VDA German Association of the Automotive Industry

Position

The Future of the Automotive Circular Economy

Climate-neutral mobility by 2050 at the latest

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Introduction

The German automotive industry is rising to the challenge of protecting the climate. Our goal is to make mobility climate-neutral by 2050 at the latest – in line with the Paris Agreement on climate change. We are ready for the challenge and to this end we are backing innovations and new technologies.

By far the greatest environmental impacts of the automotive industry come about during the vehicles' use phase.

However, the ramp-up of alternative powertrain technologies is causing the CO_2 hotspots to shift to the upstream supply chains (materials, manufacture). The German automotive industry's strategy for reducing its CO_2 footprint is therefore directed at far more than a vehicle's use phase and covers its entire lifecycle from the raw materials to production and all the way to recycling.

This holistic view covering all stages of value creation and their environmental impacts, is reflected in the automotive industry's "Design for Sustainability" strategies and continued in the debate on the development of circular economy. A circular economy aims to simultaneously reduce both the use of resources and the amount of waste generated. This can be achieved by reusing, recovering and recycling products and raw materials, and by designing products to be resource-efficient (ecodesign).

Manufacturing vehicles resource-efficiently, using them for a long time, and repairing, recycling and reusing them – the principles of the circular economy are mainstreamed within the automotive industry:

Resource efficiency	Material efficiency is important – and especially in vehicle construction because materials account for a particularly large proportion of the costs. Material efficiency strategies include designing products to be economical with resources, optimizing production processes, material-friendly storage and internal recirculation of materials.
Longevity	Vehicles are built to travel more than 200,000 kilometers during their lifetime. Some of them are in use for over 20 years, which puts them among the consumer products with the longest lifespans. During this time there are frequent changes of ownership.
Repairability	Customers are supplied with new and remanufactured spare parts up to 15 years after vehicle production ends so that they can remain in operation. This is not the case with other consumer goods.
Recyclability	At least 85 percent of an end-of-life vehicle can be recycled. This is the highest figure for any consumer product. The IDIS (International Dismantling Information System) is a central repository of information provided to the end-of-life vehicle treatment operators by the OEMs in a cost-free, user-friendly database. Today IDIS is a blueprint for many other information platforms for consumer goods.
Recoverability	One third of a vehicle already consists of secondary materials.

The foundation for a successful automotive circular economy is created in the products themselves. However, this can only be the starting point for the automotive circular economy.

According to the “Circularity Gap Report” published by the Ellen MacArthur Foundation, just under 9 percent of the global economy was circular in 2020. The report states that doubling the circularity would be sufficient to close the emission gap.

Against this backdrop, the German automotive industry wishes to highlight potentials for improvement that have to be leveraged by a variety of players who share responsibility for a functional circular economy.

Guiding principles for a viable future automotive circular economy

A circular economy can be understood in very varied ways. The German automotive industry bases its concepts on the following six guiding principles:

Product requirements
Vehicles are very different from other consumer goods in terms of their complexity and longevity. A vehicle consists of around 7,000 components and many times more sub-components, it is in use for 15 to 22 years, and its internal temperatures fluctuate by more than 100 °C. (Crash) safety, flame resistance and material durability are guaranteed throughout a vehicle's lifetime.

Shared responsibility
All economic operators in the value chain are involved in implementing the requirements of the End-of-life Vehicle Directive, and are required to ensure that their business activities satisfy them. In this context, vehicle manufacturers bear responsibility for replacing hazardous substances, for preparing and distributing information about vehicle dismantling and treatment, for providing information to customers, and for ensuring a cost-free option for relinquishing almost complete end-of-life vehicles (ELVs) at recognized treatment facilities (dismantlers and shredders) authorized by the public authorities. These operators organize the return of ELVs, ensure environmentally sound treatment and recovery procedures, and ensure compliance with the recycling- and recovery quotas.

Lifecycle assessment
The automotive industry uses lifecycle assessments to systematically evaluate environmental impacts. They can support internal strategic decisions about product development. In addition, they can be used to document optimization of environmental impacts resulting from products and processes. Any political instruments that are introduced should therefore bring about a significant reduction in vehicles' CO_2 emissions over their whole lifecycle.

Design for Sustainability
The guiding principle of lifecycle assessment also applies to vehicle design. The vehicle industry has recast approaches from Design for Circularity, Design for Dismantling and Design for Recycling in holistic Design for Sustainability strategies in order to take account of the products' long use phase.

Securing raw materials
Alongside the classical purchasing instruments for safeguarding the availability and quality of critical raw materials, the automotive industry is currently stepping up the use of recycled materials in vehicle development and production. Practices common today for steel, aluminum and copper will be expanded in the future and applied to the key raw materials for batteries as well.

Decade of transformation
The automotive business and the circular economy are two strong sectors that work together as peers sharing responsibility, to establish material cycles within the market economy for today's generations of vehicles and for those to come. The fundamental transformation and innovation currently underway in the automotive industry must extend to the players in the circular economy to secure the positive ecological effects along the entire chain.

Requirements for a viable future automotive circular economy

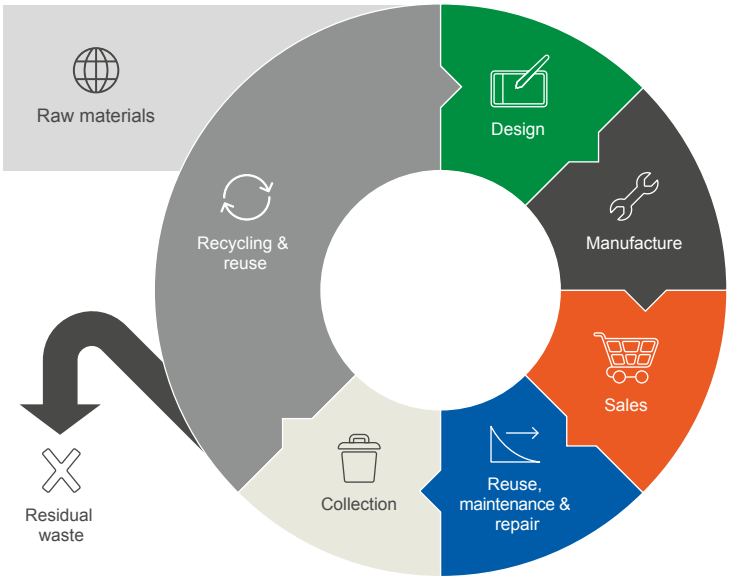
Current political initiatives, such as revising the End-of-life Vehicles Directive or drawing up a strategy for a circular economy, offer the possibility of strengthening important framework conditions for a successful automotive circular economy (see Figure 1).

1 Raw materials

- Improve the framework conditions for secondary materials and recyclates

2 Design

- Design for Sustainability (with support from lifecycle assessments, etc.) as the guiding principle of an automotive circular economy



3 Manufacture

- Mainstream optimized resource-efficient production processes and internal re-circulation in the manufacturing phase

4 Sales

- Transparent product information for consumers is already available

5 Reuse, maintenance & repair

- Vehicles are repairable
- Promote market for spare parts from ELVs in the EU

7 Recycling & reuse

- Use existing dismantling information in IDIS
- Material-specific recycling quotas impede a functional circular economy
- Use post shredder technology throughout the sector as the “best available techniques”

6 Collection

- Ensure freedom of choice under extended producer responsibility
- Enable economically viable financing to cover the possible negative market value of an ELV
- Combat illegal ELV disposal
- Reinforced role for certificate of destruction
- Guarantee the environmentally sound export of used vehicles

Improve the framework conditions for secondary materials

The automotive industry is endeavoring to use more secondary materials and therefore less new material from fossil sources and ores. It should be possible to deploy materials from all sources to realize the circular economy efficiently. The focus on pure closed-loop recycling hinders the optimum use of available secondary materials. Chemical recycling has to be recognized as recycling so that material cycles from long-lasting products can be closed and pollutants eliminated.

Vehicles’ long product development cycles mean that any quotas introduced for recycled content will need a transition period of at least five years. Each target should apply only to type approvals for new vehicle models, the type approvals being based on the certified and known “RRR” reference vehicle.

Regulatory provisions must be based on technologies and materials that are available at acceptable market prices and which improve the net environmental impact without compromising the quality, safety or durability of the final product. Furthermore, pre and post-consumer recyclates must be regarded as equivalent. If there is a shortage of recyclates, use quotas must allow the use of new materials to prevent production from coming to a standstill (force majeure).

Transparent product information for consumers is already available
Vehicle manufacturers' customers receive all the necessary information about end-of-life vehicles (ELVs) which they need to dispose of their vehicles in the proper manner. A unified, EU-wide, meaningful recycling label for vehicles and their components should always be documented separately from the vehicle in digital format, to enable a reaction to technological and regulatory changes in the disposal process at any time.

The following policy measures could also support communication to customers:

- the vehicle owner's legal responsibility should feature in driver's education courses;

- the authorities should actively request the certificate of destruction when a vehicle is to be deregistered.

Promote the market for spare parts from ELVs in the EU
There is in fact already a well-established market for reusing spare parts from ELVs, with the dismantlers best placed to gauge which parts from ELVs are saleable. This market could be supported by a dismantler registration number that would be legally linked to reused parts (from ELVs) sold on online platforms. The market would also benefit from a ban on selling spare parts from treatment facilities who operate illegally.

The market for spare parts can be backed up by EU legislation clarifying that parts removed from ELVs for reuse (with the necessary traceability) are not waste and can therefore be transported and traded between the EU Member States without restrictions. Ultimately, the choice should be left to the customer and should not be determined by a statutory target.
In addition to these structural instruments, some countries have introduced promising demand-side measures to provide additional support for the spare parts market:

- For example, the Netherlands, Sweden and the US achieve high use rates for reused/remanufactured original parts by applying specific features in insurance policies, such as reduced premiums for customers who accept repairs with reused/remanufactured parts whenever they are available.

- In 2017 France introduced specific measures to foster the supply and promotion of reused parts in vehicle workshops. However, it is still too early for a final evaluation of these measures.

Measures to boost the supply of spare parts, such as setting dismantling quotas, have marked weaknesses compared with the structural and demand-side measures. The automotive industry therefore advises against them, given the large fluctuations in demand for the parts of a particular vehicle, depending on the model year and the fleet. Removing parts from old models (e. g. Euro 3 or Euro 4 vehicles) for which there is no longer any demand may even be detrimental to the environment.

Ensure freedom of choice under extended producer responsibility

When the EU End-of-life Vehicle Directive is revised, vehicle manufacurers and importers should still have the choice (as currently enshrined in the European Waste Framework Directive) between individual and collective take-back networks, plus the option of commissioning a service provider. This choice must not be restricted by other means. For instance, individual take-back systems must not be put at a disadvantage by tougher requirements for financial securities or the number and density of collection points. If collective take-back systems are set up, the provisions relating to the type of company and its funding must be in line with business principles. Moreover, even in a collective system the vehicle manufacturers/importers themselves should be allowed to organize the take-back of ELVs to make it economically viable.

Enable economically viable financing to cover the possible negative market value of an ELV

The legislation must ensure that operators in the recycling chain have the option of developing and applying an economically viable solution to compensate for potential negative market values of ELVs (as in Norway, for example). This should be flanked with appropriate supporting legislation if necessary.

Combat illegal disposal of ELVs

To prevent illegal practices, presentation of a certificate of destruction is mandatory when a vehicle is to be finally deregistered for the purpose of recovery. Only those treatment facilities that are officially authorized and approved under the waste disposal legislation are entitled to issue these certificates of destruction. A supporting system should be set up obligating a vehicle owner to continue paying an insurance premium and/or tax until unequivocal proof of the vehicle's sale, export or theft – or a certificate of destruction – is presented. The vehicle registration system in the Netherlands is regarded as exemplary in this respect. In addition, the responsible authorities should cooperate with one another and be given the relevant competences to identify the illegal operators, impose sanctions, and close them down if necessary.

Reinforced role for certificate of destruction

The VDA calls for the certificate of destruction to be given a greater role in the German Vehicle Registration Ordinance (Fahrzeug-Zulassungsverordnung). This would create the basis for reliable information about the whereabouts of ELVs. The automotive industry proposes the following measures:

1. In the future, automatic deletion of a vehicle identification number after seven years with no information about the whereabouts of the vehicle should be impossible.

2. The certificate of destruction should be integrated into online vehicle registration/deregistration process (i-Kfz).

3. Section 15.1 of the Vehicle Registration Ordinance should be reformulated to emphasize the fact that the authorities will finally deregister a vehicle only on the basis of the certificate of destruction.

4. In the future, car owners should be required to continue paying fees for vehicles that remain registered; however, the needs of dealers and owners of classic cars should be taken into account.

Guarantee the environmentally sound export of used vehicles

A key feature of the German automotive industry is its global value chain. The VDA is therefore not in favor of general bans on exporting new and used cars, their parts, raw materials or secondary raw materials.

Reuse should be preferred over disposal, in keeping with the disposal hierarchy. For this reason, the trade in used cars is hugely important in the assessment of a vehicle's lifecycle, and should not be restricted. Regulatory contradictions between the Waste Framework Directive and the Waste Shipment Regulation should also be resolved. In addition, all vehicles that are exported should be recorded, and the various registration and deregistration systems in the EU should be harmonized.

The final vehicle owner should remain the person to decide whether the vehicle is sold as a used vehicle, or deregistered and disposed of as an end-of-life vehicle.

Regarding trade outside Europe, the customs authorities should be able to stop the export of potentially environmentally hazardous used cars. To this end, the authorities should have a catalog of criteria to hand to aid in decision-making, which takes account of the interests of the exporting and the importing countries. The Swiss system could serve as a model.

Use existing dismantling information in IDIS
IDIS is the central information platform provided free of charge by the automotive industry to all dismantling and disposal operators. All the necessary information is compiled and made available in this system. It is an internationally recognized, self-explanatory, simply structured and user-friendly tool. From the perspective of the market participants it fulfills all the key criteria for an information tool. Inspections of dismantling companies should include a check that they are using IDIS.

Material-specific recycling quotas impede a functional circular economy
The auto industry is considering a vehicle holistically as one product that is taken to market in its complete and fully functional state. The industry pledges to take back this complete product at the end of its life and have it treated holistically by the recycling industry. Treating and recycling the complete product along the recovery chain is a profitable business – a shift in this approach, to separate assessments of each individual material flow, will lead to the wrong conclusions. The aim should be to optimize material cycles in terms of both economy and ecology, to make better use of existing recycling technologies, and to encourage innovations that improve the return of materials to the cycle. Suitable instruments for doing this would be simplified approval procedures for innovative systems, and raising the fees for landfill and incineration.

Use progressive post shredder technology throughout the sector as the "best available techniques"
The automotive industry supports the decarbonization targets. In this context it supports all measures that improve the ecological footprints of vehicles.

However, this does not include the publicly discussed decentralized manual removal and sorting of materials such as plastics, glass, precious metals and rare earths, owing to the amount of work involved in removal and collection, followed by transportation to central processing centers. In the context of post shredder technology, many innovative separation techniques have been developed, which make ecological sense. These "best available techniques" (BAT) should be required, as in the Circular Economy Act (Kreislaufwirtschaftsgesetz), consistently applied and promoted. Appropriate instruments are simplified approval procedures and raising the fees for landfill and incineration.

Contact for this topic

Michael Püschner
Head of Division Environment & Sustainability
michael.pueschner@vda.de

Publisher

German Association of the Automotive Industry
Behrenstraße 35, 10117 Berlin
www.vda.de/en

Registered representative R001243
EU Transparency No. 95574664768-90

Version

Version 2.0, April 2022