste as a fuel in their production (e.g. Aalborg Portland), are not included.

Imports of waste suitable for incineration	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Germany	-	12	8
Great Britain	14	74	98
Ireland	-	-	33
Norway	2	15	20
Total	16	103	158
Rate of total waste incineration[50]	0.5 %	3.1 %	4.6 %

Table 4.3. Imports of waste for incineration by country of export

Developments show that in particular Great Britain and Ireland are exporting waste for incineration in Denmark[51]. This reflects the fact that both countries at the moment have a lack of treatment capacity for household waste and that as a consequence gate fees are on the increase.

In addition to the presentation of countries of export of waste suitable for incineration to Denmark, Table 4.4 shows the most frequent countries of export from where waste is generally imported to Denmark.

Imports - Countries	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Germany	63	11%	85	11%	107	11%
Great Britain	19	3%	94	12%	164	18%
Italy	31	6%	19	2%	159	17%
Norway	134	24%	217	27%	257	28%
Sweden	139	25%	173	22%	76	8%
Ireland	30	5%	24	3%	33	4%
Other	146	26%	190	24%	134	14%
Total	562	100%	802	100%	929	100%

Table 4.4. Imports of waste to Denmark by country of export

It is seen above that in 2013 a substantial increase took place regarding waste from Italy; this is primarily due to a larger import of fly ash for the manufacture of new materials, such as cement and concrete. Norway is that country from which Denmark imports most waste; this waste is primarily aqueous liquid waste containing dangerous substances. The decrease in quantities imported from Sweden covers a general decrease, however in particular a drop in imports of metal wastes[52].

[50] Danish incineration plants cover dedicated plants (24 plants) and multi-fuel firing units (3 plants), respectively. Plants handling either special waste by incineration (e.g. Nordgroup), or using waste as a fuel in their production (e.g. Aalborg Portland), are not included. Total waste incineration in this context covers waste for incineration and temporary storage (2011:3,401,000 tonnes; 2012; 3,341,000 tonnes; 2013: 3,411,000 tonnes). Source: ADS.

[51] RDF waste (refuse derived fuel); domestic waste is coarsely separated for recyclables, in particular metal and glass, and waste is dewatered.

[52] It is assessed that the stated quantity of imported ferrous and non-ferrous metal in 2013 is too low compared with actual quantities imported, which is primarily due to lack of reporting on imports of ferrous and non-ferrous metal by one major Danish player.

As to treatment of imported waste it is seen in Table 4.5 that in the period 2011 to 2013 24-27% is disposed and 70-76% is recovered. It is seen that quantities of waste imported for disposal increase; this is primarily due to higher imports of hazardous waste.

Imports	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Disposal	153	27%	195	24%	288	31%
Recovery	409	73%	607	76%	642	69%
Total	562	100%	802	100%	929	100%

Table 4.5. Imports of waste to Denmark by treatment form

Waste imported for disposal is presented in more detail in the below Table 4.6. As it is seen in the table imported waste is primarily disposed under D8 Biological treatment or D10 Incineration on land without energy recovery. Both cases cover disposal of hazardous waste.

Imports - Disposal	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
D8 – Biological treatment	66	43%	111	57%	152	53%
D10 – Incineration on land	87	57%	83	43%	134	47%
Other	1	1%	1	1%	2	1%
Total	153	100%	195	100%	288	100%

Table 4.6. Imports of waste to Denmark by disposal option

Table 4.7 shows imports of waste for recovery. The increase in quantities of waste for recovery is due to higher imports of waste for R1 incineration with energy recovery.

Imports - recovery	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
R1 - Use principally as a fuel or other means to generate energy	63	15%	157	26%	211	33%
R3 - Recycling/reclamation of organic substances which are not used as solvents	87	21%	108	18%	109	17%
R4 - Recycling/reclamation of metals and metal compounds	104	25%	174	29%	29	4%
R5 - Recycling/reclamation of other inorganic materials	66	16%	79	13%	195	30%
R6 - Regeneration of acids or bases	2	1%	6	1%	4	1%
R9 - Oil re-refining or other reuses of oil	15	4%	26	4%	26	4%
R10 - Land treatment resulting in benefit to agriculture or ecological improvement	28	7%	42	7%	47	7%
R12 - Exchange of waste for submission to any of the operations numbered R 1 to R 11	44	10%	11	2%	8	1%
R13 - Storage of waste pending any of the operations numbered R 1 to R 12	0	0%	3	1%	12	2%
Total	409	100%	607	100%	642	100%

Table 4.7. Imports of waste to Denmark by recovery option

4.2 Exports of waste

Exports of waste are presented at the level of waste fractions in Table 4.8.

Exports - waste fractions	2011	2012	2013
	Tonnes (1,000)	Tonnes (1,000)	Tonnes (1,000)
Paper incl. newsprint and packaging paper	200	223	207
Packaging cardboard and other cardboard	229	225	262
Packaging glass	40	30	30
Glass	10	12	14
Wood	70	57	71
Packaging plastics	14	13	15
Plastics	17	14	17
Packaging metal	6	7	8
Ferrous and non-ferrous metals	1,429	1,273	1,026
Electronics	44	45	38
Refrigerators containing freon	3	3	3
Sludge - other	33	21	18
Tyres	1	2	3
Mixed construction and demolition waste	25	23	0
Impregnated wood	38	38	40
PVC	0	1	1
Residues from incineration	312	215	395
Other wastes	174	149	64
Total	2,647	2,360	2,215

Table 4.8. Exports of waste by waste fraction

Exports are dominated by waste types that are used as recyclable materials in the manufacturing industry, particularly paper and cardboard as well as ferrous and non-ferrous metals. Exports of these waste types also reflect that Denmark has no steelworks using scrap just as we have only few and relatively small paper and cardboard mills.

The decrease in exports covers many different trends, cf. Table 4.8. It should be noted, however, that the decrease in exports of ferrous and non-ferrous metals may be related to the decrease in the imports of the same fraction, which means that less waste is passing through Denmark.

In Table 4.9 exports of waste from Denmark are shown by country of import. In addition to the general decreasing trend in waste exports it should be noted that quantities going to Norway are increasing; this covers primarily flue gas cleaning waste and slag. Quantities going to Turkey are increasing - this is primarily metal waste.

Exports - Countries	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Germany	900	34%	804	34%	848	38%
Netherlands	195	7%	222	10%	170	8%
Norway	164	6%	155	7%	206	9%
Sweden	399	15%	333	14%	227	10%
Turkey	272	10%	287	12%	410	19%
Estonia	154	6%	112	5%	41	2%
Other and EU[53]	562	21%	439	19%	313	14%
Total	2,647	100%	2,360	100%	2,215	100%

Table 4.9. Exports of waste from Denmark by country of import

As to treatment of exported waste it is seen in Table 4.10 that in the period 2011 to 2013 6-7% is disposed and 93-94% is recovered.

Exports	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
Disposal	191	7%	159	7%	143	6%
Recovery	2,456	93%	2,200	93%	2,072	94%
Total	2,647	100%	2,360	100%	2,215	100%

Table 4.10. Exports of waste to Denmark by treatment form.

Waste exported for disposal is presented in more detail in the below Table 4.11. The large increases and decreases in D 1 Deposit into or on to land, D12 Permanent storage and D15 storage are primarily due to a change in the use of the codes for reporting. Fractions in question are primarily hazardous waste and slag from mainly power plants and incineration; these fractions are exported to Germany and Norway[54].

Exports - Disposal	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
D1 - Deposit into or onto land	12	6%	77	48%	127	89%
D3 - Deep injection	9	5%	9	6%	1	1%
D5 - Specially engineered landfill	0	0%	23	14%	0	0%
D9 - Physico-chemical treatment	43	22%	33	21%	14	10%
D12 – Permanent storage	1	0%	18	11%	1	1%
D15 - Storage pending any of the operations numbered D 1 to D 14	127	66%	0	0%	0	0%
Total	191	100%	159	100%	143	100%

[53] EU means a broad range of countries within the EU. It also includes amounts where no information about destiny was reported. This means that additional export to Germany, the Netherlands etc. may also be found in this quantity.

[54] In its communication of 7 July 2015 the Danish Environmental Protection Agency has noted that alkaline waste used by NOAH at Langøya in Norway for the neutralisation of waste acid in the future may be classified as recovery instead of disposal.

Table 4.11. Exports of waste to Denmark by disposal options.

Waste exported for recovery is presented in more detail in the below Table 4.12. It is seen in the table that the primary treatment options used are R3 Recycling/reclamation of organic substances, R4 Recycling/reclamation of metals and metal compounds and R5 Recycling/reclamation of other inorganic materials; this is logically due to the large export of cardboard, paper, ferrous and non-ferrous metals and residues from, primarily, coal-fired power plants. The largest decrease in 2013 is seen in the treatment option R4 Recycling/reclamation of metals and metal compounds, which is due to the decrease in the exports of ferrous and non-ferrous metals.

Exports - recovery	2011		2012		2013	
	Tonnes (1,000)	%	Tonnes (1,000)	%	Tonnes (1,000)	%
R1 - Use principally as a fuel or other means to generate energy	55	2%	41	2%	46	2%
R3 - Recycling/reclamation of organic substances	310	13%	220	10%	489	24%
R4 - Recycling/reclamation of metals and metal compounds	1,340	55%	1,256	57%	995	48%
R5 - Recycling/reclamation of other inorganic materials	516	21%	512	23%	324	16%
R9 - Oil re-refining or other reuses of oil	6	0%	11	1%	10	1%
R10 - Land treatment resulting in benefit to agriculture or ecological improvement	17	1%	3	0%	0	0%
R12 - Exchange of waste for submission to any of the operations numbered R 1 to R 11	184	7%	111	5%	133	6%
R13 - Storage of waste pending any of the operations numbered R 1 to R 12	28	1%	46	2%	75	4%
Total	2,456	100%	2,200	100%	2,072	100%

Table 4.12. Exports of waste to Denmark by recovery option

5. Resource Strategy: Denmark without waste

The Resource Strategy - Denmark without waste was published in October 2013; its primary purpose is to increase the Danish rate of recycling. Waste must be considered as a resource and it should be avoided that valuable materials are lost.

This section has as its only focus the Resource Strategy's national objective of 50% recycling of waste from the source households (RS 50% objective), which must be met in 2022. The objective covers seven selected waste fractions: Organic waste (food waste), paper, cardboard, glass, wood, plastics and metal waste from the source households; thus, it does not cover all waste from households. Appendix 5 to the Danish Environmental Protection Agency's Guidelines no. 4 from 2014 (Denmark without waste) defines in more detail how to calculate the 50% recycling rate. These statistics clarify and detail this calculation. The selected waste fractions included in the calculation are presented in the following table:

Selected waste fractions[55]		
Waste fraction code	Waste fraction name	LoW combination[56]
H01	Domestic waste	-
H02	Organic waste	-
H03	Suitable for incineration	-
H05	Paper incl. newsprint	-
H06	Cardboard	-
H07	Glass	-
H08	Plastics	-
H09	Packaging paper	-
H10	Packaging cardboard	-
H11	Packaging glass	-
H12	Packaging metal	-
H13	Packaging plastics	-
H15	Wood	-
H19	Ferrous and non-ferrous metals	-
H27	Bulky waste	-
H30	Packaging wood	-
H29	Other wastes	15 01 06 Mixed packaging

Table 5.1. Selected waste fractions contained in the RS 50% objective for households[57]

[55] "Seven focus materials" (Paper, cardboard, metal, glass, plastics, wood and food waste).
[56] More information on LoWcodes can be found in Appendix 1.
[57] Primary waste generated under the LoW group 16 01 ** *End-of-life vehicles* has been excluded despite the fact that these quantities may be combined with the waste fraction codes from Table 5.1.

Since the publication of the guidelines the Danish Environmental Protection Agency has decided to include the waste fraction H29 *other wastes* in a locked combination with the European List of Waste code (LoW) 15 01 06 *mixed packaging*[58] in addition to the originally selected waste fractions in the Danish Environmental Protection Agency's guidelines no. 4, 2014. This addition covers different types of packaging, e.g. packaging of metal and plastic, that are collected commingled in the households. It has also been decided in this context to exclude waste quantities under the LoW group 16 01 ** End-of-life vehicles, if the quantity is combined with the selected waste fraction codes. Finally it should be mentioned that waste from recycling centres in the relevant waste fractions is calculated as coming 100% from households and that single-use packaging under the deposit-refund system collected from households is also part of the calculation.

The calculation of the rate of recycling is made by dividing primary waste generated going to recycling from the selected waste fractions with total quantities of primary waste generated from the selected waste fractions.

$$\frac{\textbf{Primary waste generated going to recycling}}{\textbf{Primary waste generated in total}} = \textbf{Rate of recycling}$$

For the calculation of the rate of recycling raw data[59] from the Waste Data System (ADS) are used. The waste data are in some cases adapted and supplemented with external sources[60]. More details on data adaptations can be found in Appendix 1. The rate of recycling calculated for all of Denmark can be seen in Figure 5.1 and Table 5.2[61].

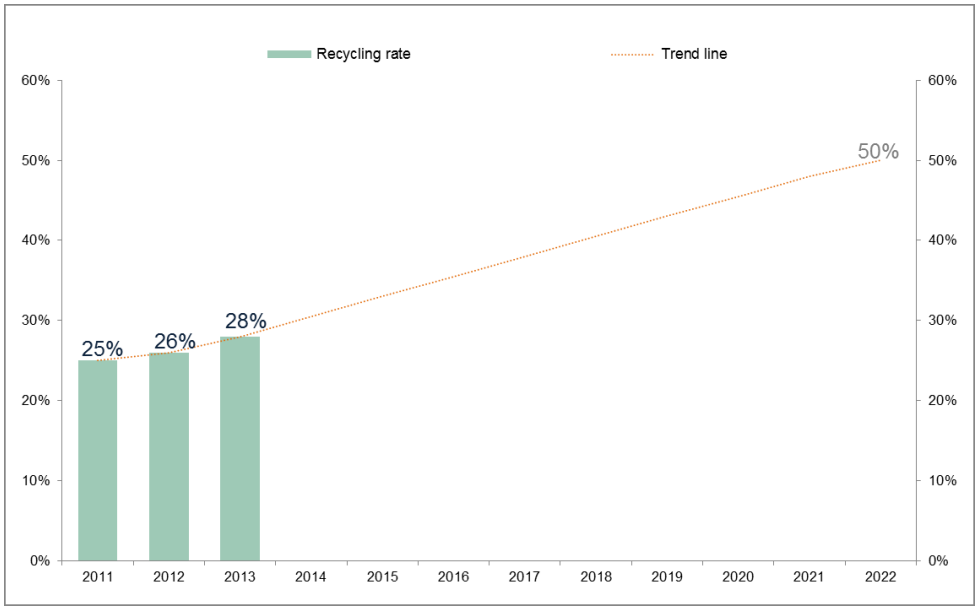

FIGURE 5.1. RS 50% OBJECTIVE FOR HOUSEHOLDS

[58] Only waste for recycling

[59] Compared with section 3 of the statistics on waste sources, waste from households related to codes on building and construction activities (LoW group 17 ** **) in the calculation of the RS 50% objective has not been moved from the source *households* to the source *building and construction*, where waste from households belongs to the selected waste fractions that are included in the RS 50% objective. For example, this applies to ferrous metals that may be combined with LoW group 17 ** ** and that are therefore included in the calculation of the 50%.

[60] Waste collected from mixed residential and commercial areas and industrial and commercial waste similar to domestic waste collected in a municipal collection scheme is in practice registered mainly as waste from households. Therefore, this waste will be included in the RS 50% objective if the waste has been reported under the selected waste fractions. It is assessed that an adaptation of the calculation in the form of an exclusion of that part of the waste that originates from companies in mixed residential and commercial areas and companies covered by a municipal collection scheme for industrial and commercial waste similar to domestic waste will have a minor positive effect on the rate of recycling since this waste is expected to consist of waste going to incineration, such as domestic waste or waste suitable for incineration.

[61] The rate of recycling in 2011 (25%) is different from the rate of recycling stated in the Resource Strategy (22%), which is due to a qualitative improvement of the data basis in ADS since the publication of the strategy.

It appears from Figure 5.1 that the national rate of recycling for waste from households (RS 50%) has increased by 3 percentage points in the period 2011 to 2013. With the publication of the Resource Strategy in October 2013 further recycling initiatives are expected in the future in the local authorities of Denmark; this will enhance the positive development in the period 2014-2022. Figure 5.1 also shows that the present rate of increase in the period 2011 to 2013 must continue as a minimum if the 50% recycling objective is to be met in 2022.

Table 5.2 and Figure 5.2 present the rate of recycling in the different Danish regions[62]. The highest rates of recycling are found in the Region of Southern Denmark and the Region of Central Denmark. By contrast, the largest increase in percent over the three-year period is seen in the Capital Region; here the rate of recycling in 2013 is slightly higher than the rate in Region Zealand and the Region of North Denmark.

RS 50% objective	2011			2012			2013		
	Total	Recycling		Total	Recycling		Total	Recycling	
	Tonnes (1,000)	Tonnes (1,000)	%	Tonnes (1,000)	Tonnes (1,000)	%	Tonnes (1,000)	Tonnes (1,000)	%
Denmark	2,805	694	25%	2,690	686	26%	2,721	749	28%
Capital Region	798	148	19%	757	156	21%	744	175	24%
Region of Central Denmark	590	163	28%	584	163	28%	589	173	29%
Region of North Denmark	305	63	21%	303	67	22%	313	73	23%
Region Zealand	451	105	23%	415	93	23%	420	98	23%
Region of Southern Denmark	623	177	28%	595	169	28%	614	189	31%
Without regional division	38	38	100%	37	37	100%	41	41	100%

Table 5.2. RS 50% objective for households

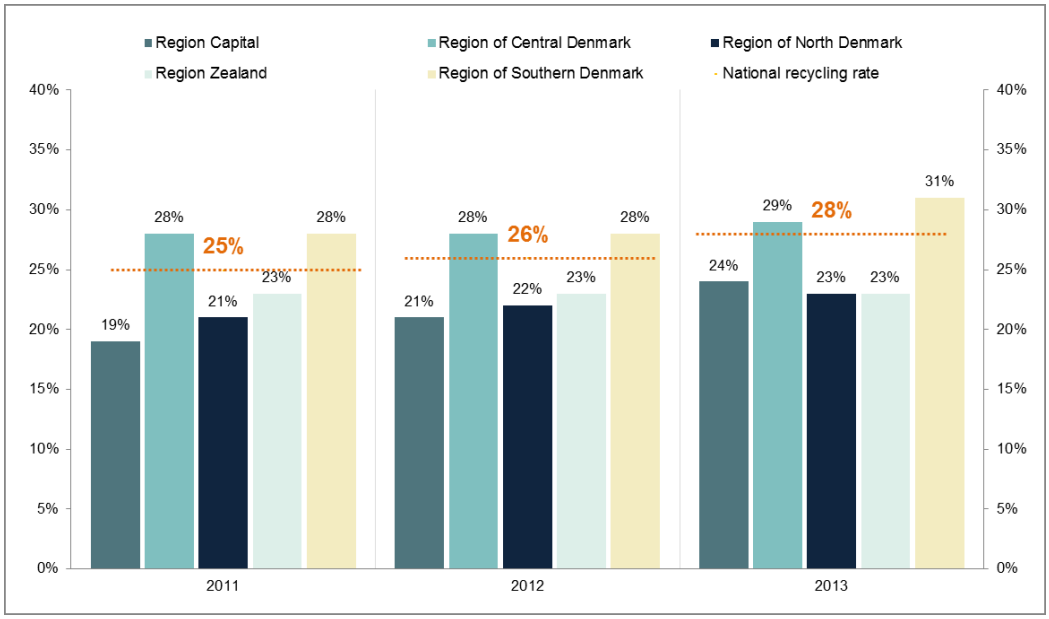

FIGURE 5.2. RS 50% OBJECTIVE FOR HOUSEHOLDS

[62] The results for the regions have been stated without the quantities of household waste in the form of single-use packaging under the deposit-return system. This quantity has been included in total quantities for Denmark.

Appendix 1 Waste Data System

Data behind this publication have been collected through the Waste Data System of the Danish Environmental Protection Agency. In the following a description is given of the design of the Waste Data System and the data collected in it.

Reporters

All waste collectors, receivers, exporters and importers of waste must report to the system. All reports must state information about the source of the waste and the receiver of the waste. For waste from businesses and public institutions the CVR and P numbers of that business/institution[63] must identify the producer. Also, the CVR and P numbers of the receiver must be stated.

Data Model Principle

In the following figure the principle of reporting to the Waste Data System is illustrated. Waste producers must not report to the system unless they export waste or if a business treats its own waste. Waste collectors must always state the source of the waste and the receiver of the waste. Reception facilities must state from where they receive waste. If a receiving facility receives waste from a waste collector the reception facility must state the waste collector as being the waste producer. If the reception facility receives waste directly from the original waste producer this reception facility must state this producer as the waste producer.

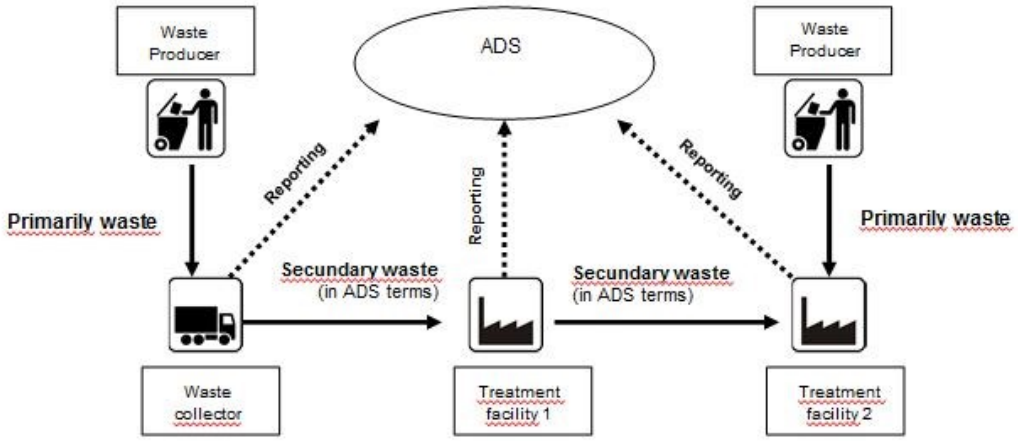

FIGURE B1. DIAGRAM OF WASTE FLOW (BLACK ARROWS) AND REPORTING TO THE WASTE DATA SYSTEM (BROKEN LINE ARROWS).

Primary and secondary quantities

Potentially, the same load of waste can be reported several times to the system; this happens, for instance, when the waste collector registers to have collected a load of waste and the reception facility registers to have received the same load of waste from the waste collector. Naturally, this has to be taken into consideration when the primary quantity (net waste generation) is stated. Therefore, all P numbers of the businesses having reported to the system are labelled as "waste actor". The P numbers of businesses stated as waste receivers are also labelled as "waste actors". Waste stated as generated by a "waste actor" is automatically calculated as secondary waste and does not count in the statement of primary waste generated. However, waste from businesses exclusively exporting waste and not collecting or receiving waste is included in the primary quantity.

[63] Each business in the Central Business Register (CVR) has a CVR number and one or more P numbers. For instance, a supermarket chain may have one CVR number and several underlying P numbers - i.e. one P number for each store. A P number is sometimes referred to as a P unit.

Data reported
A report must contain the following information:

- Quantity
- Waste fraction (made up by 31 household waste codes and 35 industrial waste codes)[64] as well as an LoW code[65]
- Treatment (6 Danish treatment codes, 13 recovery codes (R codes) and 15 disposal codes (D codes))[66]. For actors not treating waste themselves, e.g., only collecting or exporting waste the expected treatment to which waste is subjected is stated.
- Final treatment. The actors must state whether they subject the waste to a final treatment. Final treatment means that waste is taken out of the waste flow. This may happen, among others, by incineration, landfilling, recycling or export.

How
Information in the CVR register is used to decide to which sector the waste producer belongs according to the categories of the Danish Sector Code 07[67] and his geographical location. In view of creating a clear overview the Danish Environmental Protection Agency has aggregated the different sectors in a number of general classes[68].

Supervision of reporting
The rules on the Waste Data System were described in a stand-alone Statutory Order in 2012[69]. It is stated in the Order that businesses not reporting in due time or form may be subject to a fine. With the Order the duty of supervision was moved from the local authorities to the Danish Environmental Protection Agency.

Quality assurance of waste data
Waste data reported to the Danish Environmental Protection Agency are subject to quality assurance both before and after reporting. Reporting templates and automatic validity control of, among others, P numbers contribute to ensuring validated and standardised waste data prior to reporting. The quality assurance after reporting has focus on deviations in waste data and general errors in the reports. Each individual reporter is contacted when problems are found in the reports and a solution is agreed on. This individual contact minimises the risk of repetition of the same problem.

To ensure even higher data quality information seminars are organised in cooperation with reporters and local authorities. The purpose of these seminars is to improve the knowledge about correct and streamlined reporting.

In addition to improving 2013 waste data, this year's quality assurance has resulted in improvements of 2011 and 2012 waste data; thereby, the quality assurance also has repercussions on previous reporting years.

[64] Statutory Order on the Waste Data System (Order no. 1306 of 17/12/2012) - https://www.retsinformation.dk/Forms/R0710.aspx?id=144615
[65] Statutory Order on Waste (Order no. 1309 of 18/12/2012) - https://www.retsinformation.dk/Forms/R0710.aspx?id=144826
[66] Statutory Order on Waste (Order no. 1309 of 18/12/2012) - https://www.retsinformation.dk/Forms/R0710.aspx?id=144826
[67] Read more on the website of Statistics Denmark: http://www.dst.dk/da/Statistik/dokumentation/Nomenklaturer/DB.aspx
[68] See Appendix 2
[69] Statutory Order on the Waste Data System (Order no. 1306 of 17/12/2012)

Appendix 1.2 Meta data and adaptations

To form the data basis for Waste Statistics 2013 raw data extracts have been made from the Waste Data System (ADS). For all sections of the statistics, with the exception of the sections on soil, imports and exports, data have been extracted on primary quantities without import and soil. Waste quantities imported do not reflect waste generation in Denmark, which is why these quantities are only included in the section on imports. Waste soil quantities are too volatile to really give a picture of developments in total waste arisings. Therefore, also waste soil is discussed in a separate section.

The distinction between primary waste and secondary waste generated is exclusively based on whether the producer is a waste actor, i.e. makes his own reporting to ADS from that P number. If the waste producer himself does not report to ADS the quantities in question are considered as primary waste; vice versa, if the producer reports himself the quantities in question are considered as secondary waste. To avoid double counting only primary quantities are included in the statistics with the exception of the section on imports and exports.

The very foundation of the statistics is the raw data from ADS; it is, however, assessed to be necessary to make certain adaptations in order that data at a more detailed level reflect reality as far as possible. Quality assurance of waste data has high priority in the Danish Environmental Protection Agency and it is therefore expected that the major part of adaptations will have been integrated in the ADS database during the autumn of 2015.

In the statistics some of the waste fractions have been aggregated in view of making it easier for the reader to get an overview; also, some of the fractions make up a very small quantitative proportion of total waste arisings, see also Appendix 4. Furthermore, the treatment options of landfilling and tax-exempt landfilling have been aggregated.

In addition to the aggregation of waste fractions the NACE codes[70] have also been aggregated both at the general and the more detailed levels. The division into NACE codes at the general and detailed levels has been carried out by the Danish Environmental Protection Agency based on the division that is found most expedient in relation to waste generation, see also Appendix 3. In addition, adaptations of data have been made in a way that in a few cases the original NACE code has been changed to provide a more true and fair picture of the waste sources.

In cases where no P number of the producer has been stated and the waste in question is from commercial and industrial activities no NACE code has been stated; therefore this waste will not automatically be categorised in a sector. This has been taken into consideration in the statistics and waste from commercial and industrial activities is therefore related to a relevant sector, if possible.

Some producers report waste from a landfill and a recycling centre under the same P number. In this case, waste from the recycling centre will appear as secondary quantities and will therefore not directly be included in the extract for primary quantities. For this reason, adaptations have been made to make these quantities primary waste - and vice versa in the opposite case.

In the reporting of imports/exports it is possible to state more than one LoW code per line. In view of creating correlation to the rest of the report, the section on imports and exports has been adapted to only select one LoW code.

[70] Sector codes - See Appendix 2 (Danish Sector Code 07)

Due to outstanding or incorrect reports, the Danish Environmental Protection Agency has obtained conformation of lacking quantities under specific waste fractions and sectors or has in a few cases made a concrete assessment.

All construction and demolition waste has been assigned to the building and construction sector; this also applies to construction and demolition waste from households.

Appendix 2 Division of sectors

General division of sectors	Two digit NACE-code
Households	-
Service sector	45-99
Industry	5-33
Building and construction	41-43
Power, gas and district heating supply	35
Agriculture, hunting and forestry	1-3
Waste water treatment plants	37
Other	36 og 38-39
Waste from commercial and industrial activities without sector	-

Service sector - main subgroups	Two digit NACE-code
Wholesale and retail trade and repair of motor vehicles and motorcycles	45
Wholesale of waste and scrap (four digit NACE-code)	46.77
Wholesale trade	46
Retail trade	47
Transporting and storage	49, 50, 51, 52 og 53
Hotels and restaurants	55-56
Communication, culture, financial services and private services	58, 59, 60, 61,62, 63, 64, 65, 66, 68, 69, 70, 71,72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 90,91, 92, 93, 94, 95, 96 og 99
Public administration, education, human health and social work activities	84, 85, 86, 87 og 88
Unspecified service sector waste	Other NACE-codes (45-98)

Industry sector - main subgroups	Two digit NACE-code
Manufacture of food products, beverages and tobacco products	10-12
Manufacture of paper and paper products, printing and reproduction of recorded media	17-18
Manufacture of chemicals and chemical products, basic pharmaceutical products and pharmaceutical preparations	20-21
Manufacture of basic metals, fabricated metal products, except machinery and equipment	24-25
Manufacture of machinery and equipment n.e.c.	28
Other manufacturing industry	13-15, 16, 19, 22, 23, 26-27, 29-30, 31-33

Waste from other sources	Two digit NACE-code
Water collection, treatment and supply	36
Waste collection, treatment and disposal activities	38-39

Appendix 3 Use of waste fraction terminology

Use of waste fractions in Waste Statistics 2013	Danish Waste Fraction Code
Batteries	H22 and E22
Mixed construction and demolition waste	H24, E24, H25, E25 and E34
Mixed residual waste	H01 and E01
Waste suitable for landfill	H04 and E04
Tyres	H31 and E33
Electronics	H23 and E23
Packaging glass	H11 and E11
Packaging metal	H12 and E12
Packaging cardboard and other cardboard	H06, E06, H10 and E10
Packaging plastics	H13 and E13
Packaging wood	H30 and E32
Waste suitable for incineration	H03, E03 and H27
Gypsum	H28 and E30
Glass	H07 and E07
Garden waste	H17 and E17
Impregnated wood	H16 and E16
Ferrous and non-ferrous metals	H19 and E19
Refrigerators containing freon	H18 and E18
Organic waste	H02 and E02
Paper incl. newsprint and packaging paper	H05, E05, H09 and E09
Plastics	H08 and E08
PVC	H14 and E14
Residues from coal and biomass fired energy plants	E35
Sludge - other	E26, E27 and E28
Wood	H15 and E15
Other wastes	H26, E29, H29 and E31
Sludge from wastewater treatment plants	E28
Uncontaminated soil	H20 and E20
Contaminated soil	H21 and E21

Appendix 4 Hazardous waste – European List of Waste codes

Hazardous waste	European List of Waste code
Wastes from mineral excavation and processing	All codes starting with 01 01xx, 01 03xx and 01 04 xx
Drilling muds and other drilling wastes	All codes starting with 01 05 xx
Sawdust, shavings etc. containing dangerous substances from wood processing and the production of panels and furniture	03 01 04
Wastes from petroleum refining	All codes starting with 05 01 xx
Wastes from the manufacture, formulation, supply and use of acids and bases	All codes starting with 06 01 xx and 06 02 xx
Wastes from the manufacture, formulation, supply and use of salts and their solutions and metallic oxides containing cyanides and heavy metals	06 03 11, 06 03 13 and 06 03 15
Metal-containing wastes containing mercury	06 04 04
Metal-containing wastes containing others heavy metals	06 04 05
Organic halogenated wastes and other wastes from organic chemical processes	All codes starting with 07 01 xx, 07 04 xx, 07 05 xx, 07 06 xx and 07 07 xx
Wastes from the manufacture of paint and varnish	All codes starting with 08 01 xx, 08 03 xx and 08 04 xx
Wastes from the photographic industry	All codes starting with 09 01 xx
Acids and bases from chemical surface treatment	11 01 05, 11 01 06 and 11 01 07
Phosphatising sludges from chemical surface treatment	11 01 08
Sludges and filter cakes from chemical surface treatment	11 01 09 and 11 01 10
Other hazardous wastes from chemical surface treatment	11 01 11, 11 01 12, 11 01 13, 11 01 15, 11 01 16, 11 01 98 and 11 01 99
Wastes containing cyanide and other wastes from tempering processes	11 03 01 and 11 03 02
Machining oils, emulsions and solutions free of halogens	12 01 07 and 12 01 09
Wastes from hydraulic oils	All codes starting with 13 01 xx
Waste engine, gear and lubricating oils	All codes starting with 13 02 xx
Bilge oils	All codes starting with 13 04 xx
Oil, sludges and other wastes from oil/water separators	All codes starting with 13 05 xx
Other oil wastes	All codes starting with 13 03 xx, 13 07 xx and 13 08 xx
Waste organic solvents and refrigerants	All codes starting with 14 06 xx
Oil filters, brake fluids, antifreeze fluids and other hazardous waste from end-of-life vehicles	All codes starting with 16 01 xx except 16 01 04
Waste electronics containing PCBs	16 02 09 and 16 02 10
Waste electronics containing CFC, HCFC or HFC	16 02 11 and 20 01 23
Other waste electronics	16 02 13, 16 02 14, 16 02 15, 16 02 16 , 20 01 35 and 20 01 36
Fluorescent tubes and other mercury-containing waste	20 01 21
Discarded chemicals	16 05 06, 16 05 07, 16 05 08 and 16 05 09
Lead accumulators, Ni-Cd batteries and mercury-containing batteries	16 06 01, 16 06 02 and 16 06 03
Lead accumulators, Ni-Cd batteries and mercury-containing batteries from households	20 01 33
Other batteries	16 06 04 and 20 01 34
Concrete, bricks, tiles and ceramics containing dangerous substances	17 01 06
Glass, plastic and wood containing or contaminated with dangerous substances	17 02 04
Bituminous mixtures, coal tar and tarred products	17 03 01, 17 03 02, 17 03 03
Cables containing oil, coal tar and other dangerous substances	17 04 10
Insulation materials and asbestos-containing materials	All codes starting with 17 06 xx
Construction and demolition wastes containing PCB	17 09 02
Other hazardous construction and demolition wastes	All codes starting with 17 yy xx except 17 01 06, 17 02 04, 17 03 01, 17 03 02, 17 03 03, 17 04 10, 17 06 xx and 17 09 02
Wastes from hospitals, medicare, dental care and research	All codes starting with 18 01 xx and 18 02 xx
Solvents, acids, alkalines and photochemicals from households and the service sector	20 01 13, 20 01 14, 20 01 15 and 20 01 17
Pesticides from households and the service sector	20 01 19
Paint, inks, adhesives and resins from households and the service sector	20 01 27 and 20 01 28
Medicines from households and the service sector	20 01 31 and 20 01 32
Wood containing dangerous substances from households and the service sector	20 01 37
Other	Other European List of Waste codes

Appendix 5 Building and construction waste- European List of Waste codes

Building and construction waste- European List of Waste codes	
Concrete	17 01 01
Bricks	17 01 02
Tiles and ceramics	17 01 03
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics	17 01 06 and 17 01 07
Wood	17 02 01, 19 12 06, 19 12 07, 20 01 37 and 20 01 38
Glass	17 02 02 and 20 01 02
Plastics	17 02 03 and 20 01 39
Bituminous mixtures, coal tar and tarred products	17 03 01, 17 03 02 and 17 03 03
Copper, bronze, brass, aluminium	17 04 01 and 17 04 02
Iron and steel	17 04 05, 19 10 01, 19 12 02 and 20 01 40
Lead, zinc, tin, mixed metals and other metals	17 04 03, 17 04 04, 17 04 06, 17 04 07, 17 04 09 and 19 12 03
Cables	17 04 10 and 17 04 11
Track ballast	17 05 07 and 17 05 08
Insulation materials	17 06 01, 17 06 03 and 17 06 04
Construction materials containing asbestos	17 06 05 and 17 06 06
Gypsum-based construction materials	17 08 01 and 17 08 02
Construction and demolition wastes containing PCB	17 09 02
Mixed construction and demolition wastes	17 09 04
Mixed residual waste	20 03 01
Other wastes from building and construction activities	Other European List of Waste codes

Appendix 6 Power, gas and district heating supply - European List of Waste codes

Waste from power, gas and district heating supply	European List of Waste codes
Bottom ash, slag and boiler dust	10 01 01
Coal fly ash	10 01 02
Calcium-based reaction wastes from flue gas desulphurisation (gypsum waste)	10 01 05 og 10 01 07
Fly ash from co-incineration	10 01 16 og 10 01 17
Other wastes from gas cleaning	10 01 18 og 10 01 19
Other wastes	Other European List of Waste codes

Waste statistics 2013

The statistics give a detailed description of the quantity of waste generated in Denmark in 2013 broken down on waste types and treatment options. Waste Statistics 2013 contain detailed infor-mation about the sources generating the waste. The statistics also present information about quantities of waste imported and exported. In addition, at the end of the publication a section provides the status for compliance at the national and regional levels with the 2022 objectives of the Danish Resource Strategy regarding recycling of waste from households (50% objective).

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