EEB comments on report produced by GHK and BIOIS (June 2006) to investigate the costs and benefits of the potential 2015 targets for re-use, recycling and recovery of End-of-life vehicles

20 July 2006

Benefits of the End of Life Vehicles Directive and the costs and benefits of a revision of the 2015 targets

1. After more than 25 years of discussion about the unsolved problem of disposal of shredder light fraction the study highlights certain promising developments in post shredder technologies; Initiated and developed by car manufacturers new installations for the treatment of SLF (Shredder light fraction) went online and some more are projected which are capable to enable the achievement of the 2015's recycling and recovery targets.
This development stands at the end of a long debate about the best possible drivers to solve the ELV problem and certain unsuccessful trials with other instruments like national approaches and "voluntary" self binding agreements of the car industry (e.g. ARGE Altauto in Germany and the German ELV law). After all the ELV Directive was the driver to initiate a positive turn.

However, the study also shows that the new technical developments did not yet reach sufficient stability and diffusion into the European recycling market. Further support is still necessary and changing the instruments of the ELV Directive could endanger planning reliability and slow down or even stop this development.

The removal of presently existing drivers (see annex 2 for manufacturers recognition of the effect of the ELV directive as a driver to find recycling solutions) would not be justifiable especially because the study stresses that the cost for treatment and recovery will not rise when the 2015's targets have to be reached. With regard to the still existing possibility of landfilling SLF it seems to be furthermore sensible to think about the implementation of additional support to ensure stability of development of alternatives, in particular for material recycling. The continuity provided by maintaining the targets is crucial. Pilot projects and experiments with various options for material recycling (pre-shredding) are beginning to emerge. See notes on an example of new developments in Portugal annex 1. Thus we fear the study is based on a too static understanding about development of pre-shredding material recycling options.

2. With regard to the general environmental assessment of the treatment and recovery of fractions from ELV there seem to be some inconsistencies in the study where the new developments in post shredder technologies are not taken into account adequately. Some general statements about the environmental performance of certain processes are for example not set in the context of real life ELV treatment in a sufficient way. This leads to a result where for example on page 20 5th para the report gives the statement:

> *"As a general rule, the research has identified (although with significant exceptions) that recovery provides greater benefits when it is undertaken using cement kilns, followed by blast furnaces (where use of materials is feedstock rather than energy recovery), followed by syngas production (also feedstock use).*

This statement is not comprehensible and one gets the impression that a too much simplified approach was taken for the assessment of the environmental benefits of ELV recycling leading to a situation where the environmental benefits resulting from up to date differentiated treatments are underestimated. The basis of this statement can not be plastics from dismantling, because this would result in very high efforts/costs for a secondary fuel in cement kilns. Recovery of shredder residues where the plastics end up, if not dismantled, in a cement kiln or blast furnace is not possible without prior treatment[1]/[2].

If one compares material recycling of plastics with energy recovery from plastics in a cement kiln, the only reliable scenario is a differentiated scenario including post shredder technologies. In addition one has to take into account that using the shredder light fraction without prior treatment in cement kilns would make it impossible to recycle the non ferrous metals contained in the untreated SLF. But recycling of these non ferrous metals brings relatively high environmental benefits [see for example section 5 of the VWSicon LCA study].

Thus, a simple comparison of the environmental benefits for 1 kg of e.g. PP in the different disposal routes (as e.g. done in the Fraunhofer Study, which applies a general approach not specifically applicable to the ELV situation) can not be seen as sufficient.[3]

3. Some inconsistencies seem to be in the study. For example it is said on page 20 6th para:

> *"This result means that the environmental impact of higher rates of recovery of ELV fractions is uncertain because of the strong variability of the environmental profiles of plastic resins for the various recovery options."*

Obviously this statement does not take the effect of post shredder technologies into account in spite of the fact that it is described in the study and taken into account for other points (see above with regard to cost development).

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[1] With this treatment at least the chlorine content and (often) the heavy metal content (e.g. Hg) must be reduced.

[2] If at all 30% of the SLF can be used there

[3] In addition one has to take into consideration that there is still a systematic problem with the applied LCA method: As long as the substituted primary energy carrier is dirty enough it could be even better not to recycle the most valuable PA6.6 but to use it for the substitution of this "dirty" coal". Substituting this dirty coal with other primary energy carrier would be even more beneficial for the environment, but is never done. Another example of the shortcomings of the LCA approach is that the system boundaries are often set in way, that they do not reflect the specific pros of the material recycling. They also do not reflect material recycling routes that are emerging and may become established in the near future (as for the Portuguese example).

Similarly if for example plastic recyclates replace primary plastics then they can still be used for energy recovery in the next end of life phase. But this second or third life cycle can not be taken into account in the LCA. This problem is also relevant for the post shredder treatment scenario: The fibres from SLF treatment replace coal in the dewatering process for sewage sludge. This might have been taken into account in the scenarios of the study, when environmental benefits of the PST were calculated. But subsequently the fibres are incinerated and their energy content is utilised in addition to the benefit from the dewatering process. Probably this subsequent step was beyond the system boundaries of the study and probably also the case that the dewatered sewage sludge with the fibres replaces coal in a cement kiln.

It could have been expected that the study highlights those shortcomings and stresses their relevance with regard to the fact that the support of such LCA results for political decision making is limited.

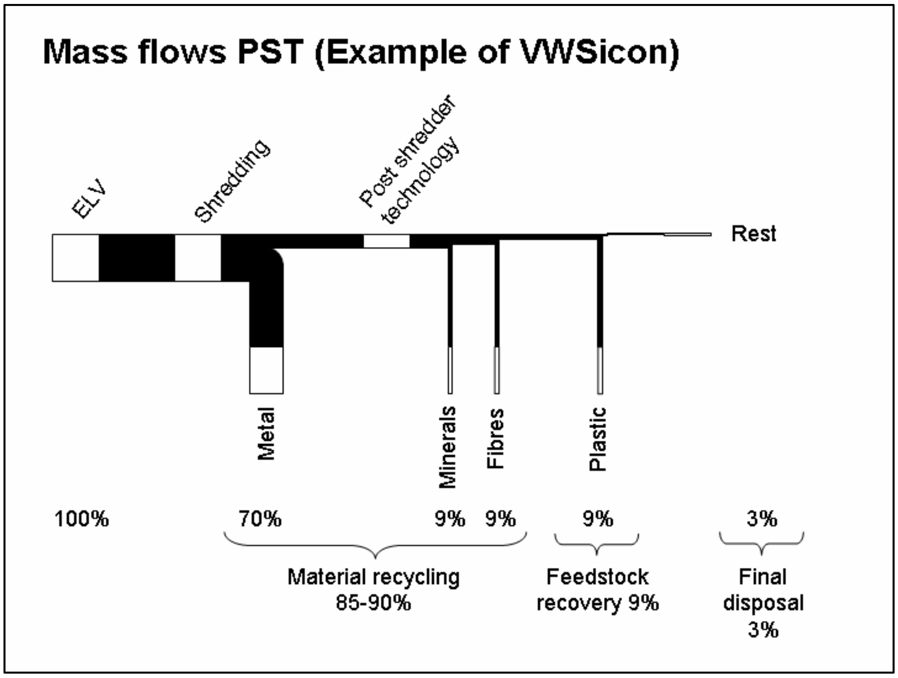


Figure1: Mass flows of ELV treatment including the VWSicon process

The VWSicon process, combined with subsequent recycling processes, achieve the 2015 recycling rates without taking the use of plastics from SLF into account. Thus, in this case, the environmental profile of plastics is not relevant (see figure below, based on pers. com. D. Goldmann and S. Krinke).

4. The study states that certain relevant LCA related data for plastics have not been available for the assessment. With the background of the different content of energy from production (see figure below) we expected more differentiated conclusions for the development of political activities and/or instruments of the Directive.

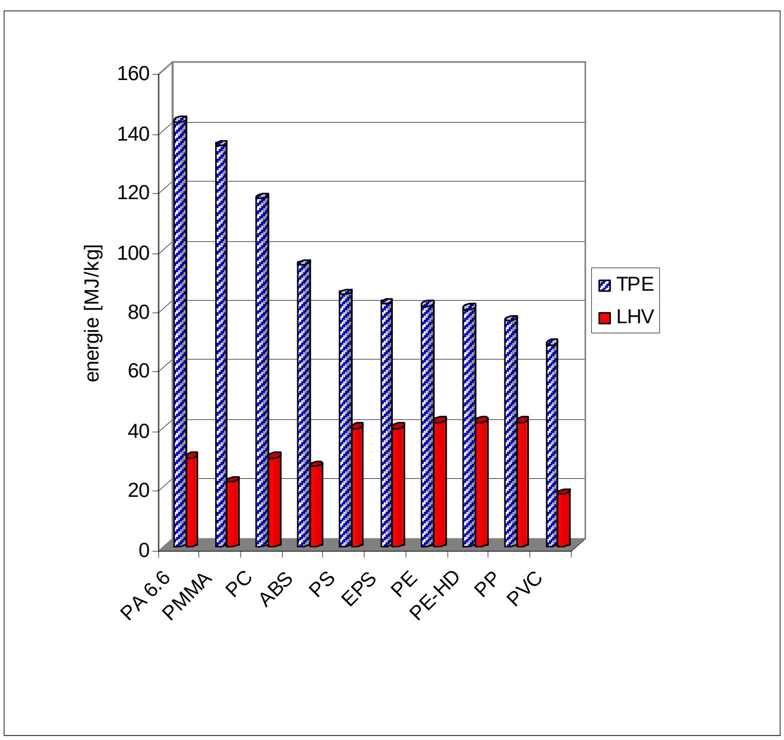


Figure 2: Total production Energy (TPH) and lower calorific value (LHV of different polymers

5. The study uses in general landfilling of shredder residues as a basis for the calculation/ comparison of costs and environmental benefits. The conclusions and recommendations of the study are strongly influenced by this general assessment line. While a relevant part of the SLF occurs in Member States, where landfilling of SLF is not allowed (Germany) a differentiated conclusion with regard to such a situation is missing.

6. The study is partly based on a too static understanding about the performance of installations (e.g. p.12). Reaching a quota is in fact a function of efforts and technical capabilities. It is not true that the VWSicon process achieves separation rates which enable recovery of 75%. If the efforts would be reduced, the rates achieved with the same technique will be lower and when the efforts are increased, the rates will rise. The published separation rates of the VWSicon process and thus the "final disposal rate" are results of management decisions which again was probably influenced by the recycling and recovery targets of the Directive.

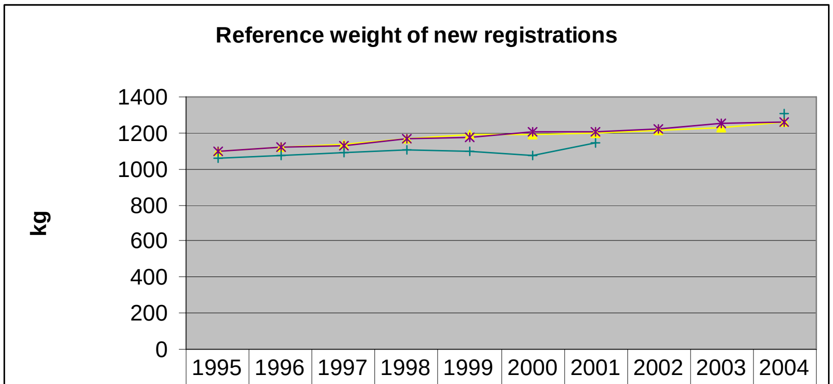
7. The issue of 'capture' and arising should perhaps be more deeply covered by the GHK assessment. The conclusions of Annex 2 – Arisings and Treatment of ELV stresses composition issues more than capture bottlenecks. It is already evident in certain cases – such as the Portuguese ones – that emerging developments on pre-shredding material recycling will potentially face questions of economic feasibility if the capture levels are not sufficient to deliver a 'critical mass' of materials. For example in Portugal the demands for proper certification to ensure that licence plates registration is cancelled is still not functioning comprehensively. This means that there are high levels of illegal treatment of ELVs. This reduces the levels of capture and thus reduces the quantities of quality arisings to generate minimum critical quantities of materials. The situation illustrates the importance of a reinforced scrutiny on enforcement and the importance of tools such as "no certification no vehicle tax cessation' approaches to provide incentives to final owners and handlers to seek proper treatment.

8. Some additional comments with regard to the question asked by the Commission:

- **"The actual weight of an ELV is estimated to be on average 1,025 kg in 2015, compared to an average weight in 2006 of 964 kg"**

While it is not required by the ELV Directive to get the actual weight of an ELV when entering the dismantling site one is required to use (and accept) other data sources and estimations. Other data sources include data about the weight of new cars.
There are different independent data bases available at the moment. According to the Commissions' data base from monitoring of CO2 emissions[4] (Com Decision 1753/2000/EC) the weight of new M1 vehicle registrations developed as follows:

[4] Other data bases like TREMOVE or COPERT might provide additional information.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ACEA	1101	1124	1139	1167	1190	1188	1198	1214	1233	1263
JAMA	1095	1121	1131	1170	1173	1205	1207	1220	1252	1263
KAMA	1057	1072	1089	1109	1096	1075	1141			1306

Figure 3: Weight of new registrations 1995 to 2004

Data basis: Monitoring of ACEA's, JAMA's and KAMA's Commitment on CO2 Emission Reduction from Passenger Cars, Joint Reports, various years

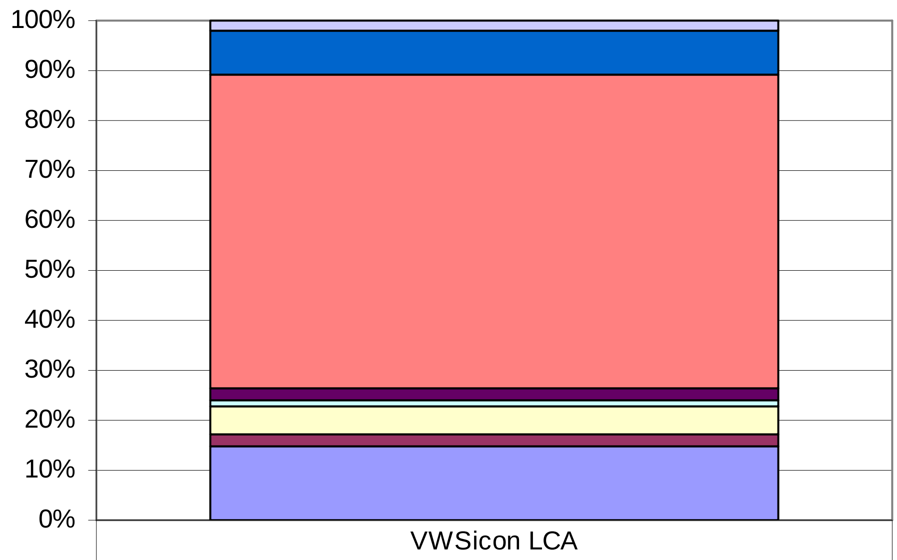
Taking into account specific aspects of "weight" according to Decision 1753/2000/EC (75kg driver and luggage, 90% filled tank plus other liquids) the expected ELV weight must be reduced accordingly.

While the "1753 database" only comprises M1 vehicles and the ELV Directive M1 and N1 vehicles the higher weight of N1 vehicles must be taken into account.

Considering other factors like the filter effect of export (the exported percentage is higher for big cars than for small cars) the shown weight is seen as an adequate estimation.

- **Average composition of an ELV in 2015 estimated to be 65% ferrous metals, 12% plastics, 9% non-ferrous metals, with the percentage of plastics and non-ferrous metals rising by a couple of percent in subsequent years.**

The VWSicon LCA study uses the following average compositions of a vehicle as a basis for the LCA.



	VWSicon LCA
Non ferrous metals II	2,08%
Non ferrous metals I	8,72%
Ferrous metals	62,74%
Fluids	2,35%
Electric, Electronic	1,18%
Others	5,58%
Polymers II	2,47%
Polymers I	14,89%

Based on the data and assumptions of the VWSicon LCA it could be expected that the ferrous metal content of a 2015 ELV is lower and the polymer content higher than in the cases used for the Commissions' study [Ökobilanz Altfahrzeug Recycling page 101 ff; Wolfsburg 2005].

However, a qualitative sensitivity analysis might show that the relevance of differences in the composition of the vehicles is not of highest relevance for the question of the appropriateness of different recycling and recovery rates.

- **The 2006 levels for recycling and recovery are achievable today without applying new techniques (with some effort to increase recycling and depollution).**

This statement is true. However, it just makes sense if costs / efforts are taken into account. If the statement is meant in a way that the levels are actually achieved in Member States, then one can agree. (see statement above, that the study is partly based on a too static understanding of “installation performance”).

- **There will continue to be a market for plastic recyclates sufficient to create demand for even 1 million tonnes of plastics in 2015, with global demand rising. Prices, dependent on oil prices, are likely to remain high (p.83)**

The capacities are depending on prices. In addition it might be sensible to take standardisation efforts as additional drivers for improving of the market into account. It can be expected that the market for plastic recyclates will be supported by some standardisation activities (see for example CEN TC249 WG11).

Annex 1 – Two cases of development of future pre-shredding material recycling destinations

The case of Unisilo - Reciclagem de Resíduos, Portugal. A Portuguese plant experimenting with the recycling of rubber and polyurethane of End of Life Vehicles .

Unisilo is experimenting with recycling in particular dismantled (ie pre-shredding):
- Profiles of the doors in polyurethane (rubber type)
- Seat foam (in polyurethane)
- Steering wheels in polyurethane (after withdrawal of the steel inner scaffolding)
- Tablier in polyurethane

This company is apparently in contact with the Renault, in the sense of being a destination for rubbers and polyurethanes of Renault, either from ELV or from car factories themselves (such as the Autoeuropa factory in Portugal)

The contacts are:
Walter Santos
Unisilo - Reciclagem de Resíduos
00351 918 283 434
valter@unisilo.pt
www.unisilo.pt

Concerning the textiles (covering the seats), another company (in the north of Portugal, Covilha) is another case of interest. They already work with the car industry for their manufacturing waste textiles. This company is in contact with Quercus who is proposing tests for recycling of ELV dismantled textiles.

Information provided by QUERCUS, Portugal – contact Rui Berkemeier - quercus@mail.telepac.pt. 00 351 934 25 65 81. Note: Quercus has spoken with the people of the plant that recycle rubber and polyurethane of ELV and they are available to give more clarifications.

Annex 2

Text from http://www.jama-english.jp/europe/news/2006/no_2/topic1.html

JAMA's Vision for ELV Recycling in Europe

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End-of-life vehicle management

Propelled by the European End-of-Life Vehicle Directive (2000/53/EC) published in October 2000 and the Japanese equivalent in July 2002, JAMA has taken an active part in the development of a recycling infrastructure and related methodologies in various parts of the world. In Europe, JAMA member manufacturers are participating in the International Dismantling Information System (IDIS) consortium and the International Material Data System (IMDS) consortium, as well as in the various working groups appointed from the European Commission and the industry.

JAMA member manufacturers have implemented measures to meet requirements directly related to the design of vehicles, such as the elimination of hazardous substances and the greater recyclability of certain parts and components. However, because requirements and procedures related to ELV recovery in the EU Member States are so extensive, and taking into account the producer responsibility principle which is being applied, the additional related costs for vehicle manufacturers remain problematic.

Meeting the recycling and recovery targets as established by the European Union's ELV Directive is an issue for EU Member State authorities; they will have to rely on data gathered via the various economic operators concerned on the basis of the procedures of individual Member States. JAMA member manufacturers are studying and implementing measures to lend support to the relevant economic operators and to the authorities in meeting the targets established by the ELV Directive. Being able to comply with the 2015 targets will largely depend on the available network of treatment facilities in Europe.

Now and in the years ahead, JAMA and its member manufacturers intend to take part on an even larger scale in research and development activities focussing on the expanded application of environmental protection measures throughout the life cycle of automobiles, including the implementation of a viable vehicle recycling infrastructure.