Annual report on end-of-life vehicle reuse/recycling/recovery rates in Germany for 2013

pursuant to Art. 7 (2) of the End-of-life Vehicles Directive 2000/53/EC

COM tables and Quality Report (description of data used) pursuant to Articles 1 and 3 of Commission Decision 2005/293/EC on End-of-Life Vehicles and the COM guidance document "How to report on ELV according to Commission Decision 2005/293/EC"

0 General information

Country

Germany

Title

"Description of the data submitted according to Commission Decision 2005/293/EC on the monitoring of the reuse/recovery and reuse/recycling targets on ELVs"

Organisation submitting the data and the description:

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We agree to make our Quality Report available to the national experts via circa (Y/N)

Y

Contents

1 Tables pursuant to COM Decision 2005/293/EC for Germany, 2013

Notes:

- According to the Commission's guidance document "How to report on end-of-life vehicles according to Commission Decision 2005/293/EC"[1] (as at: 6 May 2013), pages 9-10 and 21-22, **all** metals are to be entered in Table 2 if the "metal content assumption" is applied. To avoid double counting, Table 1 and Table 3 must therefore contain non-metals only.
- The COM tables are repeated in the **Appendix** to this Report, in this instance with allocation of the respective metals to Tables 1, 2 and 3.

Materials from de-pollution and dismantling (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within the Member State

COM Table 1 (dismantling) for Germany, 2013 Non-metals only!! (see above)					
Materials from de-pollution and dismantling	**Reuse**	**Recycling**	**Energy recovery**	**Total recovery**	**Disposal**
	(A)	**(B1)**	**(C1)**	**(D1=B1+C1)**	**(E1)**
	in t	in t	in t	in t	in t
Batteries [a)]	132	3,758	1	3,759	14
Liquids (excluding fuel)	161	2,933	688	3,621	952
Oil filters [a)]	2	0	40	40	3
Other materials arising from de-pollution (excluding fuel) [a)]	2	0	45	45	3
Catalysts [a)]	11	305	0	305	8
Metal components [a)]	0	0	0	0	1
Tyres	1,274	5,984	5,307	11,291	232
Large plastic parts	242	1,242	0	1,242	30
Glass	187	998	0	998	1
Other materials arising from dismantling [a)]	3,833	0	876	876	61
Total	**5,843**	**15,220**	**6,956**	**22,176**	**1,305**

Explanatory comments:

This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.

a) Non-metal portion only. For metals see COM Table 2

Source:

From Federal Statistical Office data, Tables 1 and 15 of the Waste Management Survey 2013.

[1] http://ec.europa.eu/eurostat/documents/342366/351811/ELV-Guidance-052013.pdf

Materials from shredding (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within the Member State

COM Table 2 (shredders) for Germany, 2013 Including all metals (see above)				
Materials from shredding	**Recycling** **(B2)**	**Energy recovery** **(C2)**	**Total recovery** **(D2 =B2+C2)**	**Disposal** **(E2)**
	in t	in t	in t	in t
Ferrous scrap (steel)	310,859	0	310,859	1,642
Non-ferrous materials (aluminium, copper, zinc, lead, etc.)	48,557	0	48,557	0
Shredder light fraction (SLF)	57,843	59,925	117,769	4,956
Other	0	0	0	0
Total	**417,259**	**59,925**	**477,185**	**6,598**

Explanatory comments:

- This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.
- The 1,642 t of metal scrap listed in the "Disposal" column originates from the metal portions of materials or components disposed of after dismantling.

Source:

From Federal Statistical Office data, Table 15 of the Waste Management Survey 2013.

Monitoring of (parts of) end-of-life vehicles arising in the Member State and exported for further treatment (in tonnes per year)

COM Table 3 (export) for Germany, 2013 Non-metals only!! (see above)					
End-of-life vehicles, body shells, components and materials disposed of abroad	**Total weight of end-of-life vehicles which are exported, per country**	**Total recycling of (parts of) end-of-life vehicles exported (F1)**	**Total recovery of (parts of) end-of-life vehicles exported (F2)**	**Total disposal of (parts of) end-of-life vehicles exported (F3)**	**Remarks**
	in t	in t	in t	in t	
1) End-of-life vehicles (WC 160104*)	0	0	0	0	No exports in 2013 according to the statistics on "Transboundary shipments of waste requiring notification" [a)]
Breakdown by countries: -- not applicable --					
2) Body shells from dismantling facilities (WC 160106)	7,339	1,855	3,226	4,113	Basic figures: 27,420 t body shells exported for recovery. Assumption: 80%/85% thereof recycled/recovered; 26.8% non-metals [b)] (= 100%-73.2% metal portion)
Breakdown by countries: -- unknown --					
3) Components from dismantling facilities	369	192	359	10	Batteries[c)], tyres, large plastic parts, glass etc.
Breakdown by countries, where known **WC** **Waste** — **Destination countries** for waste exports (total, not just from dismantling facilities), included in the waste export statistics: - 130205* Engine etc. oils — To the Netherlands, Poland - 160103 Waste tyres — To Bulgaria - 160601* Lead batteries — To Belgium, Slovenia, Spain, Czech Republic - 160807* Catalysts — To Belgium, UK, Switzerland, USA					
4) SLF from shredders	594	278	519	75	Total SLF exported: WC 191003*: 1,199 t, WC 191004: 617 t. Of which 32.7 % from ELVs.
Breakdown by countries, where known **WC** **Waste** — **Destination country** for waste exports acc. to waste export statistics (total, not just originating from ELVs) - 191003* Shredder light fraction — To Belgium (1,200 t)					
Total	**8,302**	**2,325**	**4,104**	**4,198**	

Explanatory comments and source details for this table may be found on the following page.

Explanatory comments:

WC = waste code

a) No exports of ELVs (WC 160104*) are recorded in the 2013 waste export statistics (http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf). No exports of "scrapped passenger cars" (no. 8.11) or of "other scrapped motor vehicles" (no. 8.12) are recorded in the 2013 waste export series (http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/zeitreiheexportabfallarten_3.pdf).

b) Due to the rounding of percentages, the line "Body shells" contains a few rounding differences.

c) Non-metal portion only. For metals see COM Table 2

Sources:

- Exports of body shells and other waste from end-of-life vehicle dismantling facilities: "*Erhebung über die Abfallentsorgung im Jahr 2013*" (Waste Management Survey, 2013), Table 15, Federal Statistical Office.
- Exports of end-of-life vehicles and total waste exports for Germany: "*Grenzüberschreitende Verbringung von zustimmungspflichtigen Abfällen 2013 - Export*" (Transboundary shipments of waste requiring notification, 2013 - Exports), Federal Environment Agency: http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf

Total reuse, recovery and recycling (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within or outside the Member State

COM Table 4 (rates) for Germany, 2013					
From ...	**Reuse (A)**	**Total recycling (B1 + B2 + F1)**	**Total recovery (D1 + D2 + F2)**	**Total reuse and recycling (X1=A+B1+B2+F1)**	**Total reuse and recovery (X2=A+D1+D2+F2)**
	in t	in t	in t	in t	in t
Tab 1: Dismantling (A,B1,D1) (non-metals only)	5,843	15,220	22,176	21,064	28,020
Tab 2: Shredders (B2, D2) (incl. all metals)	0	417,259	477,185	417,259	477,185
Tab 3: Exports (F1, F2) (non-metals only)	0	2,325	4,104	2,325	4,104
Total	**5,843**	**434,804**	**503,465**	**440,648**	**509,308**

			Recycling and recovery rates 2013	
W	**(total number of end-of-life vehicles)**	**500,322 vehicles**	**89.8%**	**103.8%**
W1	**(total vehicle weight)**	**490,771 tonnes**	**X1/W1**	**X2/W1**

Explanation:

This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.

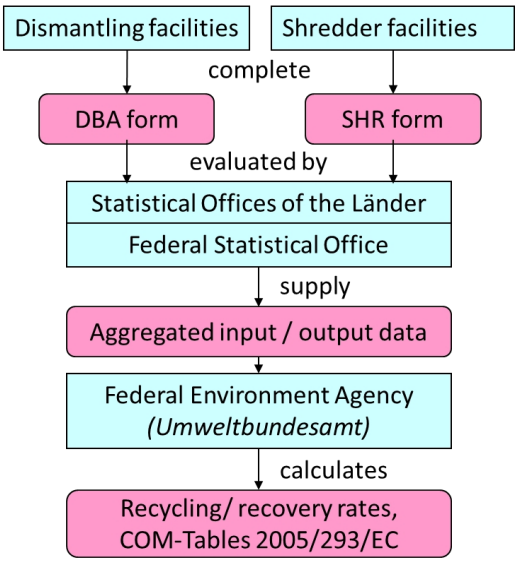
2 Quality Report: Description of the data submitted according to Commission Decision 2005/293/EC on the monitoring of the reuse/recovery and reuse/recycling targets on ELVs

2.1 Chapter A) Information according to Article 1(1) of COM Decision 2005/293/EC – Description of data used to determine ELV recycling/recovery rates for Germany, 2013

2.1.1 Section 1: Sources of information

The data used as a basis for determining end-of-life vehicle recycling and recovery rates in accordance with the End-of-Life Vehicles Directive 2000/53/EC consists of the waste statistics collected for the whole of Germany from ELV treatment facilities (dismantling facilities and shredder facilities) by the Statistical Offices of the Länder and the Federal Statistical Office under the Environmental Statistics Act (*Umweltstatistikgesetz*) [2] (Section 3 (1) No. 1). Tables 1.1, 14 and 15 of the "Waste Management Survey 2013" were used.

At the end of each reporting year, the ELV treatment facilities (around 1,200 dismantling facilities and several dozen shredder facilities) enter their operational input and output quantities for the waste management survey in the statistical survey sheets DBA (dismantling facilities)[3] and SHR (shredder facilities)[4]. These are then analysed, anonymised and summarised by the Statistical Offices of the Länder and subsequently by the Federal Statistical Office (see Figure 1). From the aggregated data, the Federal Environment Agency (*Umweltbundesamt*) determines the national recycling and recovery rates for end-of-life vehicles.



[2] http://www.gesetze-im-internet.de/bundesrecht/ustatg_2005/gesamt.pdf

[3] Sample waste disposal form 2013 - DBA for Bavaria: https://www.statistik.bayern.de/medien/statistik/erhebungen/abfallwirtschaft/dba_s18_20140704.pdf

[4] Sample waste disposal form 2013 - SHR for Bavaria: https://www.statistik.bayern.de/medien/statistik/erhebungen/abfallwirtschaft/shr_s18_20140407.pdf

Figure 1 Data streams for determining recycling/recovery rates under the ELV Directive

The statistical questionnaires differentiate the output of the facilities on the following basis:
- For recycling/recovery in Germany,
- For recycling/recovery abroad,
- For disposal in Germany,
- For disposal abroad,
- For transfer to treatment facilities, secondary materials recovered and products.

In the case of shredder light fraction, the statistical questionnaires are also used to obtain information as to whether the shredder light fraction sent for recovery is ultimately recycled as material, recovered as energy, or disposed of.

In the case of dismantling facilities, only waste types originating from the end-of-life vehicles (excluding fuel) are included in the rate calculation.

The treatment of waste containing metals in shredder facilities produces both metallic fractions and non-metallic fractions (shredder light fraction). Since shredder facilities also treat other metal waste apart from end-of-life vehicle body shells, the fractions produced were split into one portion originating from body shell treatment, and one portion originating from other input factions. Only the portion originating from body shell treatment may be incorporated into the calculation of ELV reuse/recycling/recovery rates.

- Metals: The quantity of recovered/recycled metals originating from body shells is included in the "metal content assumption".
- Non-metals: The quantity of shredder light fraction originating from body shells was determined as follows:
  The shredding of body shells produces approximately 75 % metallic fraction and approximately 25 % shredder light fraction. Consequently, a shredder light fraction portion (waste code numbers 191003* and 191004) totalling 25 % of the weight of the body shells (originating from within Germany) treated in the shredder was allocated to ELV treatment and therefore entered in COM Table 2.

<u>After-effects of the Environmental Premium</u>

In Germany, the year 2009 was heavily influenced by the effects of the Environmental Premium (see previous years' Reports). This led to a quadrupling in the incidence of end-of-life vehicles as a one-off effect. Some of the ELVs were initially placed in storage by the dismantling facilities and their treatment was postponed until subsequent years. Around 385,000 ELVs from 2009 were recovered and recycled between 2010 and 2012 - see previous year's Report. A further 26,000 or so of these ELVs were recovered or recycled in 2013. There are indications that the rate of stockreduction for vehicles stockpiled under the Environmental Premium is slowing down, having been halved each year from 2010 to 2013 - see Figure 2 in number 2.1.6.

2.1.2 Section 2: Quality of information sources

Coverage:

The data was collected from the whole of Germany from all 1,196 dismantling facilities for end-of-life vehicles and 52 shredder facilities with body shell treatment. The level of completeness is correspondingly high.

Data quality:

Since 2013 is now the tenth reporting year based on the same methodology, we can assume that the data collection process is now working well. The quality of the data is considered to be good.

The survey yields plausible values for average vehicle weight, and the figure of 981 kg is less than 2% below the previous year's figure of 998 kg.

In relation to the empty weight of ELVs arising in 2013, a smaller percentage of materials (18.6%) was dismantled by the dismantling facilities than in 2012 (20.4%).

There are no new findings regarding the quality of on-site data collection by the facilities. We would therefore refer you to the statements in the 2009 Report[5].

The breakdown of the dismantled components and materials into recycling and energy recovery is based on material types and a knowledge of the customary recovery paths in Germany. For example, 85% of the waste oil incurred in Germany in 2013 was recycled, and 15% recovered as energy. Based on industry association figures on the recovery and recycling of waste tyres (excluding reuse), the breakdown was updated to 53% material recycling and 46% energy recovery.

Various waste types consist of both metals and non-metals. The metal portions were deducted due to application of the "metal content assumption". Average figures were therefore calculated or estimated for the metal content of the relevant waste types.

Imports:

In the statistical questionnaires, the end-of-life vehicle treatment facilities state whether the vehicles accepted come from outside of Germany or within Germany. Of the 494,033 t (503,647 vehicles) of ELVs accepted, 3,262 t (0.66%, or 3,325 vehicles) came from outside Germany. The 490,771 t (500,322 vehicles) of ELVs accepted for treatment from within Germany were entered as W1 (total vehicle weight). In view of the extremely low import share of less than one percent, it was decided to dispense with a "correction factor" for output, since this would make a difference of only 0.04 % to the rate calculated.

Metal content assumption:

The metal content of the vehicles and the breakdown into ferrous and non-ferrous metals are calculated based on extensive data from German and international vehicle manufacturers;

[5] See Annual Report on end-of-life vehicle reuse/recycling/recovery rates in Germany, 2009,
German version:
http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/jahresbericht_altfahrzeug_2009_bf.pdf,
English version:
http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/jahresbericht_altfahrzeug_2009_en_bf.pdf

see number 2.2. The quality of this estimate can therefore be rated as very good. For the reporting year 2013, the “metal content assumption” database was further extended based on data provided by vehicle manufacturers, and coverage of the vehicle market is now 95% again. The recovered portion of metal content from vehicles continues to be conservatively estimated at 97 %.

Shredder light fraction:

While end-of-life vehicles accounted for 20% of the input of large shredder facilities in 2009 due to the Environmental Premium, this figure fell again as the backlog placed in interim storage continues to be cleared. Since 2011, it has been in the region of 13%. The most important additional input materials of the 52 ELV shredders in 2013 were iron and steel (56 %), ferrous metals (14 %) and others (17 %). The fact that the shredder facilities process other input materials in addition to body shells was taken into account when allocating the shredder light fraction, in that only part of the shredder light fraction amounting to 25% of the weight of the treated body shells was allocated to ELV recovery/recycling - see number 2.1.1. Consequently, of the 493,000 t (approximate figure) of body shells (accepted from Germany and) shredded in 2013, some 123,300 t of shredder light fraction was produced. This equates to 32.7 % of the 377,000 t (approximate figure) of shredder light fraction incurred in total; see also pages 31/32.

2.1.3 Section 3: Determination of the weight

In the statistical survey, the dismantling facilities state the total of the vehicle empty weights in accordance with Section 2 (1), no. 23 of the German ELV Ordinance (*AltfahrzeugV*). For a definition of the vehicle empty weight in accordance with Section 2 (1), No. 23 of the *AltfahrzeugV*, refer to the Report for 2009.

2.1.4 Section 4: Recycling or recovery of exported ELVs respectively parts of ELVs

Recycling or recovery of exported end-of-life vehicles:

No end-of-life vehicles were exported in 2013; refer to the comments on COM Table 3 in number 1.

Recycling or recovery of exported body shells:

In terms of quantity, exports of body shells and ELV parts from Germany play only a minor role: Exports of non-metals account for only 0.8 % of the overall recovery rate.

The quantities of body shells exported abroad for recovery can be taken from the statistics. No information is available concerning the body shell portion that is ultimately recycled or recovered abroad. As in Germany, a metal content assumption of 73.2% is used for calculation purposes, together with overall minimum recycling and recovery rates of 80 % and 85 %, respectively, in accordance with the targets of the ELV Directive.

Recycling or recovery of exported components/materials from dismantling facilities:

For each type of waste output from dismantling facilities, the statistics show whether recovery/recycling or disposal took place in Germany or abroad. The breakdown into recycling and energy recovery is made in the same way as for recovery within Germany (see number 2.1.5, letter c)).

Recycling or recovery of exported shredder light fraction:

The statistics show the quantity of shredder light fraction recycled/recovered outside of Germany. They also differentiate the "recovered" shredder light fraction on the basis of "ultimate fate" into recycled, recovered as energy, and disposed of. In calculating rates, this breakdown is applied to disposal both within Germany and abroad.

2.1.5 Section 5: Other comments

a) Explanations on export of shredder output in COM Table 2

As a result of the metal content assumption, COM Table 2 – as outlined in the COM guidance document – contains all metals recovered, i.e. including those recovered abroad. With regard to shredder light fraction, Table 2 contains only the shredder light fraction disposed of within Germany. The shredder light fraction disposed of abroad is included in COM Table 3.

b) Description of actions undertaken by the country to avoid double counting of ELVs and components

In accordance with Section 4 of the German ELV Ordinance (*AltfahrzeugV*), end-of-life vehicles pass through a two to three-stage disposal process in the following order:
(→ optional: acceptance or collection facility,)
→ dismantling facility for pre-treatment,
→ shredder facility.

By following this predetermined treatment sequence, we can assume that the nationwide statistical surveys do not include any double counting of the end-of-life vehicles and components reported.

For the entries in COM Tables 1 to 4, care has been taken to eliminate the possibility of double counting: All metals (in line with the metal content assumption) are entered in lines 1 and 2 of COM Table 2, and COM Tables 1 and 3 contain only non-metals; this is also true of the reuse column (A). As far as non-metals are concerned, COM Tables 1 and 2 contain only output for Germany. All outputs of non-metals destined for other countries are covered by COM Table 3.

As an alternative, the data from COM Tables 1 and 3 has also been presented in such a way that it includes the metal portions. The resultant representation of COM Tables 1 to 4 may be found in the Appendix to this Annual Report. This alternative grouping leads to the same final outcome.

c) Description of estimations/calculations conducted (e.g. factors based on ELV treatment and recovery trial, data provided by manufacturers)

There are various points at which calculations were performed or assumptions made.

As mentioned above, the statistics do not provide any breakdown of the metallic fraction of the dismantled components and materials or the recovery path (recycling or energy recovery). It was therefore necessary to make certain assumptions. For many materials, the breakdown follows from the type of material (e.g. glass and metal not recoverable as energy). For the remaining waste types, the breakdown is made on the basis of the customary recovery paths in Germany - see number 2.1.2 and further examples in the Report for 2009.

Regarding the realistic assumption that the shredder light fraction originating from end-of-life vehicles amounts to 25 % of the body shell input, see the remarks in number 2.1.2.

For the “metal content assumption”, see number 2.2. In line with the COM guidance document, only non-metals are entered in COM Table 1 and COM Table 3. Accordingly, all metals are shown in COM Table 2 in accordance with the "metal content assumption".

d) Description of missing mandatory information; what measures are taken to provide all mandatory information in future?

One item is incomplete from the mandatory information in COM Tables 1 to 4: Information is incomplete regarding the destination countries in COM Table 3 (Exports).

Since no end-of-life vehicles (waste code number 160104*) have been exported since these records began, the question of the destination countries is not relevant here. In the body shells category, the percentage of body shells exported is once again very low, at 27,420 t or 5.6 % of the total vehicle weight W1. The same applies to exported components and materials from dismantling (metals and non-metals: 6,469 t; i.e. 1.3% in relation to W1) and shredder light fraction (594 t; 0.1%).

For some of the exported dismantled fractions and for the shredder light fraction, we were able to specify destination countries; see COM Table 3. Although the statistics used[6] do not provide any ELV-specific export data, they do indicate the total quantities exported from Germany for selected waste fractions (generally considerably more than the quantities exported by the ELV treatment facilities) and the destination countries.

e) Description of the validation process: How do you establish the validity of the data?

The statistical questionnaires are checked for plausibility by the Statistical Offices of the Länder and the Federal Statistical Office using established statistical test routines (e.g.

[6] See COM Table 3 in number 1 or directly at:
http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf

input/output comparison, anticipated waste types, comparison with the previous year). The Federal Environment Agency checks the information from a technical perspective, e.g. on the basis of the quantities to be expected as a result of vehicle composition. See number 2.1.2 above, remarks on plausibility.

f) Description of changes in methodology relative to the previous data delivered

The methods used for calculating recycling and recovery rates remain unchanged against the previous year.

The database for “metal content assumption” has been extended, see number 2.2.

g) Description of the discrepancy between the number of ELVs with and without CoD and measures to be taken in order to improve the situation

Under Section 4 of the German ELV Ordinance (*AltfahrzeugV*), end-of-life vehicles must be transferred to a dismantling facility (or alternatively, an acceptance or collection facility, which is required to pass the ELV on to the dismantling facility). Dismantling facilities issue certificates of destruction for the end-of-life vehicles accepted, and are required to treat the end-of-life vehicles in accordance with the provisions of the Ordinance. Certificates of destruction must therefore be issued for all end-of-life vehicles.

Nevertheless, in 2014, prompted by the observed statistical gap (unknown whereabouts) regarding the fate of finally deregistered vehicles (see Figure 4), the Federal Ministry for the Environment and the Federal Environment Agency commissioned a study under the Environmental Research Plan (UFOPLAN) to clarify the fate of such vehicles, see number 2.3.2.

2.1.6 Input-output balance

The recommended mass balance X2+E1+E2+F3 = W1 revealed the following for 2013:

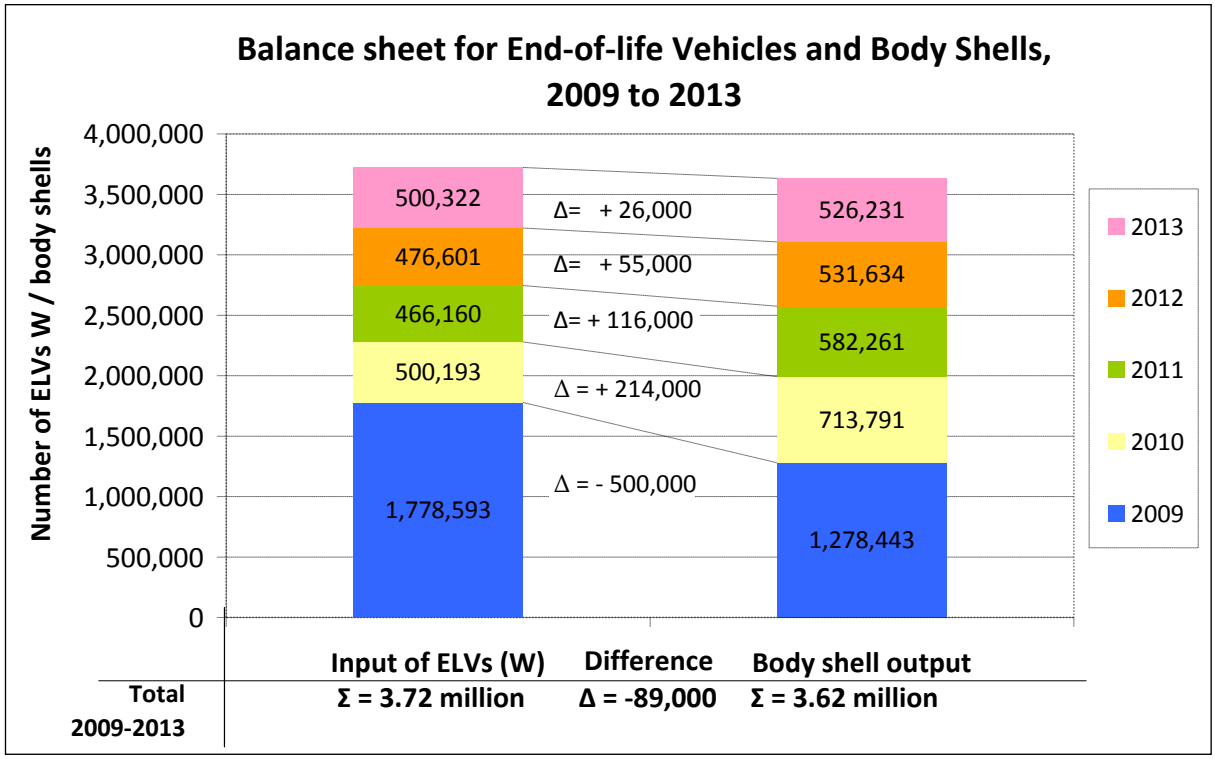
X2 =	509,308 t	(Total reuse and recovery)
E1 =	1,305 t	(Disposal from dismantling, excluding metals)
E2 =	6,598 t	(Disposal of shredder light fraction and disposal of metals)
F3 =	4,198 t	(Disposal by export, excluding metals)
Total	521,409 t	(Total output)

Comparison with the number of end-of-life vehicles W1 = 490,771 t: Difference = 30,638 t = 6.2 %.

In other words, the sum total of output flows is more than 6 % greater than the ELV input W1. This is plausible as a continuing after-effect of the 2009 Environmental Premium. There are signs that the after-effects of the Environmental Premium are weakening. Whereas in 2011, reported output quantities exceeded ELV input by 12.5%, by 2012 the difference had fallen to 8.5%, and by 2013 to 6.2%.

Because the volume of ELVs quadrupled in 2009, some of them were placed in interim storage at the dismantling facilities. For this reason, the output side of the balance sheet for 2009 was 9 % lower than the ELV input W1. The backlog was cleared almost completely between 2010 and 2013: Figure 2 indicates a year-on-year slowdown in the rate of stock reduction resulting from the Environmental Premium. Between 2010 and 2013, the clearance rate has halved each year. In addition to the 500,000 or so ELVs incurred in 2013, approximately 26,000 ELVs from 2009 were also treated and recovered (compared with around 55,000 vehicles the previous year). The quantity treated in 2013 was therefore around 5 % higher than the ELV input in 2013. This explains why the output side of the balance sheet is higher than the input side in 2013.

In mathematical terms, as was the case from 2010 to 2012, the postponed treatment and recovery of stockpiled ELVs as an after-effect of the Environmental Premium leads to an overall recovery rate of more than 100% for 2013 (see COM Table 4), because the ELVs arising in the year of reporting are used as the reference variable. As the after-effects of the Environmental Premium weaken over time, however, the rate by which the 100% level is exceeded is likewise decreasing (2013: 103.8%, 2012: 106.3%).



Source: Federal Statistical Office, Table 1 of the Waste Management Survey, 2009 to 2013

Figure 2 **Balance sheet for ELVs and body shells in dismantling facilities, 2009 to 2013:**
ELVs accepted from within Germany (W) and body shells submitted to shredder facilities

Figure 2 tracks the levels of ELVs in interim storage in the form of a balance sheet comparing the ELV input and body shell output of the dismantling facilities from 2009 to 2013. According to the statistics, around 411,000 of the ELV backlog has since been cleared.

2.2 Chapter B) Information according to Art. 1 (2) of COM Decision 2005/293/EC – Metal content assumption

According to Commission Decision 2005/293/EC, the "metal content assumption" is based on data relating to

a) the percentage of metal content of the vehicles and

b) the percentage of reuse, recovery and recycling of this metal content.

a) What investigations / data have been used (sources / quality / coverage) to derive the metal content?

For the reporting year 2012, the metal content of ELVs was updated based on new registrations of M1 and N1 vehicles in 2000, weighted according to the respective registration volumes per manufacturer; see previous year's report[7].

With an average ELV age of around 14 to 15 years (see Table 4), 2000 was the average year of first-time registration for ELVs arising in the years 2014/2015. As the average metal content of new vehicles only changes very slowly over time, the calculated data is to be applied over a 5 year period, from the reporting year 2012 to the reporting year 2016.

Whilst in the reporting year 2012, 71% of the total vehicle registration volume in the year 2000 was covered by the data supplied by ten manufacturers, in the current reporting year, the coverage rate was significantly improved by including a further 11 manufacturers. With information supplied by all seven German vehicle manufacturers and 14 (previous year: three) international manufacturers, the data covers, according to the manufacturers, 95.2 % of the total vehicle registration volume in the year 2000. The metal content according to manufacturers (anonymised) is shown in Table 1.

[7] BMUB / UBA: Annual Report on end-of-life vehicle reuse/recycling/recovery rates in Germany, 2012. German version: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/jahresbericht_altfahrzeug_2012_bf.pdf , English version: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/jahresbericht_altfahrzeug_2012_en_bf.pdf

Table 1 **Average metal contents of vehicles, new registrations of M1 and N1 in Germany in 2000,**
anonymised, arranged in descending order.

Vehicle manufacturer	Metal content		Vehicle manufacturer	Metal content
Manufacturer 1	78.5%		Manufacturer 12	75.1%
Manufacturer 2	77.0%		Manufacturer 13	75.1%
Manufacturer 3	76.8%		Manufacturer 14	75.0%
Manufacturer 4	76.4%		Manufacturer 15	75.0%
Manufacturer 5	76.2%		Manufacturer 16	75.0%
Manufacturer 6	76.1%		Manufacturer 17	74.9%
Manufacturer 7	76.1%		Manufacturer 18	74.8%
Manufacturer 8	75.8%		Manufacturer 19	74.8%
Manufacturer 9	75.7%		Manufacturer 20	74.2%
Manufacturer 10	75.2%		Manufacturer 21	74.1%
Manufacturer 11	75.2%		**Weighted average**	**75.5 %**

Source: Information supplied by the German Association of the Automotive Industry (*Verband der Automobilindustrie e.V.* – VDA) and by the Association of International Motor Vehicle Manufacturers (*Verband der Internationalen Kraftfahrzeughersteller e.V.* – VDIK), as at: 22 April 2015

The quality of data is considered very good, since the manufacturers derived it using the metal contents of models from the year 2000, obtained e.g. from dismantling studies. The vehicle manufacturers only agreed to forward this data to EU Commission provided it remained anonymous.

As a result of this broader database, the calculated **average metal content** has changed marginally from 75.6% (reporting year 2012) to **75.5%**.

a1) Breakdown into ferrous and non-ferrous metals

In accordance with the COM guidance document (page 10), the recycling/recovery of metals in COM Table 2 should also be broken down into ferrous and non-ferrous metals when applying the "metal content assumption".

For this breakdown of metal content, the database has been extended compared with the previous year's report. Data from 21 (previous year: 10) manufacturers stating the average ferrous and non-ferrous metal content of their new registrations in 2000 is shown in anonymised form in Table 2.

Table 2 **Breakdown of average metal content from vehicles in Table 1 into ferrous and non-ferrous metals,**
anonymised, arranged in descending order according to ferrous metal content.

Vehicle manufacturer	Ferrous metal content	Non-ferrous metal content
Manufacturer A	71.5%	7.1%
Manufacturer B	69.4%	7.4%
Manufacturer C	69.3%	6.9%
Manufacturer D	68.1%	6.9%
Manufacturer E	67.9%	9.1%
Manufacturer F	67.7%	7.2%
Manufacturer G	67.0%	7.7%
Manufacturer H	66.0%	10.4%
Manufacturer I	66.0%	9.2%
Manufacturer J	66.0%	9.0%
Manufacturer K	65.6%	10.2%
Manufacturer L	65.5%	8.7%
Manufacturer M	65.3%	9.9%
Manufacturer N	65.2%	8.9%
Manufacturer O	65.1%	11.0%
Manufacturer P	65.0%	10.1%
Manufacturer Q	63.8%	11.3%
Manufacturer R	62.6%	13.0%
Manufacturer S	59.3%	16.8%
Manufacturer T	58.6%	16.4%
Manufacturer U	56.3%	18.5%
Weighted average	**65.3 %**	**10.2 %**

Source: Information supplied by VDA and VDIK, as at: 22 April 2015

The quality of data is likewise considered very good, since the manufacturers derived it using the metal contents of models from the year 2000, obtained e.g. from dismantling studies.

With information supplied by 21 vehicle manufacturers, these figures cover 95.2 % of the total vehicle registration volume in the year 2000.

Weighting produces a **breakdown of metal content** in vehicles (total 75.5 %) **of 65.3 % ferrous metals and 10.2 % non-ferrous metals (average)**.

The calculated average figures have shifted slightly in favour of ferrous metals due to the expansion of the database (ferrous metals in reporting year 2012: 65.0 %, non-ferrous metals in 2012: 10.6 %). This shift between these two sub-categories of metals has no influence on the calculated recycling and recovery rates.

b) What investigations / data / calculations have been used to derive the assumed percentage of reused, recycled and recovered metals?

Reuse/recycling/recovery of the metal content was still estimated at 97 %, as outlined in the explanatory memorandum to the German ELV Ordinance (*AltfahrzeugV*) of 2002.

b1) "Metal content assumption"

Using the formula

"metal content assumption" = metal content of ELVs * recycling/recovery of metal content

produces the following figure for metal content recycled/recovered in Germany:

“Metal content assumption” in Germany = 75.5% * 97% = 73.2%

Allowing for 97% recycling/recovery of the metal content, the breakdown yields 63.3 % ferrous metals and 9.9 % non-ferrous metals recycled/recovered, in relation to the vehicle empty weight, see Table 3.

Table 3 “Metal content assumption”, broken down into ferrous and non-ferrous metals

Metal content	Total metals	Ferrous metals	Non-ferrous metals	Remarks
Average metal content of vehicles	75.5%	65.3%	10.2%	Statement on metal content valid for 95% of the German vehicle market, 2000
	Allowing for a yield of 97%			
"Metal content assumption"	**73.2%**	**63.3 %**	**9.9 %**	Metal content recycled/recovered

c) How does the Member State ensure that they meet the required coverage of 95%?

The data supplied by 21 vehicle manufacturers on the assumed metal content covers 95.2% of new registrations in the year 2000 (3,406,164 out of 3,576,206 new registrations). The coverage therefore meets the required minimum coverage of 95% as specified in Article 1 (2) of Commission Decision 2005/293/EC.

d) How have these data been broken down for COM Tables 1 to 3?

In line with the COM guidance document (page 10 and pages 21-22), all recycled/recovered metals resulting from the "metal content assumption" calculation are entered in COM Table 2. COM Tables 1 and 3 contain information about non-metals only.

Notes on the Appendix to this Annual Report: As an alternative, the data from COM Tables 1 and 3 has also been presented in such a way that it includes the metal portions. The resultant representation of COM Tables 1 to 4 may be found in the Appendix to this Annual Report. In this instance, COM Table 2 only contains metals from the shredder output, calculated as the difference between the "metal content assumption", less the metal contents reused and recovered from dismantling and exports, see COM Tables 1 (dismantling) and 3 (exports).

2.3 Chapter C) Information according to Art. 1 (3) of COM Decision 2005/293/EC – Vehicle market, exports

2.3.1 Section 1: Information on the national vehicle market

Compared with 2012, the number of new passenger car registrations in 2013 fell by 4 %. The number of ELVs increased by 5 % against 2012, reaching half a million. The statistics indicate that the number of exported used cars likewise increased by around 17 % to 1.6 million passenger cars.

Table 4 Information on the national vehicle market

National vehicle market Germany	Unit	Reference year 2013
Motor vehicles newly registered in 2013, total[8] thereof passenger cars	Number	3,443,921 2,952,431
Vehicles registered in Germany[9, 10], total thereof passenger cars	Number	52,391,012 43,431,124
Average age of fleet (motor vehicles[11,10], total) thereof passenger cars	Years	9.9 8.7
Passenger cars, taken out of service[12]in 2013 (deregistrations and temporary layups) Final de-registrations in 2013, passenger cars	Number	8,149,973 Approx. 3,300,000 [13]

[8] Federal Motor Transport Authority (KBA): *Neuzulassungen von Kraftfahrzeugen und Kraftfahrzeuganhängern in den Jahren 1955 bis 2014 nach Fahrzeugklassen*. (New registrations of motor vehicles and trailers, 1955 to 2014, by vehicle class). http://www.kba.de/DE/Statistik/Fahrzeuge/Neuzulassungen/FahrzeugklassenAufbauarten/n_fzkl_zeitreihe.html?nn=652406

[9] Federal Motor Transport Authority: *Bestand an Kraftfahrzeugen und Kraftfahrzeuganhängern in den Jahren 1960 bis 2015 nach Fahrzeugklassen*. (Motor vehicle and trailer fleet, 1960 to 2015, by vehicle class). http://www.kba.de/DE/Statistik/Fahrzeuge/Bestand/FahrzeugklassenAufbauarten/b_fzkl_zeitreihe.html?nn=652402

[10] Reference date 1.1.2013, only registered vehicles excluding temporary layups/off-road notifications.

[11]Federal Motor Transport Authority: *Bestand an Kraftfahrzeugen und Kraftfahrzeuganhängern in den Jahren 2006 bis 2015 nach ausgewählten Fahrzeugklassen mit dem Durchschnittsalter der Fahrzeuge in Jahren*. (Motor vehicle and trailer fleet, 2006 to 2015, by selected vehicle classes, showing the average vehicle age in years), http://www.kba.de/DE/Statistik/Fahrzeuge/Bestand/Fahrzeugalter/b_alter_kfz_z.html?nn=645784

[12]*Federal Motor Transport Authority: Außerbetriebsetzungen von Kraftfahrzeugen und Kraftfahrzeuganhängern in den Jahren 2007 bis 2014 nach Fahrzeugklassen*. (Motor vehicles and trailers taken out of service, 2007 to 2014, by vehicle class), http://www.kba.de/DE/Statistik/Fahrzeuge/Ausserbetriebsetzungen/FahrzeugklassenAufbauarten/a_fzkl_zeitreihe.html?nn=664274

[13] Final deregistrations have not been recorded in the statistics since 2007, as there are now only "off-road notifications". These include both temporary and final deregistrations. Based on incidents that could still be differentiated prior to 2007, a final deregistration quota of approximately 40 % of all cars taken out of service has been ascertained under the framework conditions existing at that time (data source: Federal Motor Transport Authority, see Report for 2009, footnote 13). In the absence of more up-to-date ratios, the same rate was applied

CoDs issued in Germany	Number	500,322
ELVs arising in Germany	Number	500,322
Average age of ELVs	Years	approx. 14 to 15

The waste statistics do not provide any information about the average age of end-of-life vehicles. We can assume that there were no significant changes compared with the previous year.

As described in number 2.1.5, letter g), dismantling facilities are required to issue a certificate of destruction for every end-of-life vehicle in accordance with the German ELV Ordinance (*AltfahrzeugV*).

2.3.2 Section 2: National market information on export of used vehicles, ELVs and de-polluted body shells

Exports of used cars to other EU states:

There are two sources available for determining the number of used cars exported from Germany into other EU countries: the re-registration statistics from the Federal Motor Transport Authority (KBA), and the foreign trade statistics of the Federal Statistical Office. The higher of the two values for each individual EU country were added together to obtain a total, see Table 5.

The majority of used cars exported into other EU Member States were identified from re-registrations in those countries, which were recorded in the re-registration statistics by the Federal Motor Transport Authority (KBA). The data originates from an information exchange between Member States regarding the re-registration of motor vehicles previously registered in another EU Member State, on the basis of Directive 1999/37/EC on the registration documents for vehicles. On this basis, 1,215,945 used cars were exported to other EU Member States. For 2013, figures were available for 25 of the 27 other EU Member States. Overall, these figures should be seen as a minimum.

Foreign trade statistics were also consulted in cases where higher export figures were indicated; overall, there is statistical evidence of 1,232,987 exports of used vehicles into EU Member States. Export figures to Croatia (EU Member since 1 July 2013) were included in EU exports for the first time in 2013.

to the present Report to estimate the number of finally deregistered cars in the year of reporting; however, a new quota is currently being devised on a scientific basis, and will be incorporated into future reports.

Table 5 **Exports of used cars from Germany to other EU States, 2013**
Calculated from two sources: Notifications to the Federal Motor Transport Authority (KBA) concerning vehicles formerly registered in Germany ("KBA") and foreign trade statistics ("FTS"), arranged in protocol order.

EU Member State (with country code)	Source	Number in 2013	EU Member State (with country code)	Source	Number in 2013
BE - Belgium	KBA	24,771	LU - Luxembourg	KBA	9,123
BG - Bulgaria	KBA	43,701	HU - Hungary	KBA	33,455
CZ - Czech Republic	KBA	**88,724**	MT - Malta	KBA	83
DK - Denmark	KBA	4,985	NL - Netherlands	KBA	58,334
EE - Estonia	KBA	14,651	AT - Austria	FTS	10,074
IE - Ireland	KBA	34	PL - Poland	KBA	**487,585**
EL - Greece	FTS	893	PT - Portugal	FTS	2,066
ES - Spain	FTS	5,461	RO - Romania	KBA	**191,265**
FR - France	KBA	**91,878**	SI - Slovenia	KBA	4,528
HR - Croatia	FTS	1,399	SK - Slovakia	KBA	15,556
IT - Italy	FTS	13,329	FI - Finland	KBA	14,910
CY - Cyprus	FTS	232	SE - Sweden	KBA	9,029
LV - Latvia	KBA	26,769	UK - United Kingdom	KBA	714
LT - Lithuania	KBA	79,438			
Total EU			**1,232,987**		

Sources:

- Personal communication from the KBA dated 03/03/2014
- Federal Statistical Office: *Warenverzeichnis Außenhandelsstatistik 8-Steller, Länderverzeichnis, Daten für 2013*. (Commodity Classification, Foreign Trade Statistics, 8-digit, Country Classification, Data for 2013). Wiesbaden 2014

There was a sharp increase of 29% compared with 2012, with 959,251 documented exports of used cars into EU states, see Table 5.

Exports of used cars to non-EU states:

Exports to non-EU states were small compared with exports to EU countries, see Table 6. The foreign trade statistics showed a total of around 344,551 used cars exported (passenger cars and motor homes). This meant that recorded exports dropped back to the level of 2011. The major destinations for used cars outside of Europe are West Africa (39 %) and the states of the former Soviet Union (27 %), see Table 6.

Table 6 **Exports of used cars from Germany to non-EU states, 2013,**
according to the foreign trade statistics, passenger cars and motor homes with petrol and diesel engines

Country	Number in 2013			
Non-EU total	**344,551**			
Of which states of the former Soviet Union (excluding Baltic States)	**94,226**	Of which	Georgia Russia Belarus	40,430 28,272 12,752
Of which West Africa[14]	**134,195**	Of which	Benin Nigeria	44,213 36,651
Of which Norway, Switzerland	**38,319**			

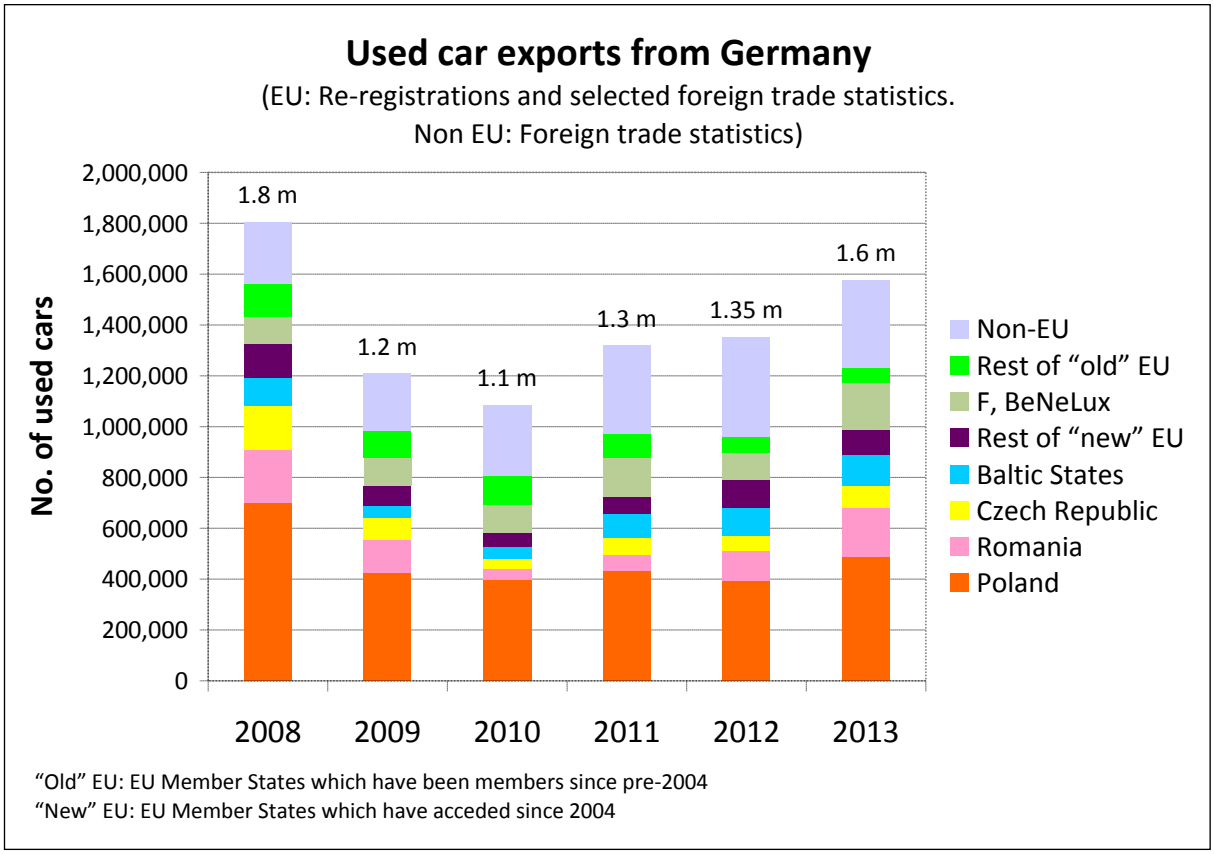
Source:

Federal Statistical Office: *Warenverzeichnis Außenhandelsstatistik 8-Steller, Länderverzeichnis, Daten für 2013.* (Commodity Classification, Foreign Trade Statistics, 8-digit, Country Classification, Data for 2013). Wiesbaden 2014

Total exports of used cars:

Figure 3 illustrates the development over time of statistically verified exports of used cars from 2008 onwards. Following the decrease in exports of used cars in 2009 as a result of the Environmental Premium, since 2011 exports of used cars have been on the increase again. In 2013, 1.6 million exports of used cars were recorded in the statistics.

[14] Collective term for 18 West African states: Angola, Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Liberia, Morocco, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

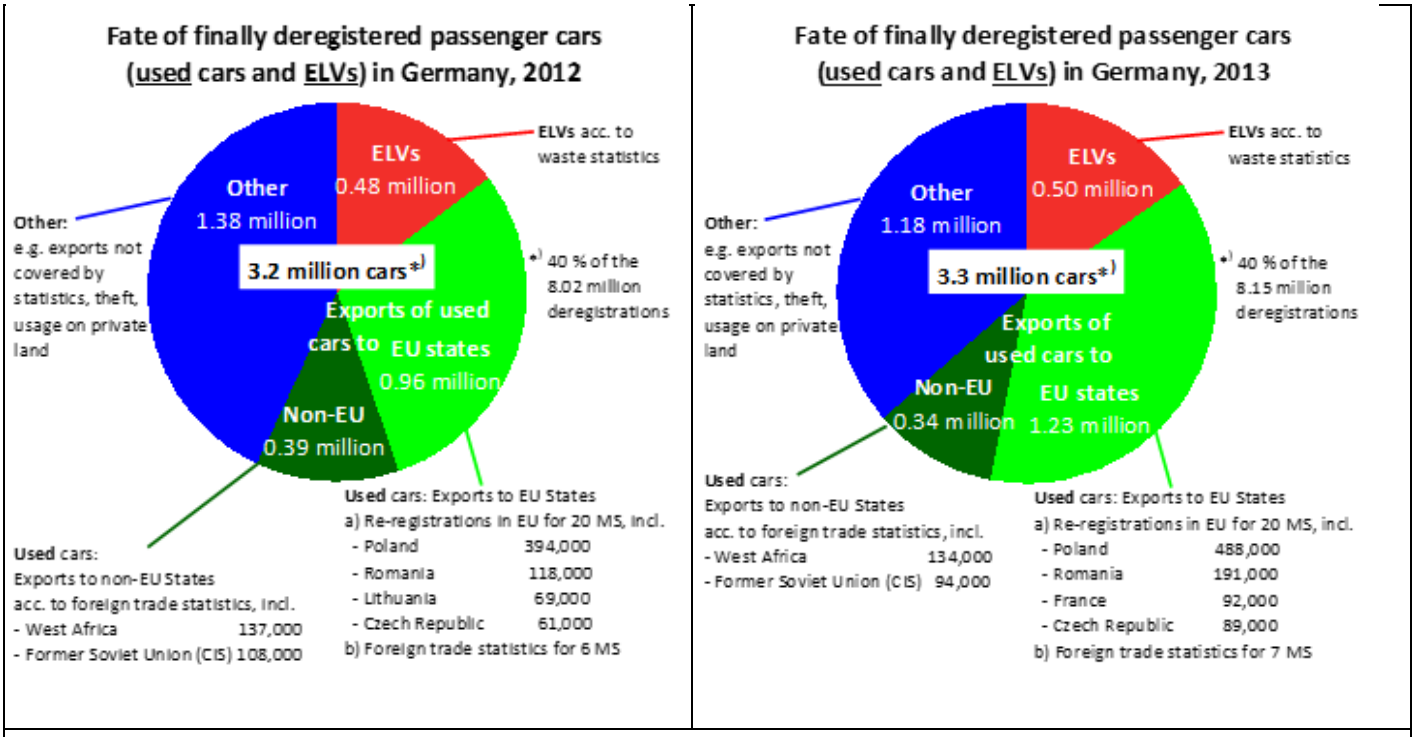


Sources: Information supplied by the Federal Motor Transport Authority, 2009 to 2014.
Federal Statistical Office: Foreign trade statistics, 2008 to 2013.

Figure 3 Development over time of used car exports from Germany, 2008 to 2013

Fate of finally deregistered cars, 2012 and 2013

Overall, the various statistical sources produce the following picture regarding the fate of cars finally deregistered in Germany in 2013 – see Figure 4, showing a comparison with the previous year 2012.



Sources:

- Federal Motor Transport Authority: Working figures on the volume of re-registered used cars abroad. Personal communications from the Federal Motor Transport Authority dated 19/2/2013 and 3/3/2014.
- Federal Motor Transport Authority: *Außerbetriebsetzungen von Kraftfahrzeugen und Kraftfahrzeuganhängern in den Jahren 2007 bis 2014 nach Fahrzeugklassen*.(Motor vehicles and trailers taken out of service, 2007 to 2014, by vehicle class). http://www.kba.de/DE/Statistik/Fahrzeuge/Ausserbetriebsetzungen/FahrzeugklassenAufbauarten/a_fzkl_zeitreihe.html?nn=664274
- Federal Statistical Office: *Außenhandelsstatistiken 2012 und 2013, 8-Steller, Gebrauchtwagenexport aus Deutschland* (Foreign Trade Statistics 2012 and 2013, 8-digit, exports of used cars from Germany). And: Federal Statistical Office: Table 14 of the Waste Management Surveys, 2012 and 2013, Wiesbaden

Figure 4 Fate of passenger cars finally deregistered in Germany (used cars and ELVs), 2012 and 2013

In 2013, statistics were unavailable concerning the fate of some 1.2 million finally deregistered vehicles.

Current study on the fate of vehicles: Prompted by the statistical gaps in the fate of finally deregistered vehicles which have been observed for a number of years now (see Figure 4), in 2014 the Federal Ministry for the Environment and the Federal Environment Agency initiated a study under the Environmental Research Plan (UFOPLAN) to investigate the fate of these vehicles[15]. Investigations will focus on identifying the possible causes for the "statistical gap" concerning the fate of finally deregistered cars, and data research into the actual fate of such vehicles in a reference year. If necessary, expedient and appropriate measures will be derived from the results of the project, which are anticipated in summer 2016.

[15] The title of the project is: "Elaboration of proposals, including legal instruments, to improve data on the fate of end-of-life vehicles" (UFOPLAN research code 3714 33 315 0).

Exports of ELVs and body shells:

- According to the statistics and time series[16], no “end-of-life vehicles” (waste code 160104*) or “scrapped passenger cars” (no. 8.11) were exported from Germany in 2013.
- The number of body shells exported for treatment abroad increased slightly against 2012, accounting for 5.6% of the total ELV weight W 1.

Table 7 Exports of used cars, end-of-life vehicles and pre-treated body shells from Germany

Reference year 2013	Unit	To other EU countries	To non-EU countries
Used vehicles exported (see Table 5 and Table 6)	Number	1,232,987	344,551
Average age of used vehicles exported	Years	(7.3)[17]	
ELVs exported (see COM Table 3)	Number	0	0
De-polluted (and dismantled) body shells exported (waste code 16 01 06)	Number	33,693[18]	
	Tonnes	27,420	

[16] See COM Table 3 and: Federal Environment Agency (UBA): Waste Export Statistics 2013 and waste export time series 2013 “*Grenzüberschreitende Verbringung von zustimmungspflichtigen Abfällen*” (Transboundary Shipments of Waste Requiring Notification). http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf, http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/zeitreiheexportabfallarten_3.pdf.

[17] This figure refers to vehicles with export licence plates in 2011. More recent figures are not available. Source: Personal communication from the KBA dated 9 July 2012.

[18] Converted with the average weight of body shells of 814 kg. The average weight was calculated from the total mass and the total number of body shells that left dismantling facilities in 2013 (to Germany and other countries): Total mass 428,254 t / total number 526,231 units = 814 kg/unit.

2.3.3 Section 3: Elements related to methods and quality of Sections 1 and 2

a) How do you assess the quality of the information on both the national vehicle market and the export market?

National vehicle market

The sources of data on the national vehicle market are stated in the footnotes to Table 4. The figures on new registrations, total registered fleet, average age and off-road notifications originate directly from the Federal Motor Transport Authority and are based on the official vehicle registrations. Their quality is therefore considered very good. Since the sum total for vehicle classes M1 and N1 cannot be taken directly from these sources, the data is given for all motor vehicles and, in addition, for the subset "passenger cars".

Final de-registrations: Since the changeover from final and temporary de-registrations to off-road notifications, the number of final de-registrations can no longer be determined directly from the statistics. The calculation is therefore based on the Federal Motor Transport Authority's estimate during the period preceding the changeover in 2007 that about 60 % of off-road notifications are temporary. It is intended to update the de-registration rate with the aforementioned study (see page 26 and footnote 15).

End-of-life vehicles: The number of end-of-life vehicles arising is taken from the waste statistics of the Federal Statistical Office, which originate from a full-coverage survey of all dismantling facilities. The quality can therefore be assumed to be good (see also the remarks on the data quality of the figures for end-of-life vehicles in number 2.1.2).

Used car exports

The data on exports of used cars to other EU Member States originates from two independent sources: The exchange of information under Article 9 of Directive 1999/37/EC on the registration documents for vehicles with information on re-registrations of used cars in other EU States, plus foreign trade statistics. The exchange of information under Directive 1999/37/EC is being expanded year by year, and the quality and level of coverage are therefore continuously improving. For 2013, figures were available for 25 of the 27 other EU States. Overall, this figure should be viewed as the lower limit; completeness cannot be guaranteed. Nevertheless, we can assume that the statistics now largely reflect the re-registrations of used cars in EU Member States. A further improvement in data completeness (an additional 17,000 or so vehicles) has been achieved by additionally including data from foreign trade statistics (including those for the two countries without re-registration data).

The data on exports of used cars to non-EU countries are taken from the foreign trade statistics. While these include all countries worldwide, they suffer from the familiar problem of notification thresholds. Since these are lower than for exports within the EU, it may be assumed that the figures cover a fairly high proportion of actual exports.

Cases of used car transits from Germany through another EU Member State to a non-EU state would not be covered by the non-EU foreign trade statistics. Neither would such

exports be covered by the exchange of information under Directive 1999/37/EC on the registration documents for vehicles, unless the car were to be re-registered in the transit country. No data is available about any possible informal exports for purposes other than reuse.

Balance sheet showing the fate of vehicles

As indicated by Figure 4, there are currently no statistics available concerning the fate of approximately 1.2 million of the 3.3 million or so vehicles finally deregistered in 2013. The Federal Ministry for the Environment and the Federal Environment Agency have initiated a study to investigate this issue (see page 26 and footnote 15).

b) Describe the source of information, the quality of sources, the completeness (coverage rate) and the validation process.

c) If Foreign Trade Statistics (FTS) are used as a source for the reporting of export of used cars, please explain how you estimate the amount which is not reported due to the (monetary) reporting thresholds for export.

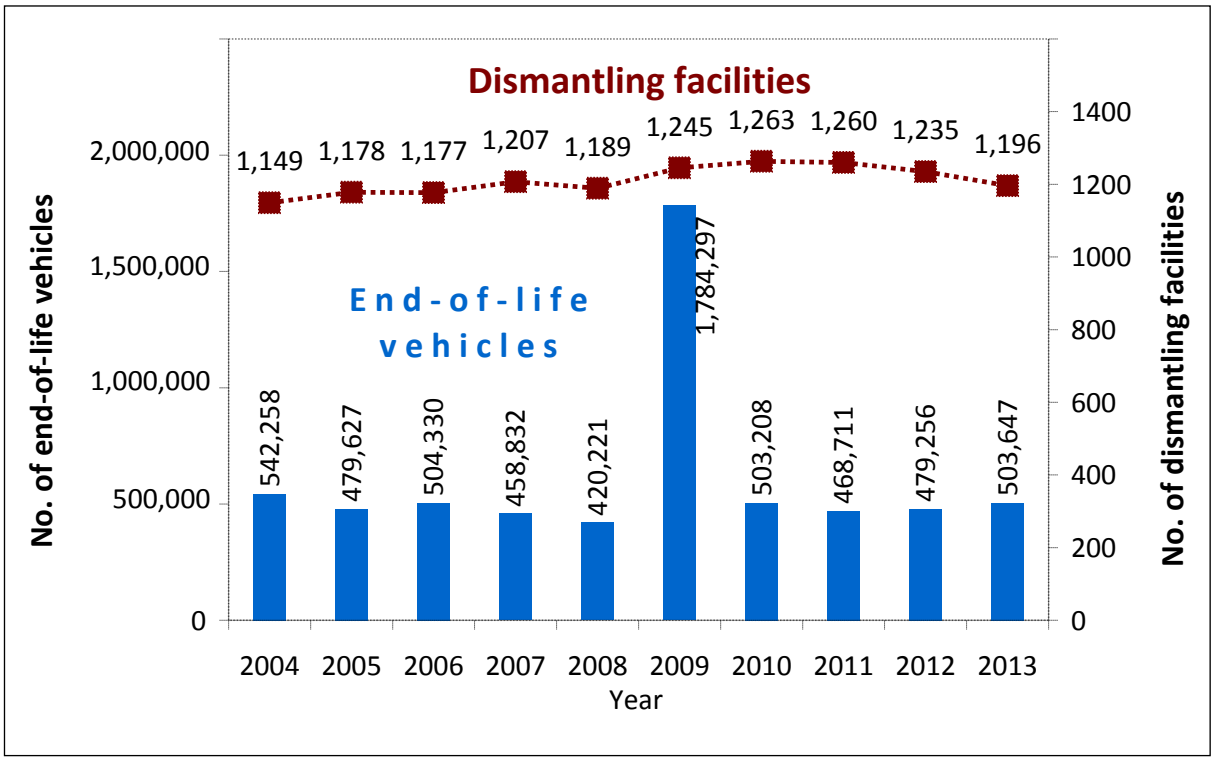
d) How did you correct for unofficial imports and exports, e.g. where used cars are exported but not for reuse as a car.

For information on items b) to d), please refer to a) above.

3 Supplement: Development of end-of-life vehicle disposal and recycling/recovery rates since 2004

3.1 Development of ELV quantities

Between 2004 and 2008, the number of end-of-life vehicles fell from 0.54 million to 0.42 million, rising to 1.78 million in 2009 as a one-off effect of the Environmental Premium, and has since dropped again to roughly its pre-2009 level - see Figure 5.

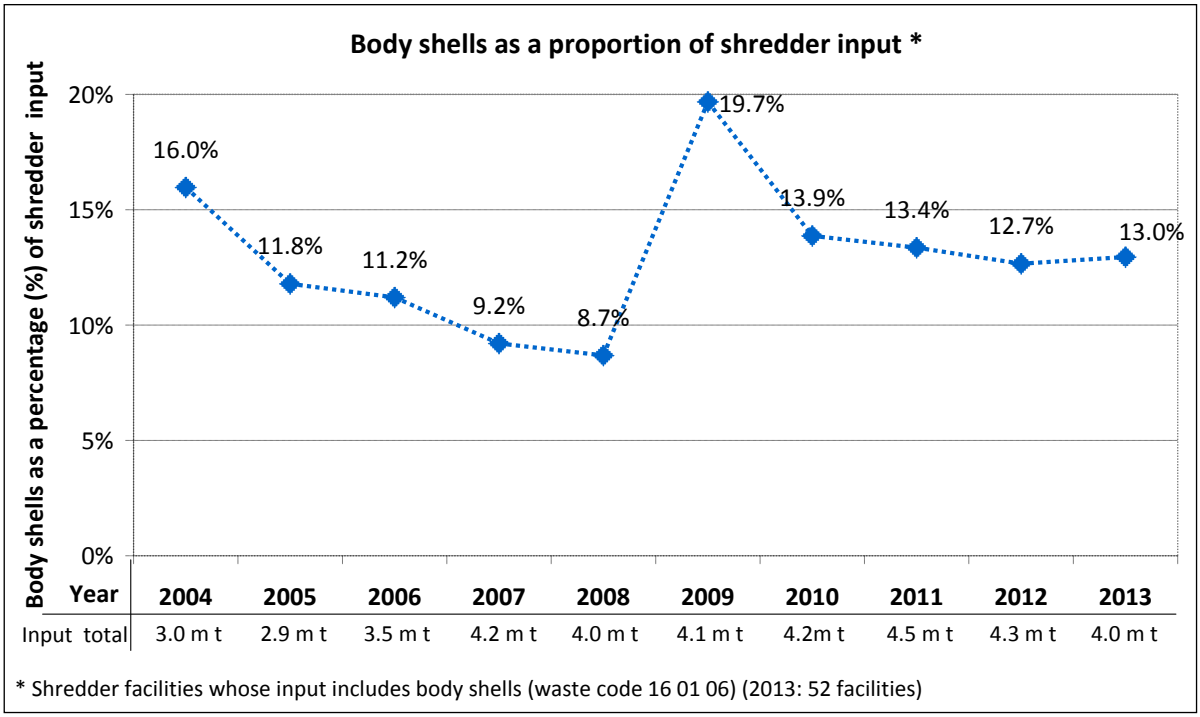


Source: Federal Statistical Office: Table 14 of the Waste Management Surveys, 2004 to 2013.

Figure 5 Development of ELV quantities (total, delivered from within Germany and abroad) and number of dismantling facilities in the waste statistics, Germany since 2004[19]

In 2009, body shells as a share of input into shredder facilities reached a new high of 19.7%. Since then, the proportion of body shells has been in the region of 13%, as was the case in the year 2013, see Figure 6.

[19] Note: Figure 5 shows the total number of end-of-life vehicles treated in the dismantling facilities.
The figure W (total number of ELVs) which is relevant for calculating the rates is lower, as the ELVs received from abroad are deducted first.
The number of dismantling facilities corresponds to the information in the waste statistics of the Federal Statistical Office. Discrepancies are possible compared with the number of dismantling facilities certified under the ELV Ordinance (*AltfahrzeugV*) as determined by GESA (*Gemeinsame Stelle Altfahrzeuge* / Joint Agency for End-of-Life Vehicles), for example because some certified facilities may not actually have accepted any end-of-life vehicles.

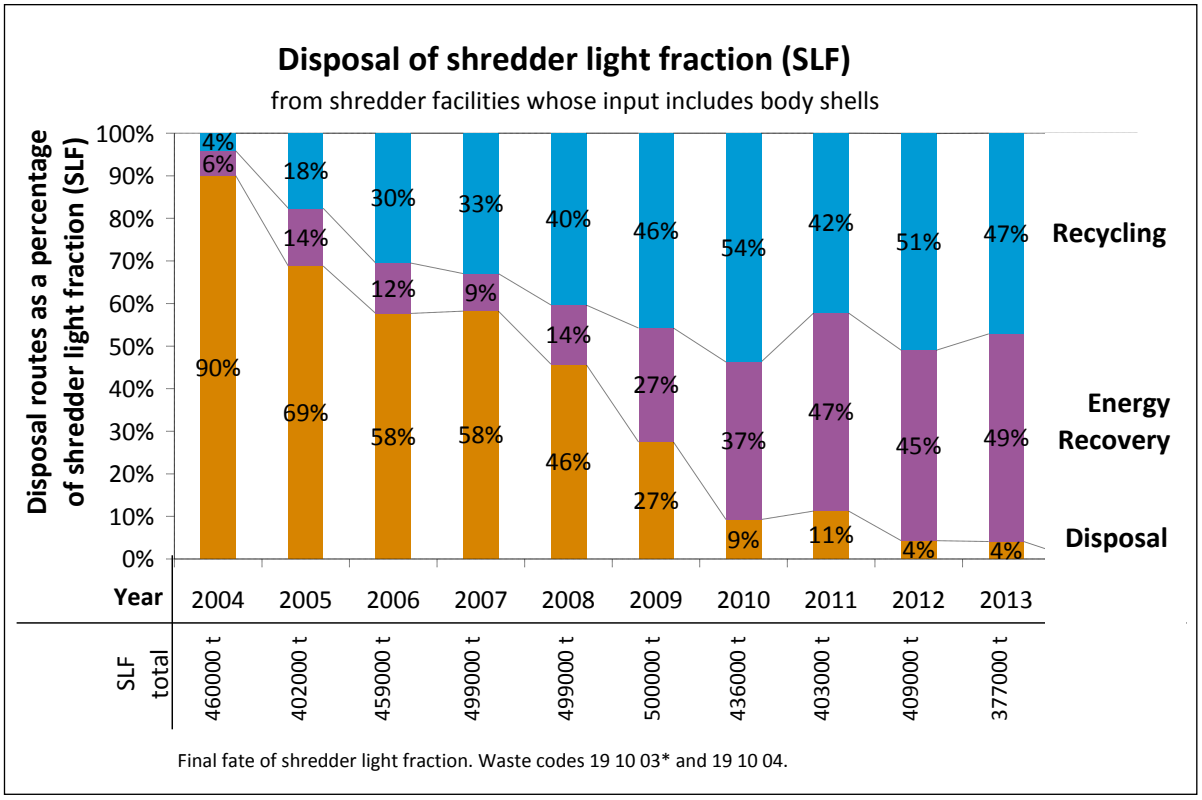


Source: Federal Statistical Office, Table 1 of the Waste Management Survey, 2004 to 2013

Figure 6 Development of body shells as a percentage of input into German shredder facilities, 2004 to 2013

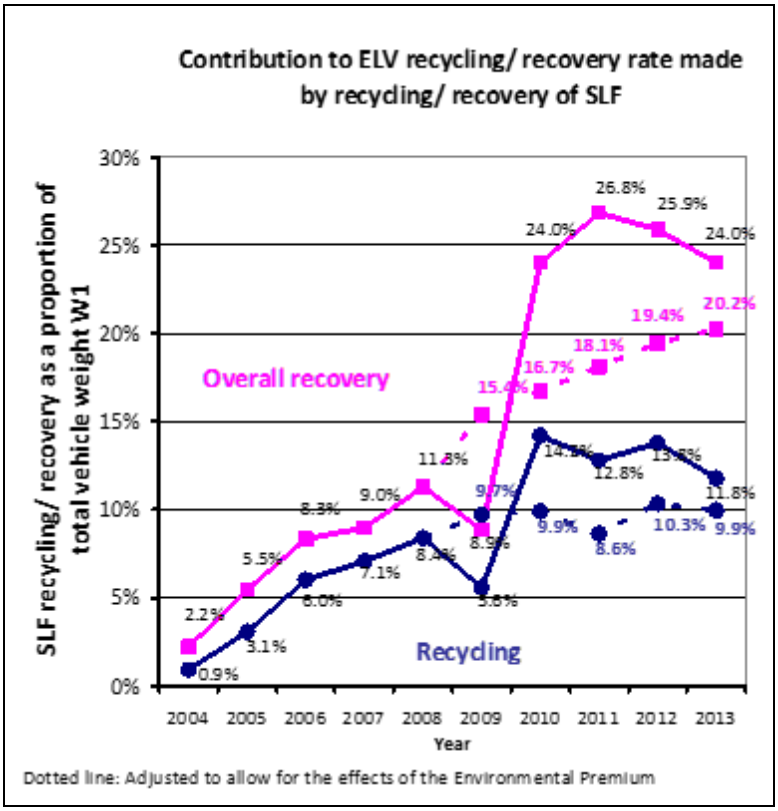
3.2 Recycling/recovery of shredder light fraction

One important non-metallic waste stream from the treatment of end-of-life vehicles is the shredder light fraction. Whereas 90 % of the shredder light fraction was still being sent for disposal in Germany in 2004 (waste codes 19 10 03* and 19 10 04), the proportion that is recycled or recovered has increased continuously year on year, and by 2012 and 2013 only 4 % was sent for disposal - see Figure 7. The diagram shows the total quantity of shredder light fraction treated in shredder facilities that accept body shells. A certain proportion of this originates from body shells (2013: 32.7 % or approximately 123,300 t of around 377,000 t).



Source: Federal Statistical Office: Table 15 of the Waste Management Survey, 2004 to 2013.

Figure 7 Disposal of shredder light fraction from shredder facilities that treat body shells in Germany, 2004 to 2013



As the after-effects of the Environmental Premium weaken year on year, the contribution of shredder light fraction to the total ELV recovery/recycling rate is slowly decreasing, and totalled 24% in 2013.

Figure 8 Contribution to end-of-life vehicle recycling/recovery rates made by recovery/recycling of shredder light fraction, as a percentage of total vehicle weight W1

In order to gauge the current contribution of shredder light fraction to ELV recycling/recovery rates excluding the effects of the Environmental Premium, a simplified additional calculation was used to extract the contribution of the Environmental Premium for the affected years 2009 to 2013; see dotted lines in Figure 8. To this end, we calculated the volume of shredder light fraction originating from the treatment of ELVs incurred in a given year in Germany (2013: around 104,000 t), regardless of in which year treatment actually took place. As we can see from Figure 8, the solid lines (”unadjusted” contributions of shredder light fraction) and the dotted lines (”adjusted” contributions) are gradually moving closer together. Since 2009, shredder light fraction has contributed around 10% to the recycling rate each year, adjusted to allow for the effects of the Environmental Premium.

3.3 Development of ELV recycling/recovery rates

On the basis of the statistical data in combination with other documented parameters, e.g. regarding the metal content assumption (73.2%), in 2013 Germany once again met or exceeded the EU-wide targets of 80 % for reuse/recycling and 85% for reuse/recovery. The target values applicable from 2015 onwards of 85% and 95% respectively have also been met.

As a result of increases/decreases in the ELV stock levels intermediately held at dismantling facilities (see Figure 2 in number 2.1.6), comparatively low recycling/recovery rates were achieved in 2009, contrasting with exceptionally high rates in the years 2010 to 2013, see Figure 9. Thus, in 2013, for the fourth year in succession more ELVs and body shells were treated and recycled/recovered than were actually incurred in that year. However, the after-effects are weakening. The treatment surplus was only 5 % (526,231 body shells in the output of the dismantling facilities, compared with 500,322 ELVs incurred), see also Figure 2.

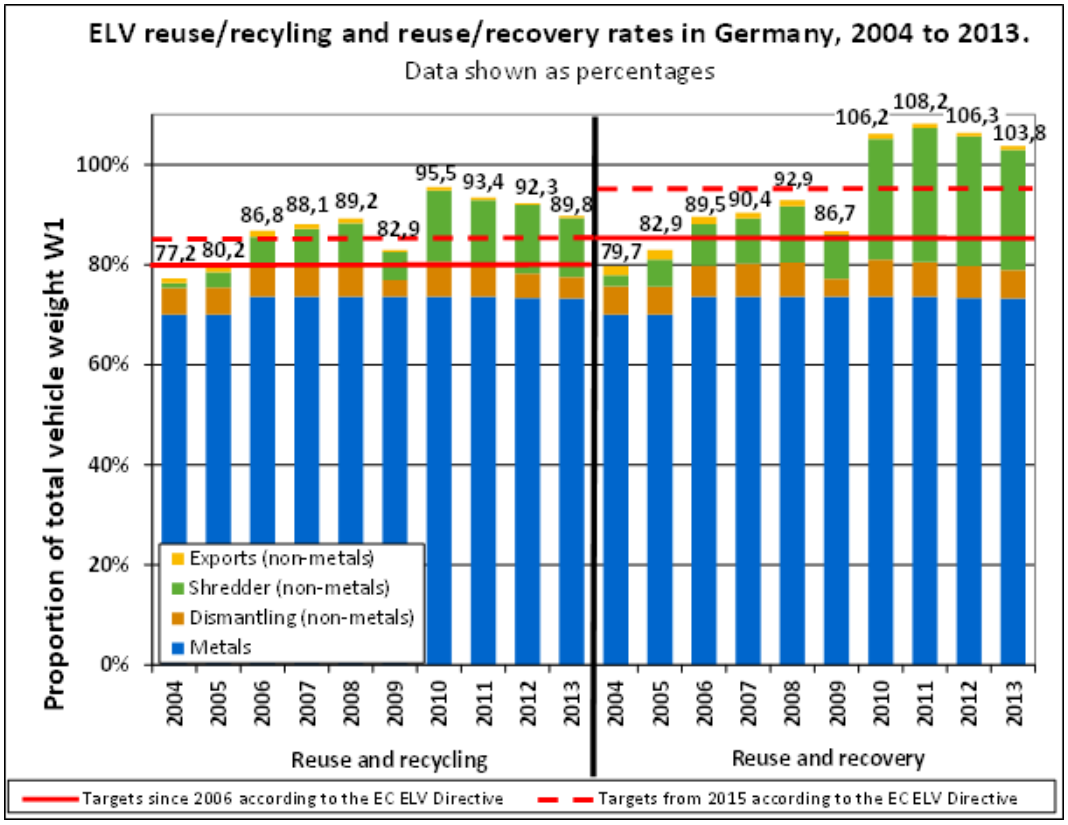


Figure 9 **Contribution of dismantling facilities, shredder facilities and recycling/recovery abroad to ELV reuse/recycling and reuse/recovery rates, 2004 to 2013**

In 2013, once again, the postponed treatment and recycling/recovery of accumulated ELVs as an after-effect of the Environmental Premium produces a mathematical overall recovery rate of more than 100% in relation to the number of ELVs incurred in that year (albeit less pronounced than in the preceding three years), whereas conversely, in 2009 (the year of the Environmental Premium), recycling and recovery rates were lower. Once the backlog from the Environmental Premium has been cleared completely, recycling/recovery rates will return to normal.

In order to gauge the potential recovery/recycling rates without the influence of the Environmental Premium, a simplified additional calculation was performed:

- The components and materials obtained by the dismantling facilities from the treatment of ELVs (for example, in 2013: 526,231 output body shells) were scaled down or up in relation to the number of ELVs for that year (e.g. 2013: W = 500,322).
- The volume of shredder light fraction was likewise scaled down or up in relation to the number of ELVs (W) for the respective year, see text on Figure 8.

This simplified calculation produces higher “adjusted” rates for 2009 and lower “adjusted” rates for the years 2010 to 2013. As in the previous year, the recycling rate for 2013, adjusted by the Environmental Premium, is approximately 88%, and the overall recovery rate is close to the 100% limit, see Figure 10.

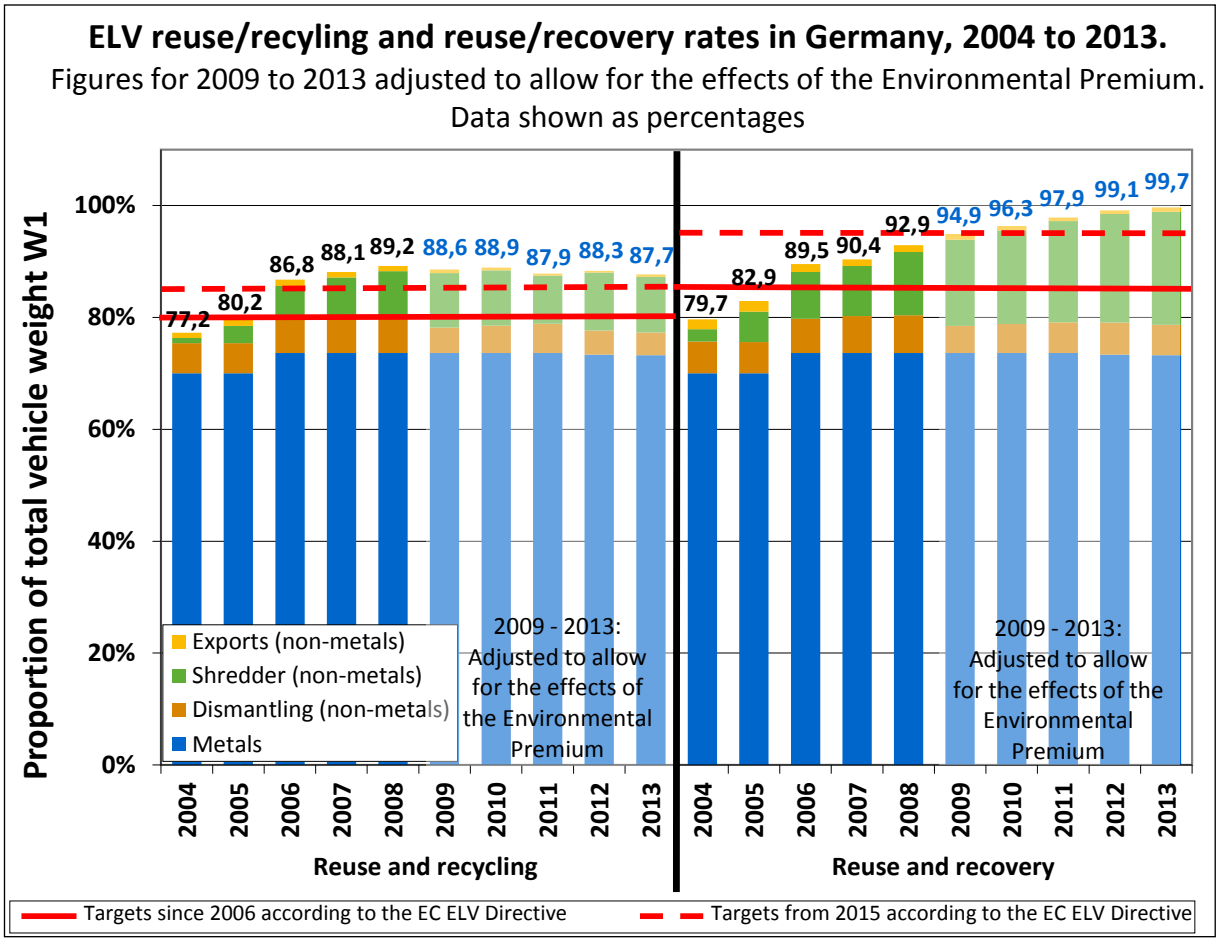


Figure 10 **Contribution of dismantling facilities, shredder facilities and recycling/recovery abroad to ELV reuse/recycling and reuse/recovery rates, 2004 to 2013, with figures for 2009 to 2013 adjusted to allow for the effects and after-effects of the Environmental Premium.**

4 Appendix: COM Tables with allocation of metals also to Tables 1 and 3

According to the COM guidance document, all recovered/recycled materials are to be entered in COM Table 2 (Shredders) if the "metal content assumption" is applied. However, this representation is not suitable for certain interpretations, such as calculating the specific dismantled battery mass per vehicle. For this reason, an alternative representation of COM Tables 1 to 4 is included in this Appendix, showing the distribution of recovered/recycled metals among COM Tables 1 to 3.

Materials from de-pollution and dismantling (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within the Member State

COM Table 1 (dismantling) for Germany, 2013 Total metals + non-metals					
Materials from de-pollution and dismantling	**Reuse**	**Recycling**	**Energy recovery**	**Total recovery**	**Disposal**
	(A)	**(B1)**	**(C1)**	**(D1=B1+C1)**	**(E1)**
	in t	in t	in t	in t	in t
Batteries	331	9,425	1	9,426	14
Liquids (excluding fuel)	161	2,933	688	3,621	952
Oil filters	4	59	40	99	7
Other materials arising from de-pollution (excluding fuel)	2	34	45	79	5
Catalysts	54	1,524	0	1,524	39
Metal components	14,582	31,981	0	31,981	1,585
Tyres	1,274	5,984	5,307	11,291	232
Large plastic parts	242	1,242	0	1,242	30
Glass	187	998	0	998	1
Other materials arising from dismantling	3,921	39	876	915	80
Total	**20,758**	**54,219**	**6,956**	**61,175**	**2,946**

Explanation:

This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.

Source:

From Federal Statistical Office data, Tables 1 and 15 of the Waste Management Survey 2013.

Materials from shredding (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within the Member State

COM Table 2 (shredders) for Germany, 2013 Proportionate metal shares only				
Materials from shredding	**Recycling** **(B2)**	**Energy recovery** **(C2)**	**Total recovery** **(D2 =B2+C2)**	**Disposal** **(E2)**
	in t	in t	in t	in t
Ferrous scrap (steel)	241,586	0	241,586	0
Non-ferrous materials (aluminium, copper, zinc, lead, etc.)	37,736	0	37,736	0
Shredder light fraction (SLF)	57,843	59,925	117,769	4,956
Other	0	0	0	0
Total	**337,165**	**59,925**	**397,091**	**4,956**

Explanatory comments:

- This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.
- Calculation of metal proportions for COM Table 2:
  1. Calculation of recovered/recycled metals (total) = 73.2% (metal content assumption, see Table 3) * 490,771 t (total vehicle weight W1) = 359,416 t.
  2. Deduction of metals already recorded in COM Table 1 (dismantling of metals: re-use and recycling/recovery) and COM Table 3 (metal exports).
  3. Breakdown into ferrous/non-ferrous on a ratio of 63.3% : 9.9%

Source:

From Federal Statistical Office data, Table 15 of the Waste Management Survey 2013.

Monitoring of (parts of) end-of-life vehicles arising in the Member State and exported for further treatment (in tonnes per year)

COM Table 3 (exports) for Germany, 2013 Total metals + non-metals					
End-of-life vehicles, body shells, components and materials disposed of abroad	**Total weight of end-of-life vehicles which are exported, per country**	**Total recycling of (parts of) end-of-life vehicles exported (F1)**	**Total recovery of (parts of) end-of-life vehicles exported (F2)**	**Total disposal of (parts of) end-of-life vehicles exported (F3)**	**Remarks**
	in t	in t	in t	in t	
1) End-of-life vehicles (WC 160104*)	0	0	0	0	No exports in 2013 according to the statistics on "Transboundary shipments of waste requiring notification" a)
Breakdown by countries: -- not applicable --					
2) Body shells from dismantling facilities (WC 160106)	27,420	21,936	23,307	4,113	Basic figures: 27,420 t body shells exported for recovery. Assumption: 80%/85% thereof recycled/recovered.
Breakdown by countries: -- unknown --					
3) Components from dismantling plants	6,469	6,291	6,458	11	Batteries, tyres, large plastic parts, glass etc.
Breakdown by countries, where known **WC** **Waste** — **Destination countries** for waste exports (total, not just from dismantling facilities) included in the waste export statistics: - 130205* Engine etc. oils — To the Netherlands, Poland - 160103 Waste tyres — To Bulgaria - 160601* Lead batteries — To Belgium, Slovenia, Spain, Czech Republic - 160807* Catalysts — To Belgium, UK, Switzerland, USA					
4) SLF from shredders	594	278	519	75	Total SLF exported: WC 191003*: 1,199 t, WC 191004: 617 t. Of which 32.7 % from ELVs.
Breakdown by countries, where known **WC** **Waste** — **Destination country** for waste exports acc. to waste export statistics (total, not just originating from ELVs) - 191003* Shredder light fraction — To Belgium (1,200 t)					
Total	**34,483**	**28,505**	**30,284**	**4,199**	

Explanatory comments and source details for this table may be found on the following page.

Explanatory comments:

WC = waste code

a) No exports of ELVs (WC 160104*) are recorded in the 2013 waste export statistics (http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf). No exports of "scrapped passenger cars" (no. 8.11) or of "other scrapped motor vehicles" (no. 8.12) are recorded in the 2013 waste export series. (http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/zeitreiheexportabfallarten_3.pdf).

Sources:

- Exports of body shells and other waste from end-of-life vehicle dismantling facilities: "*Erhebung über die Abfallentsorgung im Jahr 2013*" (Waste Management Survey, 2013), Table 15, Federal Statistical Office.
- Exports of end-of-life vehicles and total waste exports for Germany: "*GrenzüberschreitendeVerbringung von zustimmungspflichtigenAbfällen 2013 - Export*" (Transboundary shipments of waste requiring notification), Federal Environment Agency: http://www.umweltbundesamt.de/sites/default/files/medien/378/dokumente/ustatg2013-export_2.pdf

Total reuse, recovery and recycling (in tonnes per year) of end-of-life vehicles arising in the Member State and treated within or outside the Member State

COM Table 4 (rates) for Germany 2013					
From ...	**Reuse** **(A)**	**Total recycling** **(B1 + B2 + F1)**	**Total recovery** **(D1 + D2 + F2)**	**Total reuse and recycling** **(X1=A+B1+B2+F1)**	**Total reuse and recovery** **(X2=A+D1+D2+F2)**
	in t	in t	in t	in t	in t
Tab 1: Dismantling (A,B1,D1) (metals + non-metals)	20,758	54,219	61,175	74,977	81,933
Tab 2: Shredders (B2, D2) (metals + non-metals)	0	337,165	397,091	337,165	397,091
Tab 3: Exports (F1, F2) (metals + non-metals)	0	28,505	30,284	28,505	30,284
Total	**20,758**	**419,890**	**488,550**	**440,648**	**509,308**

			Recycling and recovery rates 2013	
W	**(total number of end-of-life vehicles)**	**500,322 vehicles**	**89.8%**	**103.8%**
W1	**(total vehicle weight)**	**490,771 tonnes**	**X1/W1**	**X2/W1**

Explanation:

This table contains a few rounding differences (of one tonne) because quantities were rounded up or down to the nearest whole tonne.