BRIEFING - October 2024

End-of-life vehicles Regulation

A T&E position paper

Summary

The automotive sector accounts for a significant share of material consumption in the EU, particularly for steel (17%), plastics (10%), with the transport sector as a whole accounting for 40% of all aluminium use. Increasing circularity is crucial for a more efficient use of these materials, and a growing interest has emerged for this topic in the EU. The Draghi report from September 2024 highlighted the untapped economic and strategic potential of increasing the circular use of raw materials in Europe. It also concluded that the automotive sector would benefit from adopting new and advanced standards in vehicle recycling and recycled material rates. Furthermore, European Commission President Ursula von der Leyen aims to create lead markets, including for clean steel, as part of the EU's Clean Industrial Deal. T&E has in its green steel study how the automotive sector is perfectly placed to be that lead market.

Materials are a big contributor to cars' embedded emissions (between 16 and 30% for steel and iron; 27-30% for aluminium depending on whether the vehicle has an internal combustion or electric powertrain). At the same time, decarbonising energy intensive sectors such as steel is high on the political agenda, so adding a firm demand route will make these investments viable and help commercialise technology faster.

In addition, improving the treatment and recycling of end-of-life vehicles (ELVs) represents an opportunity to access more reusable and recyclable materials. However, circularity in the automotive sector remains low and thus requires an updated regulatory framework to ensure more supply and crucially demand for quality recycled materials in the automotive sector.

In this context, T&E welcomes the proposal for a new ELV regulation, and supports the objectives of the Commission. The new text aims at improving the collection of ELVs, increasing the quality and quantity of recycled, remanufactured and reused material from ELVs and their use in the production of new vehicles, as well as preventing the leakage of environmentally damaging and unsafe used vehicles to third countries.

Still, several improvements need to be made:

- **A mandatory target for green steel (covering both scrap and green primary steel) in new cars of 40% should be introduced by 2030, rising to 75% in 2035 and 100% in 2040.**
- This should be coupled with **quality requirements limiting copper contamination to 0,06% on secondary steel coming from ELVs** to increase the supply of high quality scrap steel that can be reused in new cars. The current EC proposal only requires a feasibility study on possible recycled content targets to be conducted 23 months after the entry into force of the Regulation.
- A similar mandate should be introduced on **aluminium** in new vehicles: The Commission should already begin work on an impact assessment on **green aluminium targets** (covering both scrap and primary production) and adopt **green**

aluminium mandates for new cars under secondary legislation no later than 12 months after entry into force of the regulation.

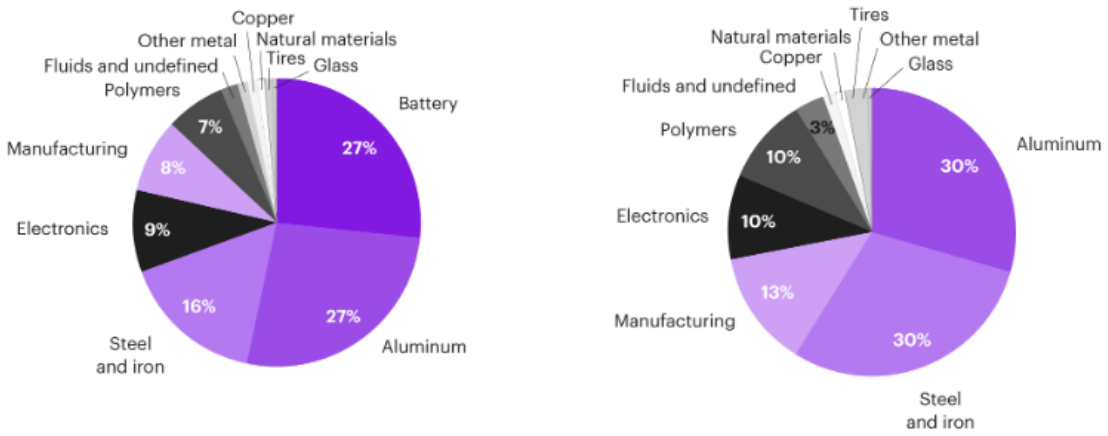
- **The requirement for dismantling parts and components such as batteries, engines, or catalytic converters among others prior to shredding in Annex VII-C should be expanded to cover additional materials**, including:
    - Some small Electric and Electronic Equipment. This will help avoid contamination of materials, thus increasing the availability of high quality automotive grade scrap.
    - Mono-material aluminium components with a weight above 5 kg - which should be sorted between cast and wrought aluminium.
- The proposal to require used vehicles intended for export to prove their roadworthiness is an important and necessary provision to reduce environmental and safety risks in importing countries. T&E proposes that, in addition, a **Euro 4 limit on vehicles exported to third countries be introduced from 2028 ownards, moving to a 5 year vehicle age limit from 2035 onwards.** This will further reduce the flow of old, polluting vehicles to third countries. Since most vehicles sold in 2030 are expected to be electric, setting a 5 year age limit on vehicle exports from 2035 will accelerate the uptake of cleaner and zero emission vehicles in these countries and allow them to leapfrog more complex combustion technologies (Euro 5, 6 and 7).
- Collection of ELVs - currently lagging in the EU - should be improved by introducing new **financial incentives** for owners to bring their ELV to an Authorised Treatment Facility by requiring Member States to **establish a national Deposit Refund Scheme (DRS)** in an effort to improve vehicle collection.
- Finally, the proposed **Circularity vehicle passport** should include more information, such as material composition (including share of recycled content per material) and carbon footprint. It should also be merged with other passports, such as the battery passport and vehicle environmental passport; and **be made available by 2027**, instead of 7 years after the entry into force of the Regulation as proposed by the Commission, which would be in 2033 at the very earliest**.**

Introduction

The automotive sector is very resource intensive, consuming 17 % of all steel consumption in the EU,[1] around 10% of the EU's total consumption of plastics,[2] with 42% of demand for aluminium coming from the transport sector more widely. Materials are not always managed optimally when a vehicle reaches its end-of-life, which can lead to significant waste and carbon emissions when these are landfilled or burned. Making this sector more circular by using its resources more efficiently will be a key challenge in the coming years.

This becomes more important as we progress towards the elimination of tailpipe emissions from new cars in Europe by 2035. Most of the carbon emissions of vehicles will transition from the use phase to the production phase, which represent around 60% of an electric car's lifecycle emissions.[3] Reducing carbon emissions from the vehicle production phase therefore becomes crucial to decarbonising the automotive sector and delivering our 2050 climate goals.

The revision of the end-of-life vehicles (ELV) directive is a timely opportunity to improve the circularity of the materials used for vehicle production, and to reduce the overall carbon footprint of both ICE and EVs. Some of these materials represent an important share of embedded emissions for both internal combustion engine cars (ICEs) and electric vehicles (EVs). The graph below shows that the most emissions-heavy materials are aluminium, steel and plastics (as well as batteries for EVs).



Respective contribution of materials to carbon footprint of ICEs and EVs production
Source: Kearny Energy Transition Institute.[4]

[1] Transport & Environment. (2024). *Cleaning up steel in cars: why and how?*. Link.
[2] European Parliament. (2023). *Circularity requirements for vehicle design and management of ELVs*. Link.
[3] Transport & Environment. (2022). *How clean are electric cars?*. Link.
[4] Kearny Energy transition Institute. (2022). *Carbon Emissions Assessment. Towards Accurate Control.* Link.

The European Commission's proposal to update the end-of-life vehicles Directive and turn it into a Regulation (merged with the 3R type-approval legislation[5]) should, among other things, improve the collection of ELVs, increase the quality and quantity of recycled material from ELVs and their use in the production of new vehicles, and ensure the roadworthiness of exported used vehicles to third countries.

Increasing circularity is crucial for a more efficient use of these materials, and a growing interest has emerged for this topic in the EU. The Draghi report[6] from September 2024 highlighted the untapped economic and strategic potential of increasing the circular use of raw materials in Europe. In particular, it suggested the automotive sector would benefit from adopting new advanced recycling standards including recycled material rates. The report also recommends creating lead markets for steel and aluminium in the automotive sector to raise demand for low-carbon materials thanks to high output volumes allowing for scale. Similarly, European Commission President Ursula von der Leyen also included the creation of lead markets, including for clean steel, as one of the priorities for her new Commission.[7] T&E has already argued that the automotive sector is uniquely placed to be a lead market for clean materials including steel.

T&E welcomes the Commission's proposal. However, we see an opportunity for further and more ambitious measures on both the supply and demand for clean and circular material, for example, mandatory green steel quotas for carmakers and recycled steel quality requirements (see section 1). Additional measures will be needed to improve the supply of high quality automotive grade scrap, including expanding the dismantling obligations to additional materials such as aluminium fractions of more than 5 kg and small electric and electronic equipment that will reduce contamination of metals (section 2). Finally, introducing a minimum Euro 4 age limit to vehicles exported in third countries in 2028, moving to a 5 year age limit in 2035, will reduce the environmental impact of old polluting cars in third countries (section 3).

1. Making automotive steel more green and circular

Steel is a major component of car manufacturing and its share of total emissions will get proportionally more important with the end of sales of combustion cars and the uptake of zero tailpipe emission electric cars. Steel and iron make up 30% and 16% of the carbon footprint of ICE and EV production respectively.[8] The uptake of "green steel" is therefore of primary importance to reduce a vehicle's embedded emissions.

[5] The 3R type approval directive focuses on "Reduce, Reuse, and Recycle" principles to promote circular economy practices within the automotive sector. It mandates that vehicle manufacturers design products with lifespan, materials recovery, and end-of-life recyclability in mind, thereby ensuring that vehicles are not only efficient and safe but also contribute to sustainability by minimising waste and resource consumption.
[6] European Commission. (2024). *The future of European Competitiveness*. Link.
[7] European Commission. (2024). *Statement at the European Parliament Plenary by President Ursula von der Leyen, candidate for a second mandate 2024-2029*. Link.
[8] Kearny Energy transition Institute. (2022). *Carbon Emissions Assessment. Towards Accurate Control.* Link.

There is, however, currently no universally agreed definition of green steel. T&E, using the International Energy Agency (IEA) definition of near zero emission steel as a basis, defines "green steel" as either produced via green hydrogen, direct electrification processes, or as recycled steel,[9] and recommends the adoption of green steel targets.

1.1 Setting green steel targets for carmakers

The Commission's proposal does not contain any targets for green or recycled steel content in new cars, only a commitment to assess the potential of recycled content targets. The revision of the ELV law is a timely opportunity to establish green steel mandates on carmakers which can provide a reliable lead offtake market for green steel production, and help de-risk investments, in Europe.

Using the IEA's definition of near zero emission steel as a basis,[10] which designates steel that has a CO2 emission intensity of between 400-50 kg of CO2 equivalent per tonne produced (kgCO2e/t) depending on the amount of scrap steel used.[11] Effectively, this includes steel either produced via green hydrogen, direct electrification processes, or recycled scrap steel.

New analysis by Ricardo and T&E[12] shows that using green steel in new cars can reduce the CO2 emissions of producing cars in Europe by 6.9 Mt in 2030, in addition to having a negligible impact on car prices (+57 euros per car in 2030), based on a 40% green steel target.

Building on the logic of a recycled content target, setting a broader green steel target will allow manufacturers to meet the target by increasing the use of primary steel produced via green hydrogen based processes, and/or by increasing the use of scrap steel depending on availability and different needs. However, as the target increases over time, demand will be ensured for scaling up both quality scrap and primary green steel processes. **T&E therefore recommends a 40% target for green steel in new cars by 2030, rising to 75% in 2035 and 100% in 2040.**

While a 40% green steel target would help stimulate the production of higher quality recycled steel and its use in new cars, **T&E believes that the recycled content target for steel of 30% for new cars, including a 15% closed loop percentage modelled in the Commission's impact assessment is feasible.** This is also in line with the ambition set by several carmakers to use increasing amounts of secondary steel in their new cars (Volvo 35%[13] and BMW 50% both by 2030[14]). Carmakers could choose to meet the 40% targets entirely with recycled steel, or a mix of both (e.g. 30% recycled steel and 10% green hydrogen based steel).

---

[9] Transport & Environment. (2024). *Cleaning up steel in cars: why and how?*. Link.
[10] International Energy Agency. (2022). *Achieving Net Zero Heavy Industry Sectors in G7 Members*. Link.
[11] Ibid
[12] Transport & Environment. (2024). *Cleaning up steel in cars: why and how?*. Link.
[13] Volvo Cars. (2024). *Sustainability - Circular Economy.* Link.
[14] BMW. (2024). *Circularity - Sustainability Strategy* . Link.

1.2 Improving the quality of steel scrap from ELVs

The quality of secondary steel plays a crucial role in whether recycled steel can be used in closed loop in cars, which is why improving the quality of steel scrap is crucial for reducing the climate impact of the materials used in new cars.

Although nearly half of the steel produced in the EU comes from recycled scrap, the amount of scrap steel used in new vehicles is restricted due to the inadequate quality grades generated by current recycling methods. Currently, the main challenge with ramping up the use of recycled steel in new cars stems from the strict quality requirements carmakers place on automotive steel for critical components like body panels and chassis. High levels of impurities in recycled steel, resulting from sorting and processing methods, lead to "downcycling." This refers to the practice where much of the scrap steel recovered from ELVs is used in less demanding sectors like construction, which doesn't require as strict limits on copper content (see section 1.2).[15]

For high-performance steel grades in the automotive sector to incorporate post-consumer scrap, the recycled material must have very low copper content (below 0.06%),[16] much lower than the current average, which is around 0.2-0.25%. Increasing the availability of automotive-quality recycled steel requires specific targets for green and/or recycled steel on the demand side, but also measures on the supply side such as establishing material quality standards within the recycling industry. Another potentially complementary approach for improving the quality of scrap steel grades is better dismantling of parts and components of ELVs before shredding, as is proposed by the Commission in Article 30 of the proposal (see section 2.2 for more details).

T&E recommends establishing a quality standard limiting copper contamination to 0.06% for secondary steel coming from the main body structure, drivetrain and suspensions of ELVs to be established under the ELV Regulation, in order to improve the supply of high quality automotive grade scrap.

2. Circularity requirements for automotive materials beyond steel

This section presents T&E's main recommendations on improving the circularity of materials other than steel including aluminium and plastics. Recommendations on rubber and glass are also available in the Annex of this paper. This section also includes recommendations on the collection and treatment of ELVs, the proposed dismantling obligations, and finally improving the Circularity Vehicle Passport.

[15] Automotive-grade steel typically requires a maximum copper content of 0.06%, whilst the current steel scrap average in the OECD is between 0.2-0.25%, which means it goes to sectors like construction which can use such steel grades without any issue

[16] World Economic Forum. (2023). *Closing the Loop on Automotive Steel: A Policy Agenda*. Link.

2.1 Greening automotive aluminium and plastics

2.1.1 Setting green aluminium targets for carmakers

Aluminium is an important contributor to the carbon footprint of vehicle production (27% for EVs and 30% for combustion cars). As demand for aluminium is projected to quadruple by 2050[17] (modern cars are using increasingly more aluminium for lightweighting purposes), maximising the efficient use of aluminium resources is key.

Although recycling rates of aluminium from ELVs are good (95%),[18] the quality of recycled aluminium is usually insufficient to be fit for use in closed loop. This is mainly due to different aluminium alloys not being sorted during recycling, which favours contamination of wrought aluminium by cast aluminium. While converting cast alloys to wrought alloys is possible, it is very energy intensive, which is why it is much preferable to separate those alloys in order to avoid contamination. This is all the more important considering that EVs use 320 kg on average compared to 180 kg for ICE cars.

The move towards EVs necessitates lower alloying concentrations in wrought aluminium alloys compared to what is typically found in end-of-life vehicle (ELV) aluminium scrap. This shift from cast to wrought alloys further creates a risk of surplus mixed aluminium scrap. For this reason, better sorting of recovered aluminium into at least 2 alloy fractions: cast and wrought alloys[19] is needed in order to improve the quality of secondary aluminium and therefore their use in closed loop as recommended by aluminium companies and associations such as Novelis[20] or European Aluminum.[21]Currently, dismantling fractions of aluminium prior to shedding is a prerequisite to recycling cast and wrought alloy separately. Despite innovative technologies being tested, none of them are yet financially attractive enough to make this practice automated.[22] Some advanced post-shredding technologies lead to better sorting of scrap aluminium but these are currently underdeveloped in the EU.

T&E therefore recommends dismantling aluminium parts and separating them into 2 alloy fractions: cast and wrought. ATFs and shredders could deviate from it if they can provide verifiable evidence that automated processes and technologies such as shredders, and post-shredders can produce recyclates of at least similar quality as manual dismantling (in terms of contamination of the recycled aluminium).

[17] R.G. Billy, D.B. Muller. (2022). *Aluminium use in passenger cars poses systemic challenges for recycling and GHG emissions*. Link.
[18] European Commission. (2023). *Impact Assessment report accompanying the ELV proposal*. Link.
[19] The Commission impact assessment explains that current ELVs contain around 100 kg of predominantly cast alloys, whereas average new vehicles contain 180 kg and BEVs more than 320 kg of aluminium per vehicle, predominantly wrought alloys
[20] Novelis Europe. (2023). *Feedback on the End-of-life vehicles - revision of EU rules*. Link.
[21] European Aluminium. (2023). *End-of-life vehicles Directive revision. European Aluminium top priorities*. Link.
[22] Oeko Institut. (2023). *Study to support the impact assessment for the review of Directive 2000/53/EC on end-of-life vehicles*. Link.

The Commission proposed to carry out a feasibility study on recycled content targets 35 months after the entry into force of the Regulation in the ELV proposal. This was justified by the absence of consensus about whether setting meaningful recycled content targets for aluminium is possible or not.

While it is sound to investigate the topic further, 3 years to conduct a feasibility study for aluminium recycled content target is too long, which is why **T&E urges the Commission to start working on an impact assessment already now and to come forward with green aluminium targets 12 months after the entry into force of the Regulation.** In addition to accelerating the timeline, expanding the scope of the targets is needed in order to both lower the carbon footprint of primary aluminium and increase the use of recycled secondary aluminium.

2.1.2 Recycled content targets for plastics

Plastics are defined under the REACH Regulation as materials made of polymers that may have received additives, and these are widely used by the automotive sector, where 39 different types of plastics are used in cars. The automotive industry represents around 10% of the EU's overall plastics consumption,[23] and the European Commission estimates plastics materials in vehicles to represent around 200 kg on average per light-duty vehicle (13 to 16% of the total weight of an average EV).[24] The impact assessment also highlights the need to accelerate the use of recycled plastics in the automotive industry, which is currently low at 19%. As a result around 0.8 million tons of plastic waste per year either ends up in landfills (40%) or is sent to waste-to-energy facilities (41%) and is not likely to progress without regulatory action.[25]

The Commission has proposed that, by 2031, new vehicles should contain a minimum of 25% of plastic recycled by weight from post-consumer plastic waste. At least 25% of this target would have to be achieved by including plastics recycled from end-of-life vehicles, which amounts to 6,25%.

This is a major step in the right direction and if implemented would lead to an annual growth rate of recycled plastic in new cars of 37%, which is a ten times increase compared to today. According to the Joint Research Centre, some complementary measures such as ramping advanced post shredding technology (PST) would be needed in order to ensure a sufficient supply of plastics coming from the automotive industry, for the closed loop requirement.[26]

T&E therefore recommends keeping the post-consumer plastics recycled content target of 25% by weight, including 25% from plastics recovered from ELVs.

---

[23] European Parliament. (2023). *Circularity requirements for vehicle design and management of ELVs*. Link.
[24] European Commission. (2023). *Impact Assessment report accompanying the ELVproposal*. Link.
[25] *Ibid*
[26] Joint Research Centre. (2023). *Towards recycled plastic content targets in new passenger cars and light commercial vehicles.* Link.

2.2 Balancing the roles of dismantling and post-shredding in the treatment of ELVs

Dismantling consists of removing vehicle parts and components such as aluminium and steel bodies, engines, tyres and so on before shredding the vehicle. Shredding and post-shredding respectively refer to "any operation used for tearing into pieces or fragmenting end-of-life vehicles"; and "techniques and technologies used to process materials from end-of-life vehicles, after they have been shredded, for further recovery".

While recyclers argue that post shredding technology is able to achieve secondary materials of sufficient quality,[27] certain stakeholders argue that dismantling before shredding is still the most effective way to produce quality secondary material and should therefore be the preferred method (e.g. European Aluminium[28], FERVER[29]). Dismantling these materials before shredding would in any case limit contamination during the recycling process.

While it is possible that advanced post-shredding could better separate materials after shredding, increasing the recovery and the quality of recycled material as a result, these technologies are quite recent and are mainly present in Western Europe. A few of these countries, mainly France, Belgium, the Netherlands and Germany together have 20 to 25 facilities with advanced PST technology, which contrasts with the 270 shredders across the EU Member States.[30]
This pushed the Commission to adopt a 'dismantling obligation' in Article 30-1 of its proposal. Authorised Treatment Facilities (ATFs), where end-of-life vehicles are collected, would be under the obligation to remove certain parts from the ELV such as batteries, e-drive motor, engines, catalytic converters, mono-material metal components, heavier than 10 kg, or tyres, according to the list in Annex VII - C, before proceeding with shredding and post shredding. This is a way to both maximise the amount of quality material recovered before - and limit the contamination of materials during - shredding.

It is important to note that point 2 of Article 30 specifies that this obligation would not apply in the case where an ATF "demonstrates that post-shredder technologies separates materials from parts and components as efficiently as manual dismantling processes or semi-automated disassembly processes." In other words, this leaves the possibility for facilities that have advanced PST to use and maximise its potential despite its currently limited roll out in the EU, which we believe is a good compromise as it leaves the door open to all technologies. That way, should advanced PST be scaled up in the EU, there would be no obstacles to its use for ELV treatment.

T&E therefore supports the proposed provisions under Article 30 points 1 and 2 as the best way to reach the circularity objectives of the text while leaving the door open to technologies

[27] EuRIC. 2023.*EuRIC welcomes the new proposal for End-of-Life Vehicles and proposes improvements.* Link.
[28] European Aluminium. (2023). *End-of-life vehicles Directive revision. European Aluminium top priorities*. Link.
[29] Fédération Européenne des Recycleurs de Verre. (2024). *FERVER Position on the ELV Regulation Proposal*. Link.
[30] European Commission. (2021). *Commission Staff Working Document of Directive (EC) 2000/53 of 18 September 2000 on end-of-life vehicles*. Link.

that can demonstrate equivalent results**. Additional measures to ensure the sufficient quality of recycled outputs should also be established, namely limits on copper contamination (see section 1.2)**

T&E also supports the removal before shredding of additional components, not currently listed in Annex VII C, including mono-material aluminium components with a weight above 5kg - which should be sorted between cast and wrought aluminium - as well as the following small Electric and Electronic Equipments (EEEs): inverters for hybrid vehicles, oxygen sensor, side assistant sensor, distance and near distance sensors. Removing these additional parts and components before shredding will both favour better sorting of scrap and avoid recovered metals being contaminated during the treatment in ATFs.

2.3 Circularity vehicle passport

One of the flagship measures of the ELV proposal is the introduction of a Circularity vehicle passport, a digital tool used to improve the provision of information on the safe removal and replacement of vehicle parts and components, in Article 13. Article 11 lists manufacturers' actual obligations on the type of information they need to include in the passport. These are information on different parts of the vehicle and their location, weight, instructions about safe removal of EV battery, e-drive motor, parts and components, material, as well as information about reparability (see Annex V of the Commission proposal for more details).

Although this is a very important step forward for increasing the transparency of a vehicle's material composition, there are still some crucial elements lacking from the passport as defined in the proposal. **Material composition (including share of recycled content per material) and carbon footprint should also be included in the circularity vehicle passport** as a way to make it easier to identify which vehicles are more environmentally friendly and incentivise their purchasing. The passport should also be made easily accessible digitally, via a QR-code for example.

The EU has either adopted or proposed two other passports for vehicles: the battery passport and the environmental vehicle passport. The **circularity vehicle passport should be merged with the others into one digital infrastructure** with interoperable data exchange and adequate accessibility for consumers and professionals. Finally, **the timeline for the introduction of the passport 7 years after the entry into force of the Regulation is too long and should be aligned with the introduction of the battery passport (in 2027).**

3. Collection and management of vehicles

There currently are 286 million cars on European roads according to the European Commission. Around 10 million of them are de-registered every year because they are not in condition to be driven anymore. While 6.6 million of these vehicles become waste, there are still around 3.4

million vehicles that go missing every year - meaning that they disappear either through illegal export or disposal and are therefore not reported. 1 million units are exported as used vehicles.

Management of old and used vehicles has proven challenging under the current regulatory framework, and the Commission has rightfully addressed some of these issues in its proposal. While there are some improvements proposed, some aspects can still be fine tuned in order to ensure that ELVs will be properly collected and disposed of, including the rules governing the export of used vehicles.

3.1 Collection of end-of-life vehicles

Article 5 of the current ELV Directive, dating from 2000, made Member States responsible for ensuring that vehicle producers set up schemes to collect ELVs, participated financially to the collection, and established that the last vehicle owner could bring their vehicle to an ATF without any cost. Considering that around 3 million vehicles continue to 'go missing' every year, the Commission decided to put these responsibilities on manufacturers' shoulders by introducing a reinforced 'Extended Producers Responsibility' provision (made possible by the switch from a directive to a regulation). Vehicle producers, rather than Member States, are now explicitly responsible for setting up or helping to set up ELV collection mechanisms at Member State level to ensure that vehicles have actually been collected and treated properly in ATFs.

The proposal outlines responsibilities for both vehicle producers and owners when it comes to the collection of end-of-life vehicles. Producers will need to contribute financially to ELV collection (Article 16 and 20), and to ensure that ELVs are indeed collected and treated in accordance with the proposed Regulations provisions (Articles 16, 23 and 27). Vehicle owners are responsible for getting their ELV to an Authorised Treatment Facility (ATF) (as per the current directive). They then receive a certificate of destruction (Article 25), which leads to vehicle deregistration. This is supposed to guarantee that deregistration only occurs once a vehicle has been properly collected and treated.

Since the collection mechanisms mentioned above have failed to ensure systematic ELV collection, **T&E supports a strong EPR scheme on car producers as proposed by the European Commission.**

In addition T&E recommends to financially incentivise owners to bring their ELV to an ATF by requiring Member States to establish a national Deposit Refund Scheme (DRS) in order to improve vehicle collection and treatment**.** With a DRS, car buyers pay a premium when purchasing a new car which contributes to a fund that grants a bonus for scrapping old internal combustion engine (ICE) vehicles. This would be inspired by the Danish DRS system, where drivers get a €300 bonus when their car reaches an ATF, which is funded by the driver

themselves via an annual tax.[31] This scheme has proven effective in reducing the illegal dumping of ELVs.

Member States would have control over the governance of the waste management and should be allowed to set the deposit amounts and premiums for returned vehicles once they become ELVs. To ensure EU level efficiency and coherence, the national DRS funds should be inter-connected, to ensure premiums can be collected when vehicles are exported from one country to another.

Introducing financial incentives through the use of Deposit Refund Schemes at national level provides an additional incentive to ensure that old cars get collected and treated, especially old combustion cars which have a high air quality and climate impact. **To increase the effectiveness of the scheme, governments could complement the DRS with a scrappage scheme to further accelerate the removal of old polluting combustion cars from the road.**

3.2 Improving and reducing used vehicles exports

Vehicles that are exported from Europe to third countries (mainly in Africa) tend to be old and of poor quality. A UNEP report indicates that the average age of exported vehicles can be above 18 years old.[32] These vehicles are highly polluting either due to their old age or to particle filters being removed and sold due their high value. The export of used combustion cars from the EU contributes to CO2 emissions from the continuous use of these vehicles. T&E calculations show that the additional CO2 emissions from all combustion cars exported from the EU between 2024 to 2050 would amount to 1.3 Gt CO2. When taking exported carbon emissions into account, total EU car emissions would in fact be 20% to 30% higher than official accounts show.

The Commission proposal tackles this issue with new provisions aiming to ensure that exported vehicles are roadworthy i.e in a fit condition to be safely on the road, which excludes end-of-life vehicles. Article 37 requires the person exporting their vehicle to prove that the vehicle is not an ELV (a checklist including criteria assessing whether a vehicle is irreparable or not can be found in Annex I), as well as providing a valid roadworthiness certificate for the vehicle in question.

T&E recommends increasing the requirements for the export of used vehicles from the EU, in order to reduce the amount of exported carbon pollution induced from exporting combustion cars. Specifically we propose **setting a Euro 4 limit on exported vehicles from 2028 ownards, then move to a 5 year age limit from 2035 onwards**. This would ensure sufficient quality and durability of exported vehicles and help accelerate the electrification of vehicles in importing countries. In addition, the Commission should undertake an assessment of the climate impact of exporting used ICE outside the EU, investigate how it increases dependency on fossil fuel

[31] Dansk Producent Ansvar. (2024). *Car scrapping and payment of scrapping premium*. Link.
[32] United Nations Environment Programme. (2020). *Global Trade in Used Vehicles Report*. Link.

vehicles and systems in other countries and what additional measures the EU can take to mitigate that.

Annex 1: Recycled content targets for additional materials

Recycled content targets for rubber

Rubber (mainly used in tyres) represents a much smaller part of a vehicle compared to other materials like steel, aluminium, or even plastics. Similarly, it accounts for a smaller percentage of its embedded emissions, which is why there is much less focus on rubber in the ELV proposal and in the discussions around it. For instance, the only requirement on tyres in the proposed Regulation is to remove them from ELVs after they are collected in Authorised Treatment Facilities.

Significant amounts of tyres coming from ELVs are currently landfilled or burnt, despite solutions to recycle this rubber actually existing. The Commission's impact assessment highlighted the problem and the fact that tyres are mostly exported and burnt for energy recovery at the moment, with negative environmental consequences as burning a single tonne of tyres can release up to 1,500 kg of carbon dioxide (CO2), alongside other harmful pollutants such as heavy metals and hydrocarbons. This is partially tackled under the EU Waste Framework Directive, under which member states are encouraged to achieve high recycling rates for end-of-life tyres, targeting a recycling rate of at least 95% by 2025. Pushing for recycled content targets for rubber would be complementary to this provision in the EU Waste Framework Directive, as it would increase demand for recycled rubber and consequently incentivise further rubber recycling.

Although no improvement to this legal framework is planned under the ELV, the Ecodesign for Sustainable Products Regulation (ESPR) gave the Commission the possibility to adopt an implementing act potentially containing recycled content targets for tyres. Mechanical recycling makes it possible to recycle tyres and use them in closed loop, or use their materials (mainly rubber) for other purposes such as cement production. The main obstacle to the uptake of this practice according to European recyclers is the lack of incentives to do so.[33] **T&E recommends adopting a recycled content target for rubber of at least 10% for new tyres** in the Ecodesign implementing act as also recommended by the European Federation of recyclers.[34] This will bring significant benefits such as increasing the amount of recycled rubber from end-of-life tyres, avoiding co-incineration and landfilling, reducing Europe's dependency on imports of natural and synthetic rubber from outside Europe, therefore supporting the EU's strategic autonomy.

[33] EuRIC. (2024). *Tyres*. Link.
[34] EuRIC. (2024). *EuRIC's recommendations on the ELV Regulation proposal*. Link.

Recycled content targets for glass

Glass is considered to be a difficult material to recycle in closed loop for cars. The fact that glass parts are often composed of several components makes them hard to produce. Windshields for example are composed of laminated glass, which is made with a layer of polyvinyl butyral (PVB) sandwiched between two layers of glass, making it more complex to recycle compared to single-material glass. For recycling specifically, contamination with other material makes it very hard to reach purity standards for recycled glass.

A recycling target for glass of 70% was considered by the Commission in its impact assessment, arguing that 20.8 kg of glass is recovered per ELV when destructive dismantling is applied, and when assuming an average weight of 30 kg of glass per vehicle, this would amount to around 70% of the glass in a vehicle.

In the end, Annex VII C and F of the proposal mandates the removal of glass parts for all ELVs before afterlife treatment (i.e. before vehicles are shredded) and recycling into container glass, fibreglass or equivalent quality, which implies 100% of a vehicles' glass is collected and recycled since this removal obligation applies to all ELVs, which are all supposed to be collected in AFTs.

While glass recyclers back the establishment of a 10% recycled content target for glass in new vehicles, the European Commission's impact assessment expressed reservations regarding the technical feasibility of such a measure due to the complex specificities of automotive glass. For this reason, **T&E recommends maintaining the mandatory removal of glass parts and their recycling into container glass, fibreglass or equivalent quality and asks the Commission to conduct a feasibility study for glass recycled content targets and keep the proposed dismantling requirements for glass parts in Annex VII C and F**.

Annex 2: Additional circularity requirements on the removal and replacement of batteries

The ELV proposal also aims to improve removability and repairability of parts and components during both the use and waste phases, as this is crucial in allowing these same parts and components to be removed, repaired or recovered.

Under the EU battery regulation,[35] in Recital 42 the Commission identified a gap requiring further action as part of the ELV revision, noting that EV batteries should be removable and replaceable by independent professionals, and that standards to facilitate maintenance, repair and repurposing of batteries and battery packs should be developed by the Commission.

Under Article 7 paragraph 2 of the draft ELV text, it is proposed that vehicles *"shall be designed, as regards joining, fastening and sealing elements, so as to enable, in a readily and nondestructive manner, the removal and replacement of electric vehicle batteries and e-drive motors from the vehicle by authorised treatment facilities or repair and maintenance operators during the use phase and waste phase of the vehicle*." This is an important addition as removability and repairability of batteries can be hindered depending on the way the battery and the EV more generally is designed and assembled. Practices such as applying foams or resins when assembling the battery to the car can make it very hard - if not impossible - to access and remove the battery during the use and waste phases of the vehicle.

T&E therefore supports the provisions as proposed in Article 7 which will improve the durability of batteries in EVs.

Further information

Zachary Azdad

Vehicles Policy Officer

Transport & Environment

zachary.azdad@transportenvironment.org

[35] Regulation (EU) 2023/1542 concerning Batteries and waste batteries. Link.