



Evaluation of the Directive 2000/53/EC on end-of-life vehicles - Findings to date

Brussels
5th February 2020

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- 10.00 Registration & coffee/tea
- 10.30 Introduction by the Commission
- 10.45 Introduction of the project (goals and process) and Q&A (Trinomics)
- 11.15 Presentation & Discussion on *Effectiveness (Trinomics & Öko)*
- 12.45 Lunch (Cafeteria on the top floor of this building)
- 13.45 Presentation & Discussion on *Efficiency (Trinomics & Öko)*
- 14.30 Presentation & Discussion on *Relevance (Trinomics & Öko)*
- 15.00 Presentation & Discussion on *Coherence & EU added value (Trinomics & Öko)*
- 15.45 Break
- 16.00 Presentation and summary of the problems identified with the Directive and implementation process
- 16.45 Conclusions, next steps and thanks
- 17.00 End of the workshop





Introduction



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The Evaluation of the ELV Directive



European Commission, DG ENV

The ELV Directive

- The ELV directive was adopted in 2000 to prevent waste from vehicles and to promote reuse, recycling and other forms of recovery of ELVs and their components and to improve the environmental performance of all economic operators involved in the life cycle of vehicles (eco-design).
- The goal is to have vehicles manufactured in such a way that are easier to recycle.
- Standardise treatment requirements with legal permits and the necessary equipment to prevent pollution

Scope: Vehicles category M1 and N1

Changes in the ELV Directive

- First assessment of the ELV Directive in 2014 (Fitness Check)
 - *Two major challenges identified: illegal ELV treatment operators and illegal shipment of ELVs*
- Compliance promotion initiative to assess implementation in 2018
- Amendment of the ELV Directive in 2018 (Waste Package)
 - *Article 10a sets the legal obligation to review the Directive by end of 2020*
 - *To consider the feasibility of setting targets for specific materials*
 - *To pay attention to the ELVs that are not accounted for, including the shipments of used waste vehicles suspected to be ELVs*

Evaluation of the ELV Directive

Evaluation of the ELV Directive started in March 2019
(contract for 12 months)

- Looking backwards to the performance of the Directive
- Looking into effectiveness, efficiency, relevance, coherence, EU-added value
- Stakeholders consultation and literature and data review
 - Online public consultation August to October 2019
 - Targeted consultation
- Commission's report on the evaluation to be published in the second semester of 2020

Towards the future

- The evaluation will be followed by an Impact Assessment and the Commission's proposal for the review of the ELV Directive

For more information please visit:

https://ec.europa.eu/environment/waste/elv/evaluation_en.htm

http://ec.europa.eu/environment/circular-economy/index_en.htm

http://ec.europa.eu/environment/waste/target_review.htm

http://ec.europa.eu/environment/waste/elv_index.htm

<http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/wastestreams/elvs>

Thank you for your attention!

ONLY ONE EARTH





Project goals and Process



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Progress and plan

- Progress

- Online public consultation

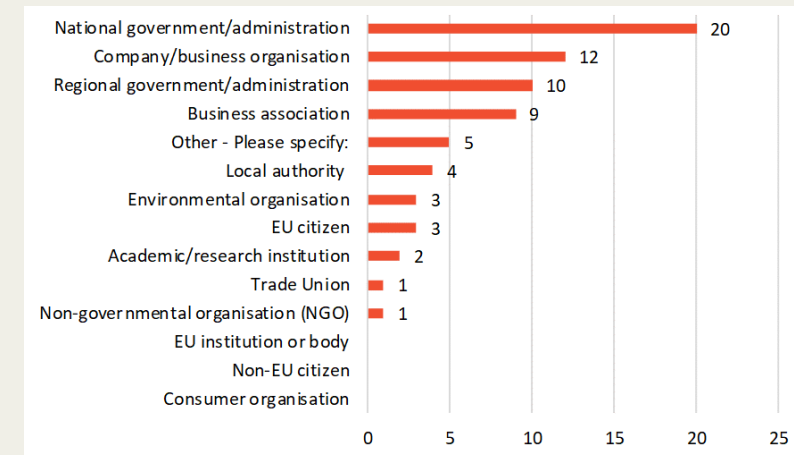
- August to October 2019
 - 141 responses
 - 16 questions

- Literature and data review

- Previous and related evaluations, studies and data

- Targetted consultations - survey and interviews

- Industry associations, MS contacts
 - 51 questions
 - 72 responses to the survey, 10 took up interviews



- **Forward Plan**

- This workshop
- Follow up consultations / interviews (if needed)
- Draft and final report March 2020
- Commission document - due before the end of December

- **Process today**

- Present the findings to date from literature review, public and targeted consultation (surveys)
- We want to know if there is anything you disagree with
- We want to know if there is anything missing
- We are asking for evidence to back up (or contradict) (or help with the analysis) of anything you disagree with or think is missing



- Session structure

- Following the evaluation questions, but some issues cross over these, so only covered once (e.g. Electric vehicles is arguably an issue of ‘effectiveness’, ‘relevance’ and ‘coherence’, but only covering it under relevance)
- The session headings are mainly to help us structure the work

- Sli.do

- Try it out now www.slido.com enter event code 1372
- Feedback opportunities per session and at the end





Effectiveness



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Effectiveness

😊 High number of ATFs registered across EU.

Density varies across the EU.

Small increase:

2011 / 2014: 13 000 ATFs

2014 / 2017: 14 000 ATFs

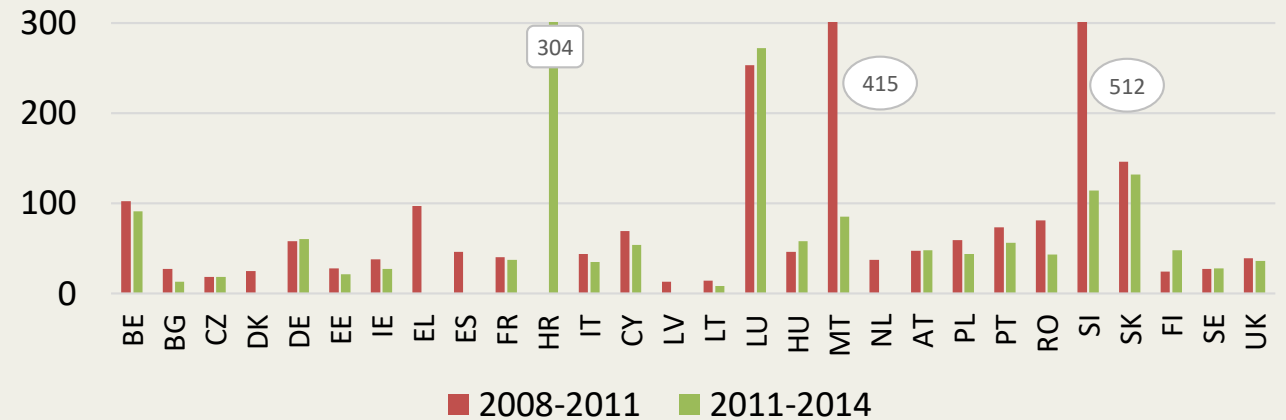
Sources:

ARGUS (2016): Summary report on the implementation of the ELV Directive for the periods 2008-2011 and 2011-2014

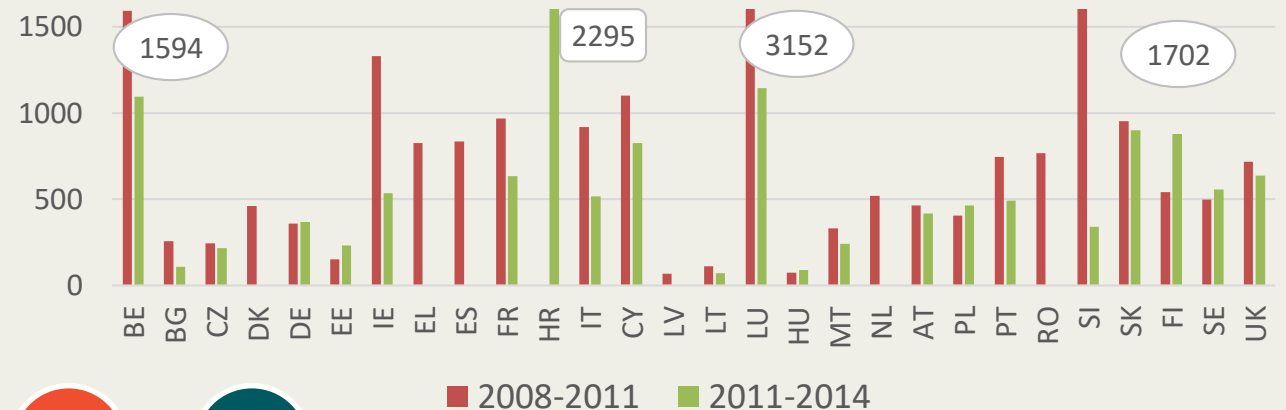
Eunomia (2019): Final Report on the Implementation of Directive 2000/53/EC on End-of-Life Vehicles for the period 2014-2017



Inhabitants per ATF [1000 inhab / ATF]



ELVs transferred per ATF in average per country



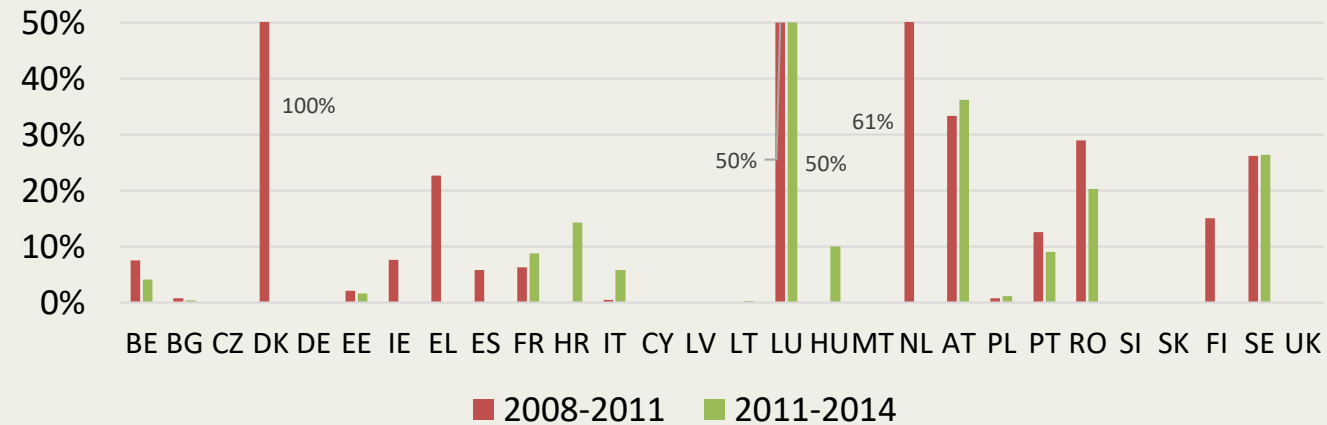
Effectiveness

☹️ A low number of Member States demonstrate that a large share of ATFs are certified.

Certification to the less demanding ISO 14001 is much more common than EMAS certification.

Source:
ARGUS (2016): Summary report on the implementation of the ELV Directive for the periods 2008-2011 and 2011-2014

Share of ATFs certified [%]



Effectiveness

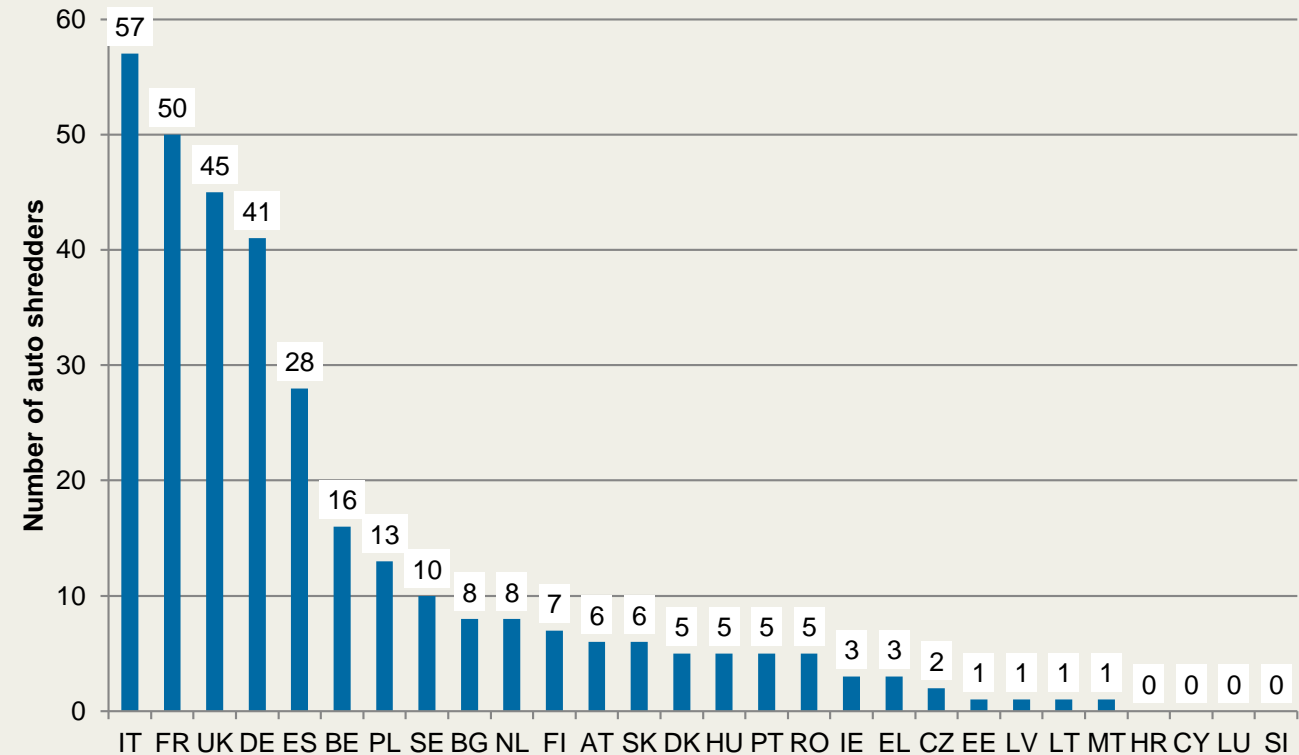
😊 Almost all Member States have at least one shredder for ELVs*

☹️ Compliance with BAT** (now covering shredders) and capacity for post-shredder treatment are unknown

Source:

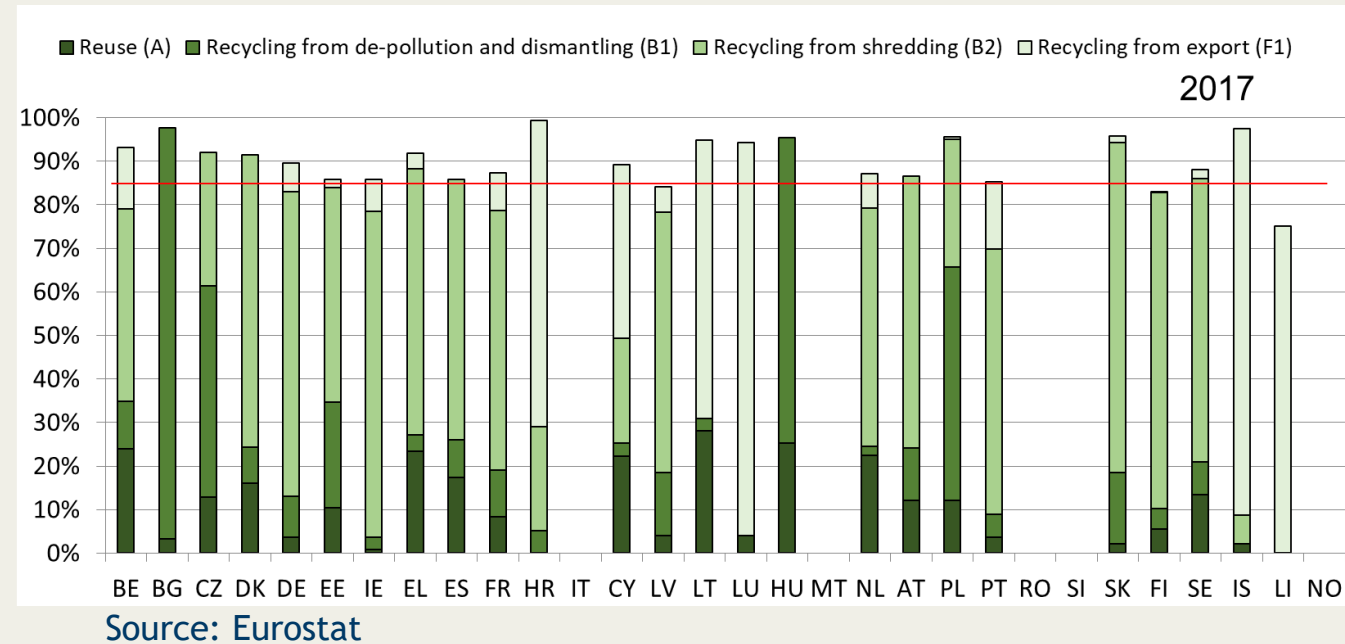
* Mc Kenna (2014): European Auto Shredder List and Map. An interactive map of auto shredding plants in the 28 member states of the European Union plus Norway.

** Best Available Techniques (BAT) Reference Document for Waste Treatment & Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C(2018) 5070) (Text with EEA relevance.) - (To be updated)



Effectiveness

- 😊 Almost all Member States achieved high recycling and reuse rates beyond 85%
- 😞 Stock effects (EL 2016, in former years DE)
- 😞 all (or most) recycling & reuse reported by ATFs (BG, CZ, HU, PL)?
- 😞 Countries with high export and very high recycling ?

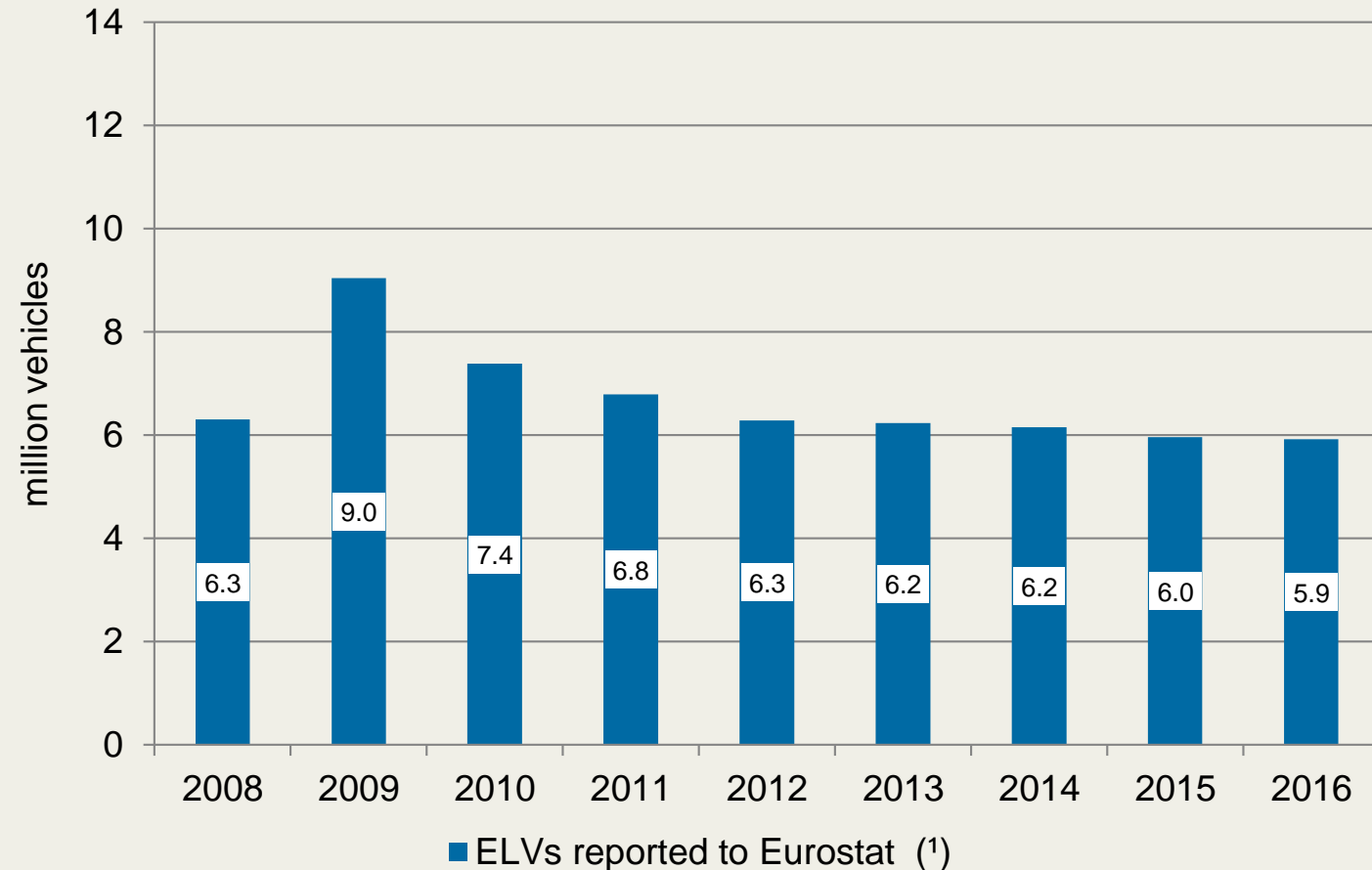


Effectiveness

😊 More than 6 Million ELV reportedly treated in EU per year

😊 Peak of 9 million caused by scrappage schemes (financial crisis)

Source:
(1) Eurostat (download 2. October 2019)



Effectiveness

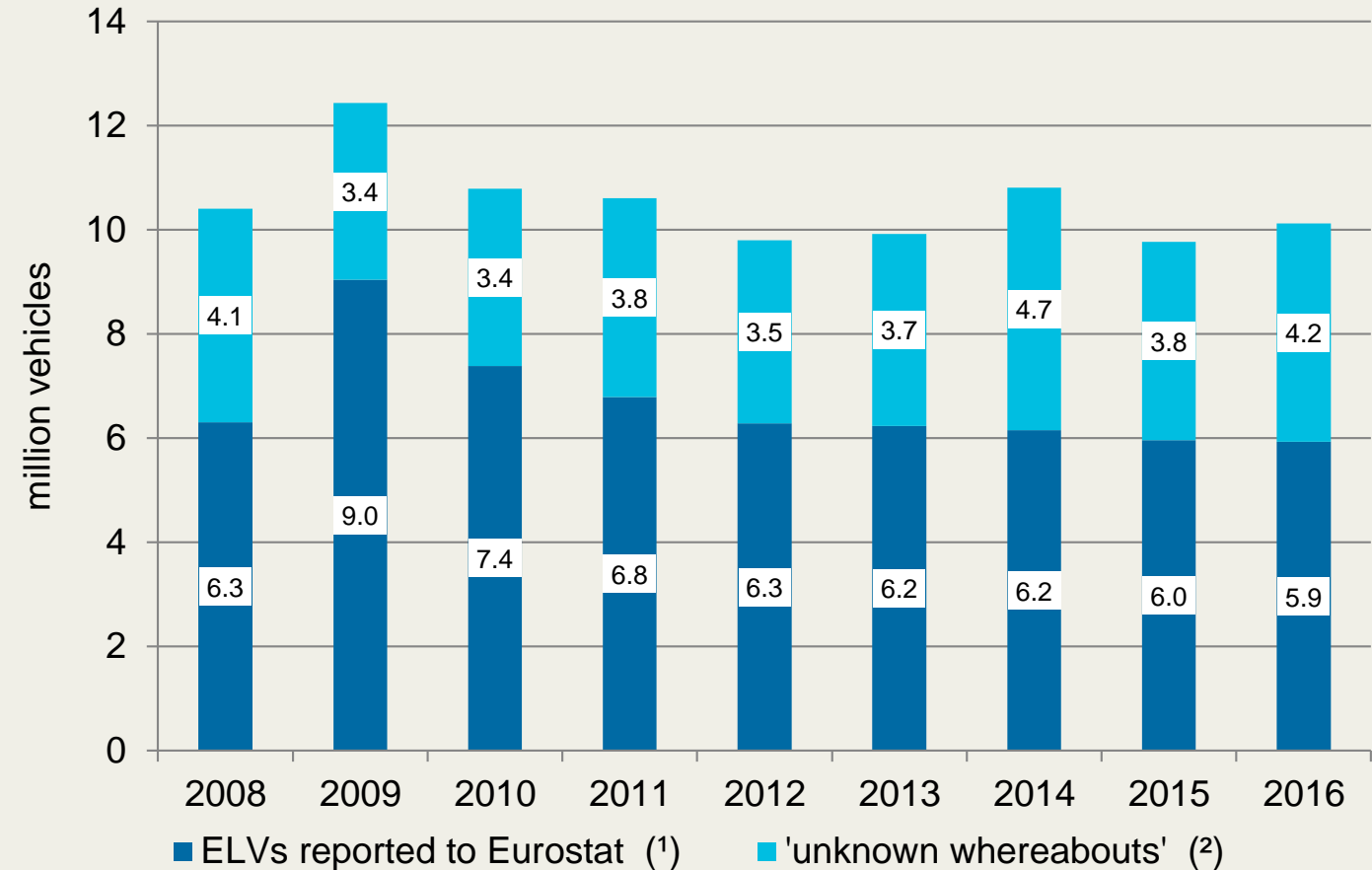


More than 4 Million
unknown whereabouts

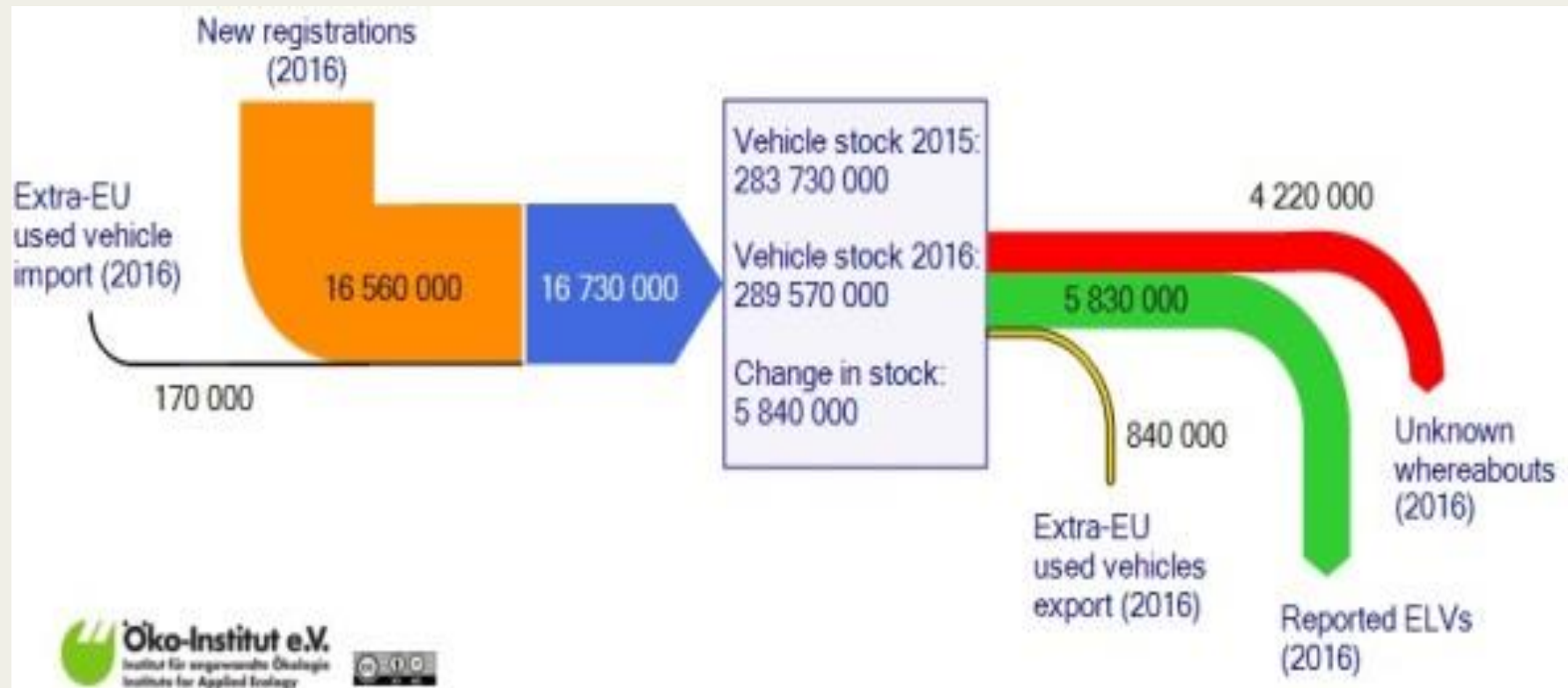
Source:

(1) Eurostat (download 2. October 2019)

(2) Trinomics/ Oeko-Institut: Study supporting the
evaluation of the Directive 2000/53/EC on end-of-life
vehicles (publication envisaged in 2020)



☹ More than 4 Million unknown whereabouts



Source:
Trinomics/ Oeko-Institut: Study supporting the evaluation of the Directive 2000/53/EC on end-of-life vehicles (publication envisaged in 2020)



Effectiveness

Explanation	Legal situation	Environmental concern
Not reported export of used vehicle to non-EU-countries	Export legal , but should be reported to Customs Some countries ban import of certain vehicles	If the used vehicle is close to being an ELV, then risk of harm to environment if its not treated accordingly
Not reported export of used vehicle to other EU Member State	NO obligation to tell vehicle register of origin what the destination is Destination register requests information from origin on any theft/crime, but origin register does not necessarily record this.	No direct environmental concern
Export of ELVs to non-OECD countries	Illegal (EC Waste Shipment Regulation (WSR))	Inappropriate treatment risks environmental harm. Country of origin could be liable for clean up +/-or return claim from receiving country
Non reported export of ELVs to other EU Member State. Treatment in receiving MS, COD not forwarded to origin MS.	Export legal in most MSs	None, assuming disposal is via ATF
Non reported treatment in ATFs (Possibly no CoD is issued)	Legal	No concern, if ATF operates within permits
Treatment in unauthorised treatment facilities	Illegal (ELV Directive)	Unregulated, so risk higher than ATFs
Increase of ELVs / de-registered vehicles on stock	Seems unlikely – too many vehicles	



- Survey opinions on missing ELVs - asked for a ranking - top 3
 1. ELVS scrapped but not deregistered
 2. ELVs exported in EU as used.
 3. Used vehicles exported out of EU but not deregistered.
- Options to help address
 - Incentives (deposits and scrappage payments) - vary between MSs, mixed opinions on their effectiveness
 - Vehicle/road tax (when end of life) only cancelled with CoD
 - Deregistration with no CoD (vehicle is 'off road') is a risk



Open Public Consultation

- ☺ Most (60%+) think they can dispose of ELV without incurring costs (and receive payment that reflects the value of the ELV) and get a CoD.
- ☺ Perception of decrease in uncontrolled disposal, increase in recycling.
- ☹ Illegal operations not helped by inconsistent approaches between MSs.
- ☹ De- and Re-register procedures (between countries) are not clear
- ☹ 61% think there are still some problems with ELVs (illegal operations, problems with recycling, issues with last owner identification, lack of enforcement.
- ☹ DIY and small car repair workshops perceived as being more risky locations, but less concentrated risks.



- **Communication between MSs on vehicle export and registration**
 - Survey opinion is good consistency and communication between MSs on vehicle recycling , not so good on deregistration of exported vehicles and export of used vehicles.
 - Calls for more consistency and digitalisation
- **Distinguishing ELVs from used vehicles when exporting**
 - NL approach (ELV if it cannot be repaired for a realistic cost) praised
 - Italy and Ireland approach - no export without recent roadworthiness test
 - Guidelines No.9, good, but non-binding and lack of inspection capacity



- Collection / treatment / targets / missing ELVs
 - Anything you don't agree with?
 - Anything you think is missing?
 - Any data / input you can provide to improve our analysis?
 - SLI.do poll



Exclusion of hazardous substances - duration of exemptions?

Article 4(2)(a) **restricts** the use of lead, mercury, cadmium or hexavalent chromium in vehicles, allowing **exemptions** unless the use is avoidable;

Article 4(2)(b) requires Annex II be **reviewed from time to time** as to technical and scientific progress, without specifying how often;

In the last years, the evaluation practice includes the specification of a review period, usually between **3 to 5 years**, depending on expected development of substitutes;

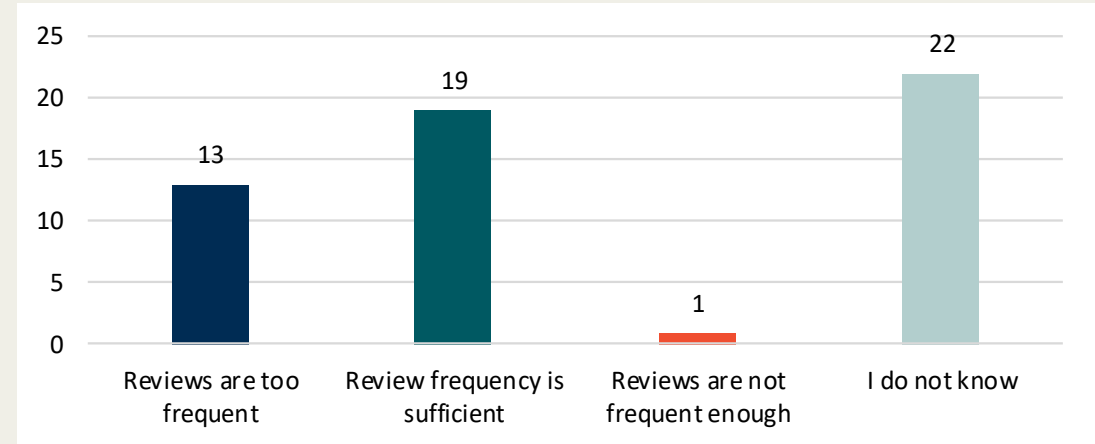
In some cases **producers** argue that the duration of exemptions is too short in relation to the design cycles of vehicles (Ex. 5), giving the example of the RoHS Directive that allows 7 year exemptions for some equipment categories.



Exclusion of hazardous substances - duration of exemptions?

Targeted consultation

- ☺ The frequency of reviews of the Annex II (every two years) is sufficient (ATF, EPR).
- ☺ Reviews are too frequent (n=13): more than 60% (n=8) are either a business association or a company; the rest (4) national or regional government bodies and one citizen. enough.
- ☹ Review frequency is sufficient (n=19): 58% (n=11) are national or regional government bodies; the rest - companies or business associations (n=4), environmental organisations (n=2), citizen (n=1), and academics (n=1).



Adequacy of the frequency of review of Annex II exemptions

- ☹ Only one NGO claimed that reviews are not frequent enough



Substance restrictions: adequacy of criteria for exemptions

RoHS has more elaborate criteria for exemption justification. Main differences:

- Negative environmental or health impacts of a substitute can justify an exemption;
- Availability of substitutes and SEA and LCA aspects can affect the duration of an exemption;

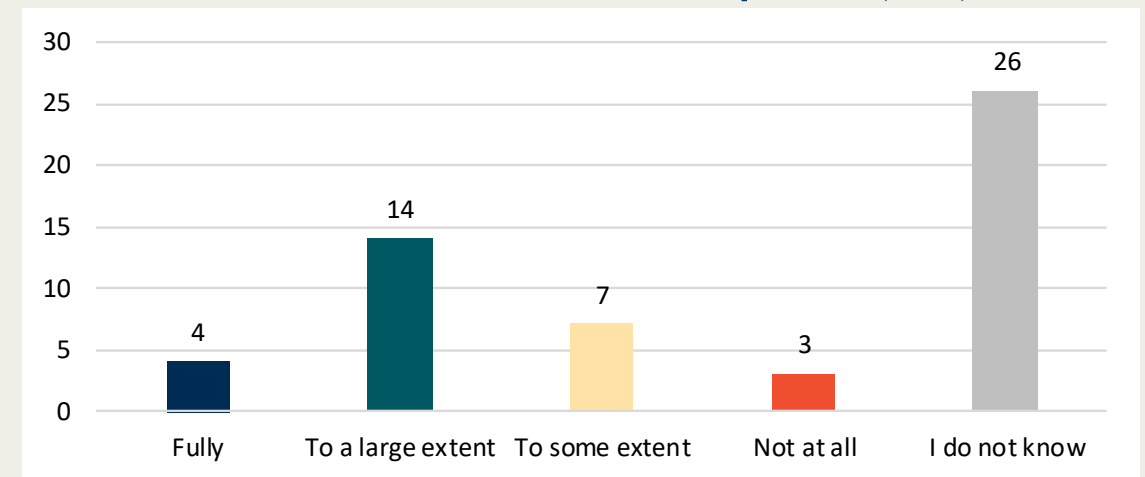
RoHS specifies the maximum exemption validity (5/7 years), allowing a few of the categories known to have longer design cycles to have longer exemptions.

Targeted consultation

☺ The criteria are adequate (26%)

☹ Did not know (48%).

☹ The criteria are not adequate (6%)



Adequacy of ELV criteria for amending Annex II (n=54)



Substance restrictions: adequacy of criteria for exemptions

Targeted consultation:

- Socio-economic aspects should be further considered (i.e. whether a scientific alternative is economically and practically viable) (n=4, business associations vehicles manufacturers). This was noted in relation to Ex. 2c for lead in aluminium alloys with up to 0.4% lead. Though it is technically possible to produce primary aluminium containing less lead, for secondary aluminium it is much harder.
- Stakeholders also noted the need to align the criteria with RoHS and REACH in relation to taking consideration of the influence of substitutes on the environment and human health.



Restriction of hazardous substances - Are current prohibitions sufficient?

Currently only 4 substances restricted.

Additional hazardous substances are addressed indirectly through depollution requirements), though with little data as to the effectiveness of these requirements (no reporting).

Recent EU policies mention the possible need for additional restrictions (additives in plastics);

There is however no indication in the Directive as to possible further restrictions (process, frequency);

Additional restrictions could be relevant where a decrease or the elimination of substances in ELVs would prevent “*their release into the environment [...] facilitate recycling and [...] avoid the disposal of hazardous waste*”.

The ELV definition for hazardous substances (Art. 3(11)) makes the connection to substances “*considered to be dangerous*” under the CLP Regulation, however a CLP classification does not mean the above criteria are fulfilled;



Restriction of hazardous substances - Are current prohibitions sufficient?

Targeted consultation

Regarding the effectiveness of depollution, stakeholders with an opinion mostly think that depollution is implemented at a high level (75-100%), meaning it could be an alternative to restrictions in some cases.

Obligatory treatment operations	100 - 75%	75 - 50%	50%	50 - 25%	25 - 0%	I do not know / no opinion
Removal of batteries	45	0	1	2	0	16
Removal of liquefied gas tanks	35	4	2	4	0	19
Removal or neutralisation of potential explosive components, (e.g. air bags)	37	3	1	1	1	21
Removal and separate collection and storage of fuel, motor oil, transmission oil, gearbox oil, hydraulic oil, cooling liquids, antifreeze, brake fluids, any other fluid contained in the end-of-life vehicle, unless they are necessary for the re-use of the	40	3	1	1	0	19
Removal and separate collection and storage of air-conditioning system fluids	34	4	4	1	0	21
Removal, as far as feasible, of all components identified as containing mercury	27	3	2	3	1	28
Removal, as far as feasible, of all components identified as containing lead	19	5	1	2	3	33



Restriction of hazardous substances - Are current prohibitions sufficient?

Targeted consultation

- All hazardous substances should be forbidden in new vehicles (2, 1 recycler).
- Prohibition of other Substances of Very High Concern.(1)
- Procedures for restriction of hazardous substances should be simplified, enabling future restriction of additional substances. RoHS Article 6 provides an example of how this could work. (Swedish authority)
- Should trucks and buses be added to scope, the heavy metal ban should not apply, given that REACH applies, and the industry voluntarily substitutes heavy metals.
- Motivation for further restrictions: Presence of hazardous substances in secondary raw materials used in new products should be avoided (NGO);



Restriction of hazardous substances - Risk of additives in plastics.

There is an increase in the use of plastics in vehicles.

For example, an increase is observed in car models, from 10% in Golf II to 15.3% for the Golf V and to 19.5% for the Golf VII*.

Study for the strategy for a non-toxic environment: additional substances may require restriction in ELVs: regarding plastics with added flame retardants - these *“should be kept out of the recycled material flows”*

* Lieberwirth, H.; Krampitz, T. (2015): Entwicklungstendenzen für den Einsatz von Leichtbauwerkstoffen im Fahrzeugbau und Auswirkungen auf das Recycling. In: Recycling und Rohstoffe (Band 8).

Table: Average composition of an ELV in 2015 in France according to ADEME (Monier et al. 2017)

Type of polymer	Share in vehicles
Polypropylene (PP) - other parts	4.4%
ABS, PVC, PC, PMMA, PS, etc.	2.2%
Polyurethane foam	2.0%
Textiles, other	1.7%
Other rubber compounds	1.1%
Polypropylene (PP) - bumpers	1.1%
Polyamides (PA)	1.0%
Polyethylene (PE) - fuel tanks	0.8%
Polyethylene (PE) - other parts	0.5%
Total	14.8%



Restriction of hazardous substances - Risk of additives in plastics.

Global Automotive Declarable Substance List (GADSL): over 20 substances categorised with flame retardant uses - most with a reporting obligation.

DecaBDE prohibited flameretardant (REACH, PoPS)

Additives applied in plastics can be a **risk to ELV recycling:** stabilizers, plasticisers, flame retardants, etc.

Targeted consultation:

- Introduction of a harmonised chemicals inventory list suggested (NGO) to improve information flow (producer ↔ recycler) and to facilitate EoL waste management. Should require a list of all substances used to improve safe dismantling of the problematic ones (i.e. PVC, PU, batteries, ABS, etc.). A few additional stakeholders referred to the need for an inventory.
- This could be done through adjusting Art. 8 to ensure information flow (Swedish national administration).



Restriction of hazardous substances - Risk of additives in plastics.

Open public consultation

- Proper handling of hazardous chemicals for success and sustainability of circular economy. In ELVs, hazardous chemicals need special attention. For example brominated flame retardants in plastics - recycling targets for plastics should not be set without fully knowledge on material content. (Chemsec)

Targeted consultation

- The removal of specific materials from the value chain should be considered to ensure that environmental risks are eliminated, especially in relation to the increasing list of POPs (EPR organisation).



Material specific requirements: Glass

1. Glass represents 3% of the ELV materials (~250 000 tonnes p.a. *)
2. Only a minority of ATFs separate glass as the effort is not compensated by revenues from glass recyclers. Effort is estimated for 5€/ELV.
3. Glass recyclers confirm the technical feasibility of glass recycling from ELVs (100% recycling of glass from repair of vehicle windows)**
4. Glass is in most cases directed to the shredder heavy fraction (SHF). In best case used for construction purposes or for backfilling (included in the recycling definition) → see separate discussion.

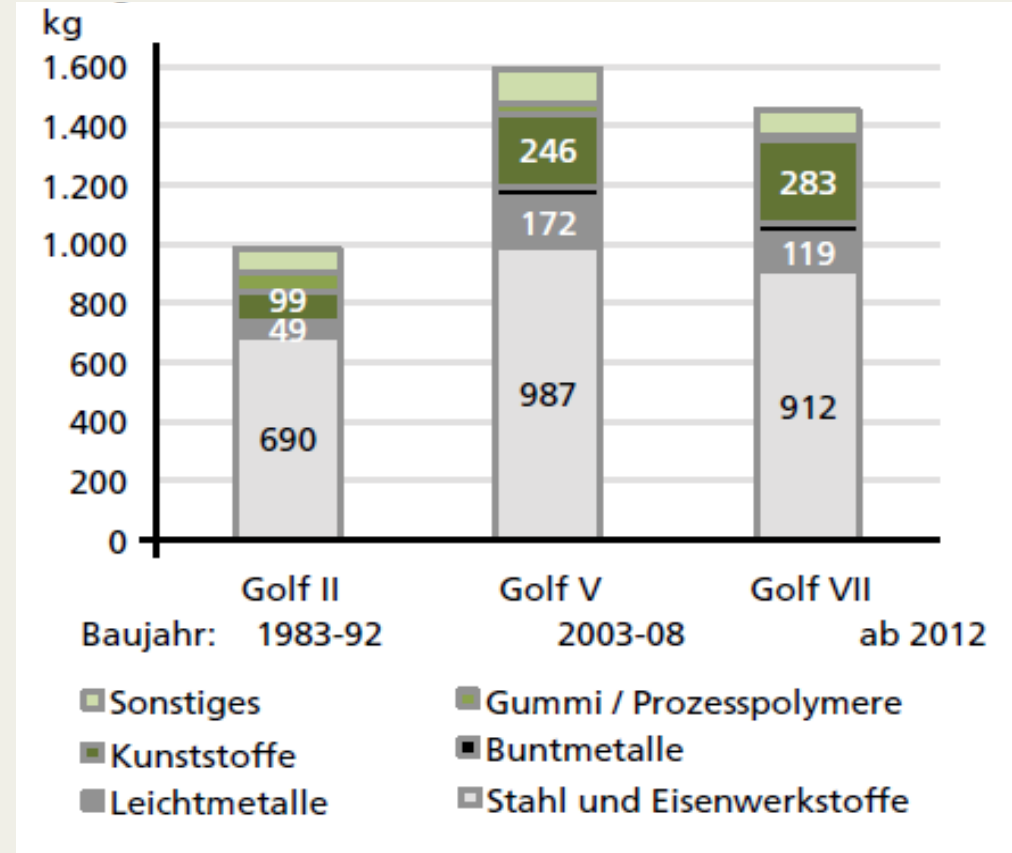
* representing +/- 10% of the European float glass resp. insulation glass production, Source: Bartels (2016) see below

** Source: Bartels, Pieter (2016):ELV glass: Re-cycling or Re-recovery? 16th International Automobile Recycling Congress IARC 2016. FERVER. Berlin, Germany, 15.03.2016



Material specific requirements: Plastics

1. Plastic content is increasing from Golf II (10%) to 15.3% for the Golf V and to 19.5% for the Golf VII*.
2. Only a minority of ATFs separate (large) plastic parts as the effort is not compensated by revenues from plastic recyclers.
3. Paint and fillers are problematic for recycling of (PP) bumpers (1.1% of ELVs**)
4. Fuel residues cause odour problems when recycling the (PE) fuel tank (0.8% of ELVs**)



* Lieberwirth, H.; Krampitz, T. (2015): Entwicklungstendenzen für den Einsatz von Leichtbauwerkstoffen im Fahrzeugbau und Auswirkungen auf das Recycling. In: Recycling und Rohstoffe (Band 8).

** Source: Monier, V.; Salès, K.; Lucet, L.; Benhallam, R. (2017): Annual Report End-of life vehicles 2015. Annual Report of the End-of-life vehicle sector observatory - 2015. France.



Material specific requirements: metal components Cu, Al, Mg

1. ELV-D: Annex I, Paragraph (4) ... – removal of metal components containing copper, aluminum and magnesium if these metals are not segregated in the shredding process,
2. The share of non ferrous metals in ELVs is about 4% + 0,5% catalytic converters + lead from the P-acid batteries (the last two are already separated)*
3. New study, recommending separation of main wiring harnesses, on the share of non-ferrous metals captures after shredding to be assessed**.

* Monier et. al.(2017): Annual Report of the End-of-life vehicle sector observatory - 2015. France.

** Sander et al. (2020): Evaluierung und Fortschreibung der Methodik zur Ermittlung der Altfahrzeugverwertungsquoten durch Schredderversuche unter der EG-Altfahrzeugrichtlinie 2000/53/EG. Abschlussbericht. Umweltbundesamt, Germany. Dessau-Roßlau (TEXTE, 15/2020).

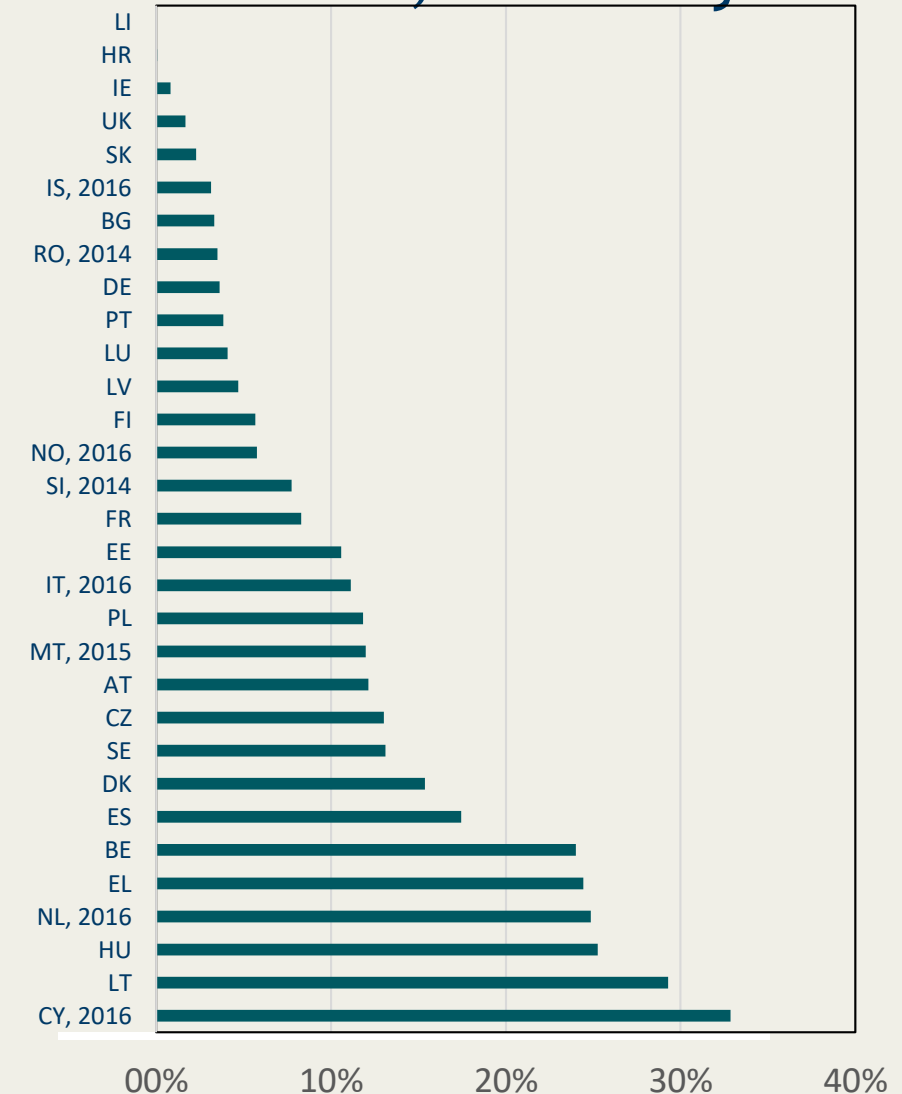


Effectiveness

Share of reuse, compared to the total volume of reuse, recovery and disposal

Com Dec 2005/293/EC requires Member States to report on of re-use. While it is apparently possible to report on reuse the ELV Directive does not establish a target for reuse, the highest level of the waste hierarchy according to the WFD.

Reuse refers to different sources: Some Member States apply the 'metal content assumption' method and the reuse is reported based on declarations from the ATFs; Other MS apply the subtraction method described in note 4 to table 4 of the Commission Decision 2005/293/EC.



- Hazardous and specific substances

- Anything you don't agree with?
- Anything you think is missing?
- Any data / input you can provide to improve our analysis?
- SLI.do poll



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Efficiency



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Who bears the implementation costs of the Directive?

Assumption of the producers:

☺ Producers established IDIS.
(IDIS = International Dismantling Information System)

ATFs and shredder plants can cover their expenses with income from reuse and recycling.

Cost / revenues for ATFs / shredder:

Highly dependent on revenues for reuse of parts and on steel price. Economic interest to avoid any obligation economically not viable.

Authorities in charge for inspections of domestic facilities:

- ☹ High costs occur for inspections (ATFs and also Garages and DIY) ensuring
 - a) minimum environmental standard,
 - b) current (and future) separation standard for Circular Economy.



- **Costs of ELV treatment**

- 6.5 million ELVs at €200 each (payment to last owners) = €1.3 billion
- ATF and shredder operating costs, plus disposal costs
- Estimate of €4-8 billion- needs to be recovered/exceeded by revenues from reusable components and recyclables.
- French study (2015) on cost of ATFs - concluded **average** situation for ATFs is not profitable, for shredders average profit is negligible

- **Incomes**

- Some components profitable to remove, others are not
- Positive value - batteries, catalysts, engines, gearboxes
- Negative - air bags, liquids (oil. cooling etc.) , tyres, plastic, glass
- Mixed - electronics



- **Administrative burdens**
 - Overlap / duplication with the Batteries Directive was raised by several - covered elsewhere
 - Call for more online reporting - varies by MS
 - Digitising the de registration process was also suggested.
 - Calls for better harmonisation between MSs on CoDs and vehicle deregistration (covered elsewhere)
 - One mention of vehicles outside scope, so MSs having to draft their own approach to these.



Benefits of substance restriction - removal of hazardous substances

- Restrictions came into force on 1 July 2003;

Substance	Remaining exemptions	Data on amounts	Comments
Cadmium	(Film pastes - 2006) (Batteries - 2008)		Higher efficiency of Li-Ion batteries probably driver;
Mercury	(Discharge lamps in headlights and displays - 2012)		Phase-out preceded EEE phase-out, possibly also related to light quality
Hexavalent Chromium	(Corrosion protection, general - 2008); Adsorption Refrigerators until 2019/2025	2g per vehicle; 1.6 to 4.8g per vehicle; 520 Kg for Domestic;	Substitution also driven by other legislation (RoHS, REACH)
Lead	Alloys Cu, Fe, Al, bearings & bushes Batteries Solders	Batteries: 9-13 kg of lead or ca. 666 thousand tonnes in total; Solders: 6.5-26.3 tonnes in total	The total number of exemptions still valid has decreased significantly, with the scope of exempted applications becoming more specific in many cases;

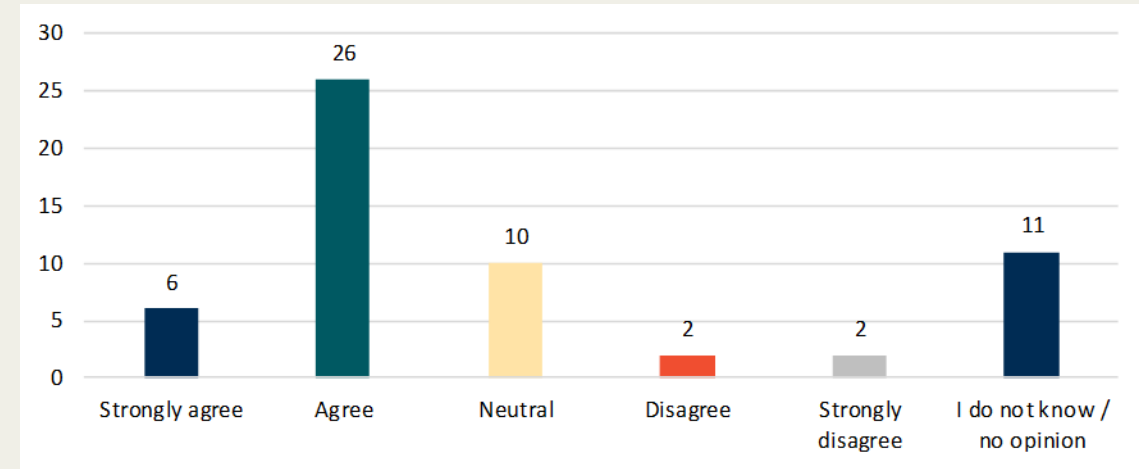
Benefits of substance restriction - removal of hazardous substances

Targeted Consultation

- The reduction of hazardous substances needs to be better monitored.
- As to the amount of lead in ELVs, high mass fractions of Pb (up to 0.2%, equivalent to around 400g per ELV) were measured in shredder light fraction. This is explained to represent lead used in ELVs aside from lead in batteries removed prior to shredding. (Swiss researcher)



- Views on overall costs vs. benefits of the Directive
 - Benefits of substance restriction, lead, cadmium, mercury.
 - Lack of data but responses suggest perception that ATFs are making money but manufacturers only see costs, but there are variations in opinion.
 - Benefits are ‘public goods’, which are not apparent to individual stakeholders.



- 67%, of national governments. 88% of business associations agree
- 50% of company respondents are neutral



Compliance costs

Data collection				
Stakeholder Type	Country of Origin	Hours per year	Cost per hour (€)	Other costs (€ per year) (e.g. software or training)
EU Recycling Association (ATFs)		100-200 depending on the country	12-60 depending on the country	100.000
Recycler/ATF	3 MSs	100 - 4,000	6-120	0 - 500,000
National government/administration	4	16-5,000	10 - 35	10 - 7,900
Regional government/administration	3	145 - 10,600	33 - 5,000	123 - 1,100

Reporting				
Stakeholder Type	Country of Origin	Hours per year	Cost per hour (€)	Other costs (€ per year) (e.g. software or training)
EU Recycling Association (ATF)		10-40 depending on the country	12-60 depending on the country	-
Recyclers (ATFs)	6 (3 MSs)	50 - 4,000	5 - 1200	50 - 500,000
National government/administration	5	8 - 5,000	10 - 35	10 - 6,700
Regional government/administration	4 (3 MSs)	5 - 10,600	30 - 2,300	123 - 1100

Monitoring				
Stakeholder Type	Country of Origin	Hours per year	Cost per hour (€)	Other costs (€ per year) (e.g. software or training)
EU Recycling Association (ATFs)		20-40 depending on the country	11-60 depending on the country	-
Recyclers (ATFs)	5 (3 MSs)	200 - 4,800	5 - 120	150 - 500,000
National government/administration	4	300 - 2,500	10 - 35	5
Regional government/administration	5 (4 MSs)	5 - 10,600	30 - 123	3 - 10.200

Technical compliance				
Stakeholder Type	Country of Origin	Hours per year	Cost per hour (€)	Other costs (€ per year) (e.g. software or training)
EU Recycling Association (ATFs)		10,000 variable depending on the country	14-35 depending on the country	-
Recyclers (ATFs)	5 (3 MSs)	100 - 20,000	5 - 100	100 - 500,000
National government/administration	3	300 - 4,000	10 - 35	0 - 20
Regional government/administration	5 (4 MSs)	145 - 10,600	33 - 134	20 - 1,100

- Very large ranges - input needed to make this useable



- Costs and benefits
 - Anything you don't agree with?
 - Anything you think is missing?
 - Any data / input you can provide to improve our analysis?
 - SLI.do poll



- Request for data - now or as follow on
- Who bears direct costs?
 - ATFs, Local and national government, others?
- What are the cost components? (staff and equipment)
 - Reporting (to meet the Directive's requirements)
 - Data collection (additional requirements)
 - Monitoring (on an ongoing basis)
 - Technical compliance (e.g. clean up equipment)
- Is data on these costs available?



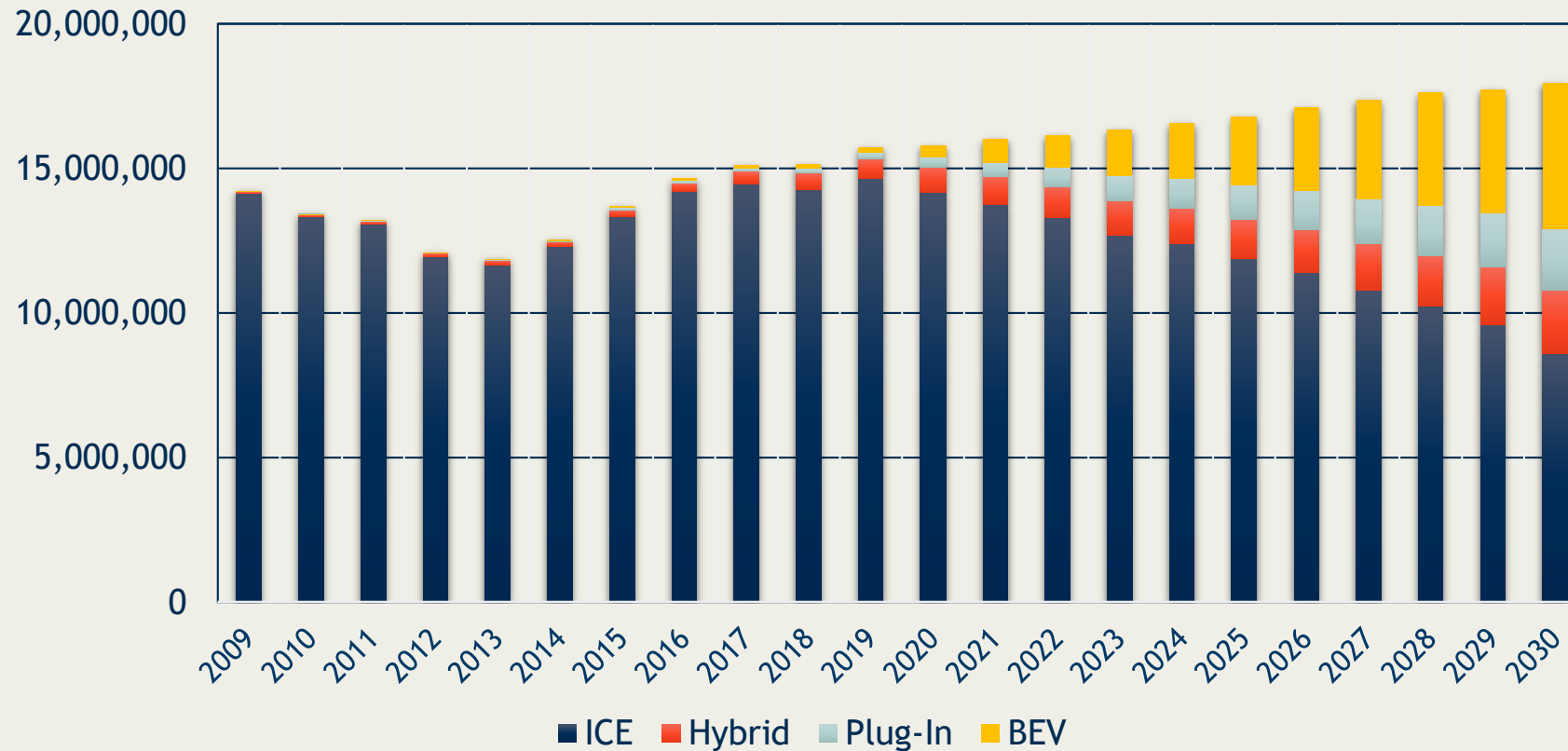
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Relevance



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Development of passenger car sales in the EU



Source:
Model for passenger cars sales, Oeko-Institut e.V.



ICE = Internal Combustion Engine
BEV = Battery Electric Vehicle

Effects of EV market penetration on cost and revenues of ATFs

Less Pb-acid batteries	less revenues: 5 - 10 € per ELV
Less catalyst	Less revenues: 40 - 80 € per ELV
Less hazardous liquids	Less cost: 5 - 10 € per ELV
More non ferrous metals (Al, Cu, ..)	Potential for more revenues from recycling (?) depending on effort (duration) for dismantling (→ shredder/ PST)
Power electronics (high voltage)	Potential for valuable spare parts
Li-ion traction battery	Higher effort for dismantling (0,5 - 1 h per battery) + safe storage. Dismantlers at risk to bear cost for transport to recyclers* Potential revenue when used as spare parts or for 2 nd life (?) Unknown potential for revenues from recycling (?)

→ Total economic effect cannot be assessed, economic risks apply



*according to current battery legislation

Effects of EV market: Relation between ELV-D and Batteries Directive

- ELV-D: Batteries should be dismantled. Recycling of batteries is accounted for the recycling targets of ELVs.
- Batteries-D:
 - Recycling targets: Li-ion: 50%.
 - Settings for EPR (industrial batteries): ‘Producers not shall not refuse to take back waste industrial batteries and accumulators from end-users, regardless of chemical composition and origin.’



Effects of EV market penetration on Circular Economy

- EV components such as batteries* power electronics, electric motor** have more different chemical elements, incl. critical raw materials, which are difficult to recycle and risk being lost via current dismantling and shredding procedures.
 - More low voltage electronic components is a general trend for both ICE vehicle and EV with the same effect.
- ELV recycling target (and Directive 2005/64/EC on the type-approval of motor vehicles regarding their reusability) are not prepared to address such specific materials.

*Recycling (and - in the future - 2nd life) of batteries is addressed by the Batteries Directive.

**e.g. containing permanent magnets required for synchronous motors contain rare earths such as neodymium, praseodymium, terbium and dysprosium, which are among the critical raw materials



- Need to adjust the Directive in anticipation of other emerging trends
 - Increased use of plastics, lightweight materials and electronics will also increase ELV treatment costs.
 - Suggestions that separation before shredding should be enforced (e.g. of carbon fibre and large plastics)
 - Impact on 95% recovery target - harder with lower weight.
 - Electronic components could be a new income stream
 - Longer life vehicles and more car sharing could reduce ELV numbers
 - Questions have been raised about the role of vehicle insurance companies (as last owners of damaged beyond repair vehicles).



- **Vehicle types under the scope of the ELV Directive.**
 - Include lorries (10% of vehicles)? Motorcycles (6.5%) others (buses)?
 - 60% say yes as comparable documents and waste streams .
 - Motorcycles would need phasing in, originally excluded on small scale and higher (compared to cars) presence of SMEs in the sector.
 - Trucks and buses are exported (pre end of life) more and have separate engine, chassis and body manufacturers.
 - Relatively low volume of other vehicles (also applies to trains and aircraft, ships not considered) means much lower scale of environmental risks - costs vs. benefits would need careful consideration



- Anything you don't agree with?
- Anything you think is missing?
- Any data / input you can provide to improve our analysis?
- SLI.do poll





EU Added Value and Coherence



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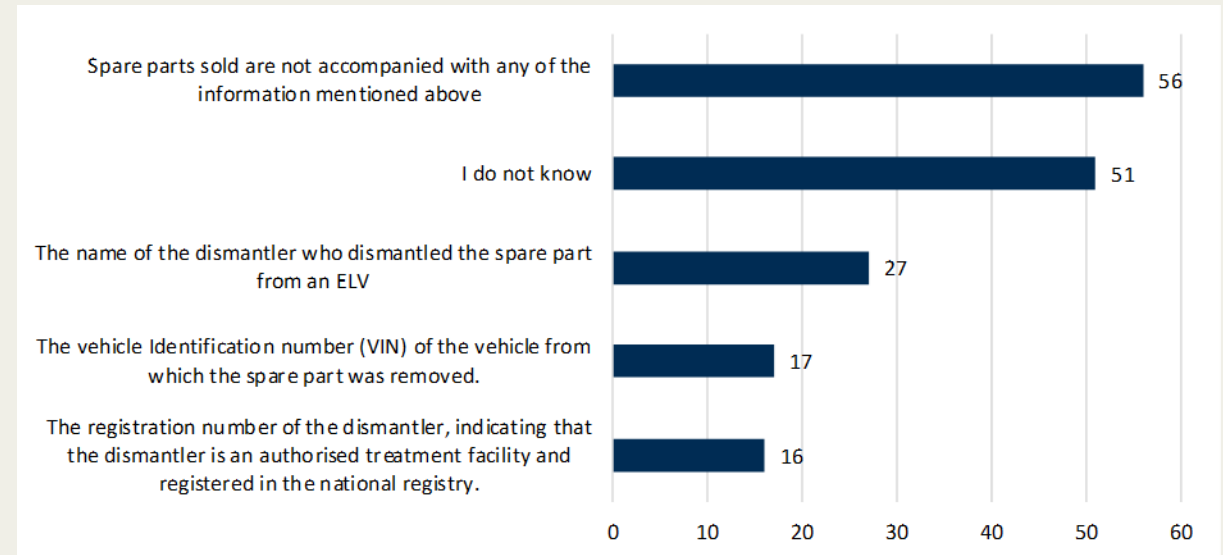
- Benefit of the harmonised approach for the EU vs. individual Member State actions,
 - Pre ELVd 10 MSs had regulations/voluntary agreements
 - Benefits of substance removal - also accrue beyond the EU market
- Some ‘level playing field’ concerns
 - Lack of detail required in reporting of recycling targets (e.g. PST capacity)
 - Inconsistent vehicle registration/deregistration procedures between MSs
 - ELV collection reporting (should be 100%) not compulsory
- Survey results
 - 44% think it has added value compared to MS action alone, 25% the same.
 - Without the Directive most think there would be more uncontrolled disposal, less recycling and less investment in ATFs



EU added value

- ‘Level playing field’ - inspections and internet sale of parts
 - No compulsory levels of ATF inspections
 - Non ATFs removing and selling parts (including via internet)
 - Public consultation - majority responded that information on the source or parts removed (and sold) from ELVs is missing
 - Internet sales - DG Connect
 - Second hand vehicles (and parts) - consumer protection - DG Sante
 - Some MSs have agreed procedures with internet sellers

Please indicate if spare parts purchased via the internet in your country are accompanied with the following information



Added value of substance removal beyond the EU

- Though substance restrictions only apply to vehicles placed on the EU market, the progress achieved here is often implemented in vehicles marketed outside the EU → benefits of substance restriction exceed those achieved within the EU alone.

Targeted consultation:

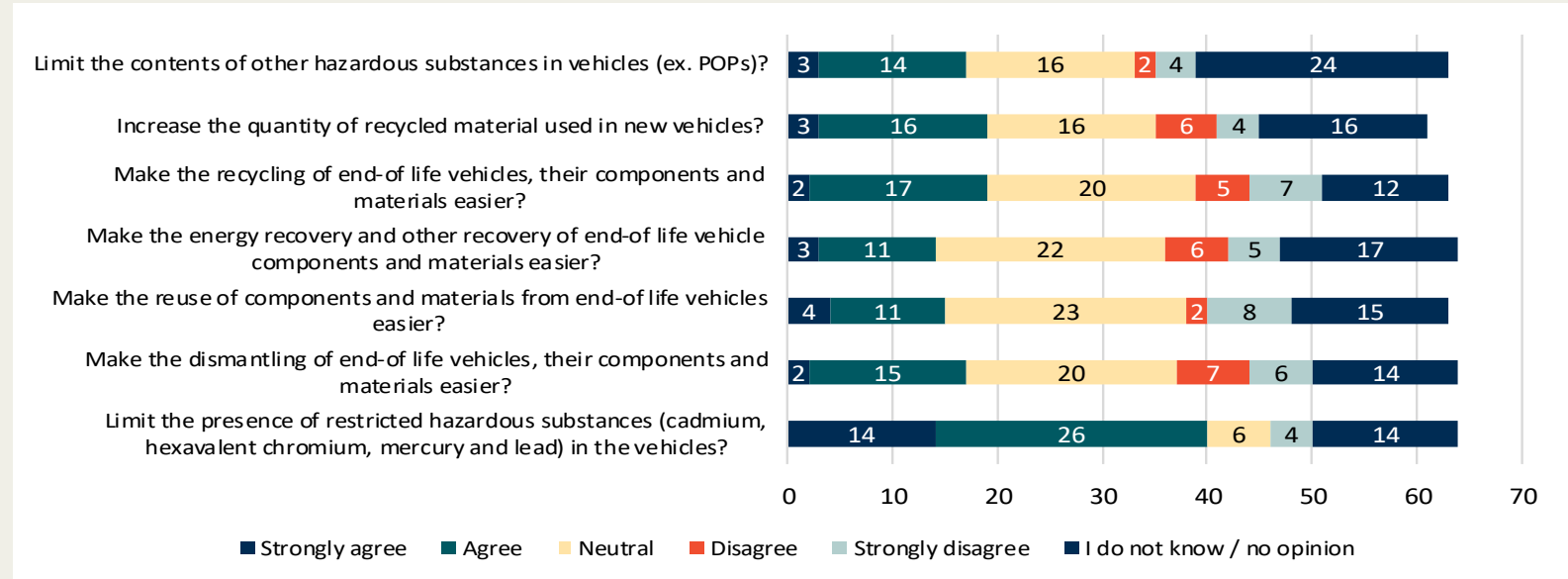
The restrictions have affected the composition of materials used in the motorcycle sector because the components used in the two industries are often the same.



Impact on innovation - removal of hazardous substances

Targeted consultation:

- Stakeholders agree that ELV influenced the use of the four heavy metals and to some degree also other hazardous substances in vehicles (particularly in new technologies and materials).
- Agreement that the recycling and use of secondary material from ELV origin has become easier. This can be attributed in part to hazardous substance removal.



ELV only had an impact on the substitution of hazardous substances in car design.(1)



- **Impacts on sector competitiveness**

- No literature to suggest the competitiveness of the EU car sector is negatively impacted
- Lack of responses to the survey.
- ELV directive imposes more obligations on ATFs than elsewhere in the world
- Concern raised about uncertainty for battery and vehicle manufacturers (due to concerns on the timetable for the exemption for lead batteries) .



ELV-D / Circular Economy / European single market

ELV-D Article 4(1): Member States shall encourage the manufacturers to limit the use of hazardous substances, to design new vehicles for dismantling, reuse and recovery and in particular for recycling as to integrate an increasing quantity of recycled materials in vehicles.

For Member States it is difficult/ impossible to establish national requirement without disturbing the single market. The only national measure is support in research.

→ Need for harmonised European approach e.g. addressing a minimum level of recycled content (e.g. for plastics),



Different definitions in ELV-D / Waste Framework Directive

- WFD: distinguishes between '**preparation for re-use**' and '**re-use**'.
- ELV-D: sets 'its own' definition only for **re-use**: dismantled components of end-of-life vehicles for re-use are not considered as waste. The ELV-D approach is proving to be beneficial for the ELV sector.
- The definition for **recycling** differs between the ELV-D and the WFD:
 - ELV-D: allows considering backfilling for recycling.
 - WFD: backfilling is not considered as recycling.



Relation ELV-D / Basel Convention & Waste Shipment Regulation

- ELVs are classified as hazardous: ban on export ELVs to non-OECD
- Difficult to distinguish used vehicles from ELVs
- CORRESPONDENTS' GUIDELINES No 9: criteria for case by case decisions:
 - Voluntary
 - Not possible to custom services to assess each single used vehicle whether it is waste or not
 - More general approach (e.g. average age, valid roadworthiness test) in discussion



Coherence of ELV with the Batteries Directive - Restrictions

The BD and ELV have overlaps in relation to substance restriction, but are for the most part coherent:

The BD refers to cadmium, lead and mercury as hazardous substances. BD prohibitions exist for Hg (total ban) and for Cd (most portable batteries). Recital 30 of the BD specifies that Automotive and industrial batteries used in vehicles need to meet the ELV requirements, particularly Article 4 → substance restrictions of ELV apply to such batteries.

Exemption 5b of Annex II of ELV refers to lead in batteries and is still valid for lead acid batteries in most vehicles .

Exemption 16 for cadmium in batteries of electric vehicles has expired (2008) but remains valid for spare parts.

As portable batteries, possibly used in keys or appliances used in vehicles, these would be covered through the BD itself if considered EEE. If these articles are however in scope of ELV, Recital 30 would not apply as it does not mention portable batteries.



Coherence of ELV with the Batteries Directive - Restrictions

Targeted consultation

Multiple views were expressed on the need to remove ELV from the BD in relation to substance restrictions:

- Some stakeholders mentioned that lead batteries should be removed from the scope of ELV but did not refer to the substance restrictions. One of them specifying that hazardous substances in battery manufacturing and recycling is well addressed through OHS, environmental legislation and site permits.

A batteries-related association suggested automotive batteries be removed from ELVD and solely addressed by BD, also explaining that ELV duplicates the BD and REACH and is not coherent with the principles used in RoHS Directive (related to substance restriction).

Overlap between ELV, BD, REACH; OHS. BD refers to use of hazardous substances REACH and OHS to exposure risk management. Instead of pushing substitution appropriate risk management options (vehicle producer) should be defined.



Coherence of ELV with RoHS and WEEE - ‘removable components;

WEEE and RoHS exclude vehicles and equipment which is specifically designed, and is to be installed in vehicles provided that it can fulfil its function only if it is part of the vehicle and cannot be replaced with other equipment.

The EC interprets this to mean “*that if a device is designed specifically for use in a vehicle (e.g. a car radio), the ELV applies. If a device is not specifically designed for use in a vehicle, that device is covered by the RoHS Directive*”.
COM FAQ and guidance - ELV and WEEE - not legally binding

However, some MS see this differently. at least two consider keys under WEEE

The legal text of the WEEE and RoHS exclusion also suggests that the case differs, depending on the equipment:

Car keys, vehicle radios and navigation systems not originally installed fulfill most of these criteria but differ in relation to being fixed in the vehicle - car keys and navigation systems are not fixed.

Where consumers dispose of such articles with WEEE, the possible contents the additional substances restricted under RoHS may affect EEE waste management;



Coherence of ELV with RoHS and WEEE

RoHS restricts substances in electrical and electronic equipment (EEE). Aside from the four heavy metals, it restricts 2 groups of brominated flame retardants and 4 phthalates and has a process for assessing additional substances for future restrictions.

WEEE addresses the waste management of EEE at end-of-life. Similarly to ELV, it also requires the removal of certain components prior to further treatment (depollution). Some of the components addressed by WEEE in this respect are also used in vehicles but not addressed by ELV: printed circuit boards and plastic containing brominated flame retardants.

Various stakeholders addressed the need to restrict further substances as detailed in prior slides.

An EPR organisation mentioned issues with the WEEE recast from 2018, which causes a high burden for car importers to work out the electronics in these vehicles, as it is not clear if these are regulated by the WEEE or the ELV Directive.



Coherence of ELV with Stockholm Convention (PoPS)

The Convention requires eliminating the production, use, import and export of chemicals specified in its annexes.

As the Convention applies to vehicles it can be considered to overlap in terms of also restricting substances in vehicles.

However, none of the PoPs listed in the convention are addressed under ELV → no contradictions in this sense.

Ban on **decabromodiphenyl ether (DecaBDE)** - also under REACH) affected the automotive sector most significantly:

- Automotive associations made efforts in 2016 to ensure DecaBDE not present in vehicles after mid-2018 (ACEA et al. 2016).

- There are concerns that the recycling of a significant share of the shredder light fraction will need to be ceased: the content of DecaBDE may exceed the threshold mentioned in Annex IV of the POP Regulation. Currently 1000 mg/kg for the sum of diverse BDEs (including DecaBDE) is specified and the EC shall review the possibility to reduce to 500 mg/kg by 2021.
- A study concluded that a threshold of 10 mg/kg would jeopardise the recycling targets of the ELV Directive. (Mehlhart et al. 2018). Disposal of such fractions to landfill is also prohibited.



Coherence of ELV with Stockholm Convention (PoPS)

Targeted consultation

- There are no contradiction between this regulation and the ELV Directive. However, a strategy designed for ELV recyclers on how to comply with both POP separation and destruction and the recycling targets for ELVs would be welcomed. (Swedish national government body)
- There are not enough tools to cope with POP-regulation regarding the ELV recycling (German stakeholder, regional government).
- Three stakeholders, do not consider ELV coherent with SC as it does not consider POPs or other SVHCs aside from heavy metals. (2 business associations; 1 regional government)
- One recycling business association highlighted possible inconsistency in Annex II regarding for example POPs in plastics, in a few cases where exemptions cover spare parts. This could create a legacy issue, as ELVs containing those spare parts will have to be treated in ELV recycling facilities having to comply with different ppm thresholds. (Recycling business association)



Coherence of ELV with REACH Regulation

Targeted consultation

- The focus of ELV and REACH on the use of chemical compounds is different (upstream vs. downstream) and the scope of REACH is much wider. (a few stakeholders)
- Business association from Brussels would like to see the divergence addressed by the EC in order to avoid the need of double compliance for companies.
- It should be investigated whether additional hazardous substances need to be restricted in vehicles. (Swedish national government body)
- REACH regulation is better at assessing the socio-economic benefits of chemical substitution compared to costs to the user. (UK Company)
- The restriction proposal for lead under REACH seems to be a double regulation. (Manufacturer company and 2 business associations)



- Anything you don't agree with?
- Anything you think is missing?
- Any data / input you can provide to improve our analysis?
- SLI.do poll





Summary of the strengths and weaknesses identified with the Directive and implementation process



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- Examples only - full minutes to be provided
- Effectiveness
 - More formalised and standardised approach is a benefit
 - Increase in capacity (or at least recorded capacity) is positive
 - Best practice on ELV vs used - NL, Italy, Ireland {is this showing up in the data?}
 - Inconsistency between MSs on implementation and enforcement
- Areas for potential improvement - Effectiveness
 - Registration procedures - need to be better standardised
 - Waste Shipments - cross over with ELVd (export of ELVs as used)
 - Pre shredder - Market demand (for recyclate) driven?)
 - Digitalisation would help consistency between MSs
 - On substances a risk based approach {like REACH} would improve effectiveness
 - Definitions of recycling - should stick with WFD - i.e. no backfilling



- Examples only - full minutes to be provided
- Efficiency
 - Incomes of ATFs are affected by metal prices - relatively consistent across MSs
 - Current low value due to ASR disposal cost problem
 - Older cars in some MSs - have lower value from parts reuse
- Areas for potential improvement - Efficiency
 - Costs vary - ranges may be the best available
 - Car manufacturers do incur costs (take back schemes, R+D, compliance assurance) may be hard to separate out
 - Differences in reporting {between MSs} has an impact on costs - more prescriptive reporting brings higher costs
 - Costs to EPR organisations
 - Formal inclusion of insurance companies in the Directive - needs consideration



- Examples only - full minutes to be provided
- Relevance
 - Growth in volume of plastics - have technical solutions, the problem is market demand (for the recycle)
 - Many ATFs already take motorcycles, trucks etc. Could they be relatively easily added?
- Areas for potential improvement / gaps - Relevance
 - E scooters - are they picked up? Issue in treating the batteries (Li-ion fires when transporting, storing and recycling). WEEE coverage of non “type approved”
 - Need data on the scale and current destination of the vehicle types that aren't picked up
 - Is adding vehicles a distraction? Minor point in comparison
 - ELV implication on vehicle design (if added to the Directive) - would be a more significant change than the recycling



- Examples only - full minutes to be provided
- Strengths EU added value
 - Internet sales is an important issue - US approach, cant sell unless you a commercial org.

- Areas for potential improvement / gaps - EU added value
 - Missing data on PST capacity (EU wide)
 - Include some positive data - how many tonnes recovered etc.
 - Not all “lightweight is bad” e.g. Aluminium content eases recycling



- Examples only - full minutes to be provided
- Coherence
 - BDPE in plastic - there are losses of useful material when sorted post shredder (to collect BDPE fraction), but this is hard to avoid
 - Key issue - to focus on - separating ELVs from used vehicles
- Areas for potential improvement / gaps - Coherence
 - Battery, transport is regulated in other places
 - Need to be careful on definitions
 - WFD - coherence with EPR requirements (Art 8a)



- Areas / issues where we would like more data / input
 - Costs
 - Data on other vehicles - out of current scope
- Anything missing?





Conclusions and next steps



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- Next steps
 - Circulate minutes
 - Request input - within 2 weeks
 - Internal reporting
 - Commission publish their evaluation





Thank you for your attention, please contact us for more information

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