



NEW LIFE



# GREENPAPER

## **NO CLEAN DEAL WITHOUT A CLIMATE-FRIENDLY (TYRE) CIRCULAR ECONOMY**

SUSTAINABLY SECURING THE FUTURE  
OF THE CIRCULAR ECONOMY IN EUROPE

2026



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## **CIRCULAR ECONOMY IS THE KEY TO CLIMATE NEUTRALITY**

In addition to the energy transition, Europe needs an economic transition. Our linear economic system – produce, use, discard – is not sustainable. It accelerates climate change, exhausts natural resources, and creates growing mountains of waste. If we do not fundamentally change our resource consumption, we will need the resources of three planets by 2050. Even in Europe, waste is still frequently incinerated – a practice that destroys valuable raw materials and releases climate-damaging emissions.



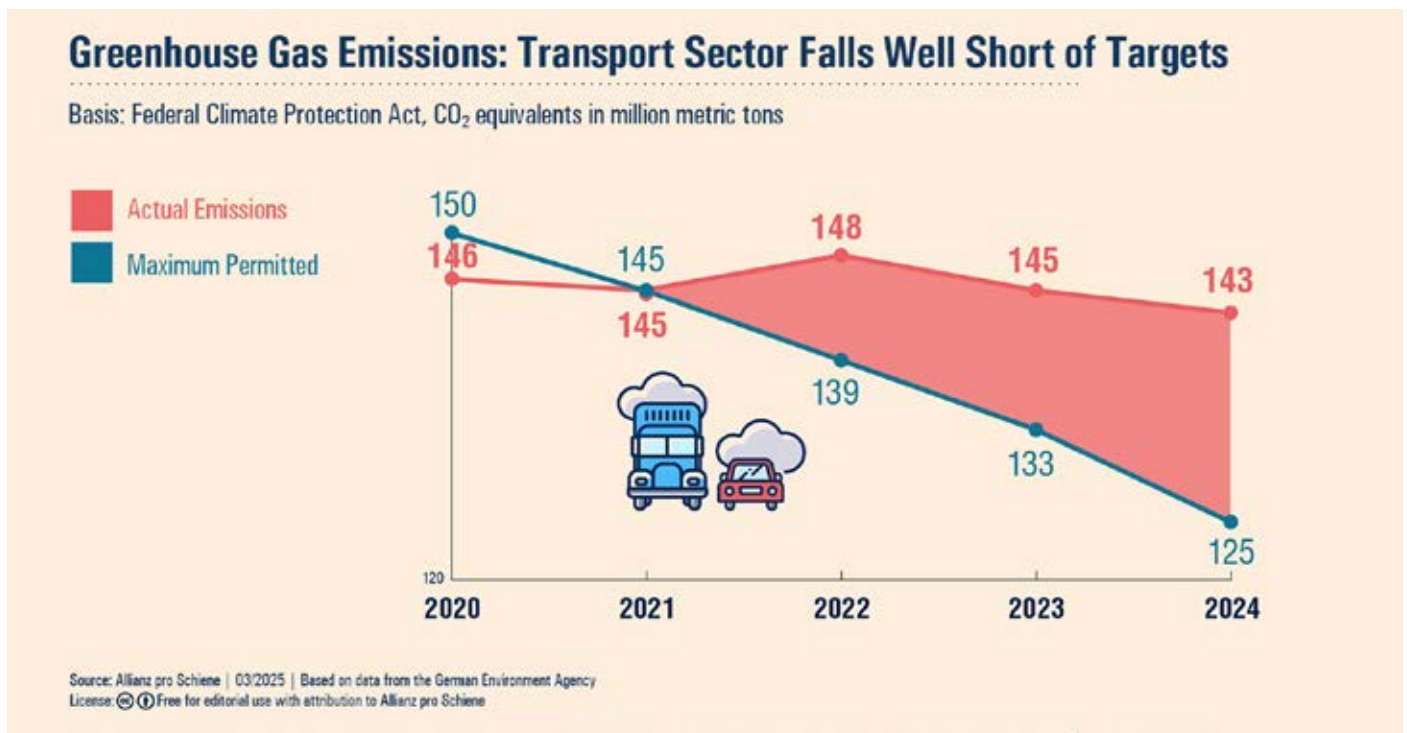
The solution is obvious: A circular economy that keeps products and materials in the cycle for as long as possible. The circular economy reduces waste and emissions, conserves resources, and saves energy.

*“The circular economy is the key to Europe’s raw material independence and competitiveness.”*

*(Ursula von der Leyen, President of the EU Commission, October 2025)*

The circular economy has gained massive importance due to the geopolitical situation and the focus on strategic autonomy. Circular business practices are now seen as an economic necessity to reduce dependence on critical primary raw materials. For 2026, the EU plans the **Circular Economy Act**. The goal is to create a real internal market for secondary raw materials that can compete qualitatively with primary materials. In its “Clean Industrial Deal,” the Commission emphasizes that **Europe must become a global leader in the circular economy** to secure its industrial base and double the circularity rate by 2030.

In Germany, greenhouse gas emissions in the year 2025 have fallen to around 640 million tons of CO<sub>2</sub> equivalents. This means the country is 49 % below the reference value of 1990 and fulfills the legal requirements for the year 2025. This success is primarily attributable to the further decline in industrial production (minus 11 million tons of CO<sub>2</sub>) and less to structural climate protection measures. In the areas of **housing and transport**, emissions even rose slightly in 2025.



In the entire EU, emissions fell by about 0.8 % in 2025. Adjusted for weather effects (cold winter, less wind), the reduction rate was almost 4 %, which is within the framework of the climate targets for 2030. However, this positive development must not lead to a **standstill in climate policy**. Experts warn that the current pace is not sufficient to ensure the binding 2030 target (minus 65 %), as the current decline is driven by economic weakness and not by the energy transition alone.

The challenge remains immense – especially in the transport sector. Therefore, the chosen path must be ambitiously pursued and expanded – through binding framework conditions, funding programs, innovation partnerships, and clear targets for the industry.

**Climate neutrality by 2045 succeeds only if we complete the resource transition in addition to the energy transition. Now is the time to switch the European economy to circular.**

## **CLEAN INDUSTRIAL DEAL: SEIZING THE OPPORTUNITY FOR CIRCULAR ECONOMY IN EUROPE**

The Clean Industrial Deal (CID) marks a decisive change in course to transform the Green Deal into a tangible growth strategy. The European Commission aims to bridge the gap by no longer viewing decarbonization merely as a regulatory task, but as a central lever for international competitiveness.



The most important pillars of this undertaking are:

- **Affordable energy:** Lowering energy costs through the massive expansion of renewable energies and grids, primarily to relieve the energy-intensive industry.
- **Investment security:** Creating clear framework conditions for green lead markets and simplified state aid rules to keep investment in Europe.
- **Security of supply:** Reducing dependence on fossil imports and critical raw materials by promoting domestic technologies and circular economy.

*“The Clean Industrial Deal offers a strategy for a competitive and decarbonized European industry. At the same time, it is intended to protect our autonomy and secure jobs. This deal is an important first step, but time is running out. We urgently call on the Commission to act immediately and be more ambitious.”*

*(Tom Berendsen, Member of the European Parliament, June 2025)*



The CID contains thoroughly positive impulses for circular business: The stronger orientation of public procurement toward criteria such as sustainability and **“Made in Europe,”** the establishment of green lead markets, and the strengthening of recycling are correct steps. Also, the intention to cover the demand for critical raw materials increasingly through intra-community recycling is particularly relevant for the tyre market with its high rubber volumes.

## **THE DIRECTION IS RIGHT, NOW POLITICAL COURAGE IS NEEDED**

**The Clean Industrial Deal can be the foundation for a new, resilient economic model. This offers the tyre/recycling industry and many other industrial sectors the opportunity to become the engine of a climate-neutral economy. However, its effectiveness depends crucially on whether the EU has the courage to understand the circular economy not as an option, but as a central element of industrial policy.**

While politicians see the CID as a bridge, tyre manufacturers and recyclers fear that they will be left standing in the rain on this bridge due to high energy costs and a lack of market rules for recyclates:

- The tyre industry views the CID critically because it does not resolve existing conflicts of objectives. New requirements in the CID and in the planned **Circular Economy Act** threaten, from the perspective of the Economic Association of the German Rubber Industry (wdk), to make production more expensive before the necessary **infrastructure for secondary raw materials** is established on an industrial scale.
- Since tyre manufacturing is extremely energy-intensive, it is criticized that while the CID promises “clean” energy, the relief in **grid fees and taxes** is progressing too slowly to secure **international competitiveness**.
- Tyre recycling companies criticize that the CID does not establish **binding usage quotas for recyclates** in new tyres. Without these quotas, the market for recycled raw materials remains volatile and investments in new plants remain risky.
- The export of end-of-life tyres to countries with low environmental standards is not strictly enough prohibited by the CID. This withdraws the raw material base from European recyclers and contradicts the idea of “security of supply.”
- Furthermore, there is a lack of EU-wide standardization on when **end-of-life tyres are no longer “waste”** but high-quality products. The industry criticizes that the CID has so far only addressed this bureaucratic bottleneck in passing.



## CRADLE TO CRADLE – RETHINKING THE ECONOMY, PRESERVING RESOURCES

**Nature leads the way: everything renews itself continuously in cycles. There is no waste, only nutrients that return to the cycle. This is precisely the principle followed by the Cradle to Cradle concept – a forward-looking vision for a true circular economy that drastically reduces resource consumption, strengthens climate protection, and secures our prosperity in the long term. It is not enough to optimize processes – we must fundamentally rethink the economy.**

Cradle to Cradle goes beyond traditional recycling: it requires products and materials to be **ecologically and sustainably designed** so that they can be reused from the very beginning or transferred into other

cycles of use – without loss of quality, without waste.

This can be demonstrated concretely using the **example of the AZuR tyre circular economy**. Tyres are kept on the road for as long as possible through retreading, repair, and regrooving and are subsequently fed into climate-friendly mechanical or chemical recovery. Every stage of the circular product life cycle extends the benefit of the materials used and saves CO<sub>2</sub>, energy, and raw materials.

**Cycles must be thought through from the start**, regularly reviewed, and adapted if necessary. It should already be clear during the development of a new tyre which

materials can be reused and how. This requires new ways of thinking, new processes, and above all: the participation of all actors along the entire value chain. Cradle to Cradle demands a change in perspective: away from waste, toward valuable materials in continuous circulation. Every material has a next life – that is not a technical dream, but an ecological and economic necessity.

**Sustainable value creation: The tyre circular economy as a model** The AZuR network shows how the Cradle to Cradle principle can be applied to a specific industry. Through the networking of companies, science, and politics, a closed loop is created that is both ecologically and economically successful. The sustainable tyre circular economy is a prime example of how the resource transition can succeed.



## **NATIONAL CIRCULAR ECONOMY STRATEGY (NKWS): UTILIZING POTENTIAL, STRENGTHENING COMMITMENT**

With the National Circular Economy Strategy (NKWS), the Federal Government has committed itself to a political guiding principle for promoting the circular economy for the first time. The strategy is intended to reduce primary raw material consumption, close material cycles, and thus make a central contribution to environmental and climate protection. It takes the entire life cycle of products into view – from production to use and recycling. This is an important step in the right direction.

### **Opportunity for location and resilience, but implementation is decisive**

The **Circular Economy Action Program** brings movement to the implementation of the National Circular Economy Strategy. It relies on **digitalization, resource efficiency, and innovation** – that is the right path. From the perspective of AZuR network coordinator Anna-Maria Guth, it is now decisive that political announcements finally turn into concrete accelerations in practice: faster permits, reliable markets for recyclates, and clear framework conditions for investments in recycling and infrastructure.

*“What we need is a coherent interplay of environmental, industrial, and economic policy. Without clear measures to promote the use of recyclates, to eliminate permit barriers, and to protect European recycling standards, the program remains an intermediate step.”*

*(Anna-Maria Guth, AZuR Network Coordinator, February 2026)*



The tyre-recycling industry views it critically that **central industrial policy levers** are missing to make the circular economy a real location factor. Resilience, competitiveness, and resource security fall short in the action program. Demanded are, among others:

- **Funding programs for retreading and high-quality tyre recovery**
- **Incentives for circular product design (Cradle to Cradle)**
- **Mandatory consideration of circular products in public procurement**

## **AZUR PROMOTES CIRCULAR VALUE CREATION IN NORTH RHINE-WESTPHALIA – THEMATIC ROUND TABLE ON TYRE RECYCLING LAUNCHED**

**The transformation to a circular economy requires concrete cooperation, regional networking, and practical solutions. The Alliance for the Future of Tyres (AZuR) is therefore actively involved in the “Circular Value Creation NRW” round table, which was initiated by the state government of North Rhine-Westphalia to promote innovative approaches to the circular economy across all industries.**



Circular economy is the key to the sustainable transformation of cities and municipalities. At the first face-to-face meeting of the AZuR Round Table on Tyre Recycling in North Rhine-Westphalia in Münster in November 2025, more than 40 participants from local government, business, politics, and science discussed opportunities and the economic and ecological advantages of municipal circular economy projects in the region.

AZuR set up a “Tyre Recycling” theme table as part of the round table. The aim of this theme table is to support municipalities and companies in North Rhine-Westphalia in the practical implementation of circular tyre solutions. In addition to AZuR and the Center for Innovation and Technology NRW (ZENIT), other participants include representatives from universities,

companies, associations, and authorities from the federal state. The following projects and approaches are being developed jointly:

- Certified disposal of used tyres in municipalities and businesses
- Use of retreaded tyres in public and private vehicle fleets
- Sustainable road renovation with rubber-modified asphalt
- Use of recycled products from used tyres in construction projects

**AZuR Tyre Recycling  
Roundtable – North  
Rhine–Westphalia**



These measures combine resource conservation, climate protection, and regional value creation in an exemplary manner – and demonstrate how the circular economy can be put into practice.

### **Thematic table: a circular model project for the whole of Europe**

The tyre recycling theme table is not only a milestone for North Rhine-Westphalia, but also a model project for the whole of Europe, showing how the circular economy can be advanced in a concrete and industry-specific manner. AZuR is thus demonstrating that a sustainable tyre recycling economy is much more than just waste prevention – it is an economic, ecological, and social model for the future.

## **GROWING IMPORTANCE OF SOLVING THE PROBLEM OF END-OF-LIFE TYRES DUE TO GLOBALLY INCREASING TYRE DEMAND**

Tyres are the indispensable basis for the mobility of the economy and society. Global demand for tyres is growing steadily as the number of vehicles increases. In the EU, the number of vehicles has more than doubled since 1975. In 2025, over 225 million passenger car tyres and 11 million truck tyres were sold in Europe. Current studies forecast an annual growth rate of approximately 3% to 4% in the European tyre market until 2030.



With the number of new and replacement tyres, the amount of used tyres is also increasing. In Germany, around 533,000 tons of end-of-life tyres (ELTs) were generated in 2024, which corresponds to approximately 52.8 million passenger car, commercial vehicle, and van tyres. If these tyres were laid end to end, they could cover the area of 2,550 soccer fields.

Every minute, over 100 tyres are consumed in Germany alone. Unfortunately, these used tyres are still far from being sent to every region for retreading, repair, or climate-friendly mechanical or chemical recycling. A considerable amount of tyres (an estimated

100,000 tons in 2024!) is exported halfway around the world, causing additional CO<sub>2</sub> pollution, and is then illegally disposed of, burned in a manner that is harmful to the climate, or recycled in backyard pyrolysis without environmental protection requirements.

**In June 2024, AZuR called in a resolution for EU ELTs to be kept in the EU recycling cycle and also demanded a ban on ELTs exports to non-EU countries.**

## TYRE RECYCLING IN GERMANY: LOST RESOURCES, MISSED OPPORTUNITIES

The volume of end-of-life tyres in Germany rose to 533,000 tons in 2024 – 20,000 tons more than in the previous year. Around 100,000 tons were removed from the recycling system, mainly through exports outside the EU, where they are often incinerated, illegally dumped, or recycled in ways that harm the environment. This deficit must be closed. Every ELT recycled locally saves CO<sub>2</sub>, conserves raw materials, and avoids waste. “These quantities are missing from our domestic recycling industry and are slowing down the development of a sustainable circular economy,” warns Stephan Rau from the wdk. In order for more tyres to remain in circulation, reliable framework conditions, targeted support, and a clear commitment from politics and industry are needed.



**Tyre retreading: 71,000 tons (13.3%)\***

- ➔ Multiply tyre mileage
- ➔ Save more than 60% in raw materials and CO<sub>2</sub> emissions



**Material recycling into rubber granulate/rubber powder: 193,000 tons (36.3%)\***

- ➔ Durable, robust recycled material with low CO<sub>2</sub> emissions
- ➔ High-quality products made from rubber granulate/rubber powder



**Chemical recycling (pyrolysis): 12,000 tons (2.25%)\***

- ➔ Recovering valuable secondary raw materials (e.g., for new tyres)
- ➔ Rubber granulate, carbon black, and much more



**Thermal utilization: 93,000 tons (17.45%)\***

- ➔ Fuel substitute (primarily in the cement industry)
- ➔ Secondary fuel with high calorific value and low sulfur content

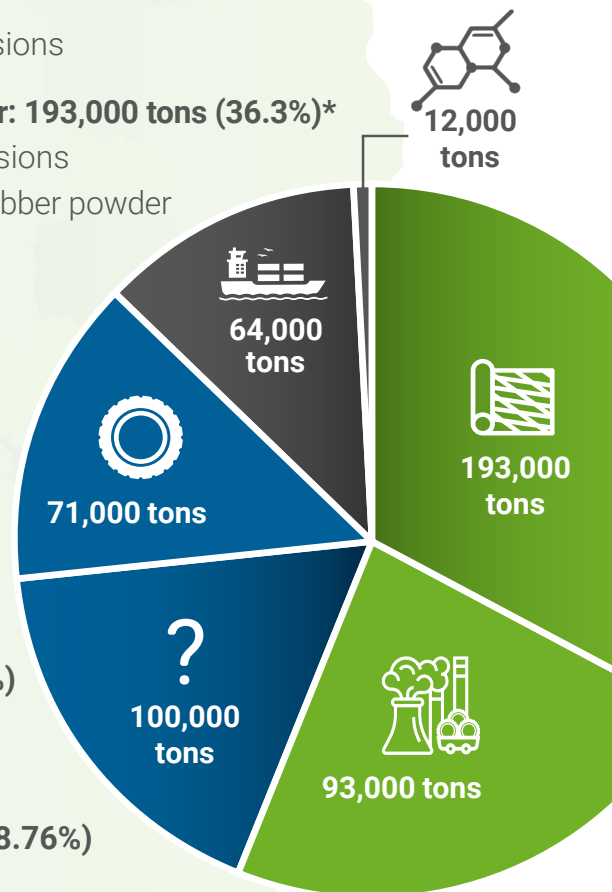


**Exports for reuse and recycling: 64,000 tons (12.01%)\***

- ➔ Exports to countries that do not have disposal systems should not be permitted.



**Used tyres with unclear destination: 100,000 tons (18.76%)\***



**Used tyres for reuse and recycling in Germany:**

**533,000 tons**

\* The quantities refer to the recycling of waste tyres generated in Germany.

The circular economy for used tyres relies on reliable data collection



## **BASIS OF THE TYRE CIRCULAR ECONOMY: CERTIFIED END-OF-LIFE TYRE DISPOSAL (ZARE)**

A functioning circular economy begins at the end of a product's life – with proper disposal. Certified end-of-life tyre (ELT) disposal companies make a decisive contribution to the sustainability of the entire tyre/recycling industry. Through structured processes of collection, testing, and sorting, ELTs are specifically directed to the next stages of recycling. Thus, certified end-of-life tyres disposal (ZARE) forms the backbone of a functioning tyre recycling economy – and a central interface between use and recycling.



Certified End-of-Life Tyre  
Disposal Companies  
(ZARE)

Certified end-of-life tyre disposal also ensures a reduction in the illegal dumping of ELTs in the environment. End-of-life tyres illegally dumped in forests, meadows, rivers, and lakes, with a half-life of around 2,000 years, endanger water, flora, fauna, and diversity, which must also be prevented through consistent prosecution of these crimes. Depending on the federal state, fines of up to €50,000 are imposed in Germany for this offense.



Certified end-of-life tyre disposal companies (ZARE) ensure, in accordance with the waste hierarchy, that as many ELTs as possible remain in the recycling cycle and are not illegally disposed of or exported. ZARE is calling for the introduction of a nationwide ELT regulation with a central registration system and mandatory disposal certificates – including for auto repair shops, tyre dealers, and car dealerships.

*“Only when quantities are recorded and transparently controlled can illegal exports be stopped and genuine recycling processes strengthened.”*

*(Christina Guth, AZuR Network Coordinator, February 2026)*



The objectives of certified end-of-life tyre disposal are in line with the NKWS:

- **Environmental protection:** Prevention of environmental pollution through proper disposal
- **Resource conservation:** Promotion of recycling and reuse of materials
- **Transparency & safety:** ELTs must be disposed of in a legal and traceable manner
- **Awareness raising:** Public education on the importance of sustainable disposal

**In order to prevent illegal dumping and ensure that end-of-life tyres are optimally reused and recycled, the following measures must be implemented across the EU by 2030:**

- Illegal disposal of ELTs must be prosecuted more consistently.
- Collection points for ELTs (tyre dealers, auto repair shops, and car dealerships) may only cooperate with certified waste disposal companies.
- Non-recyclable sealant tyres\*, which can only be thermally recycled, should no longer be allowed to be used.

\* Tyres with self-sealing function for minor punctures

## **REPAIR AND RETREADING OF TYRES: SUSTAINABLE OPTIONS FOR EXTENDED TYRE LIFE**

**Worn or defective tyres on passenger cars and commercial vehicles do not necessarily have to be replaced with new tyres. The ecologically and economically superior solution is professional repair or regrooving of commercial vehicle tyres. Approximately one in three damaged passenger car tyres Around one in three damaged car tyres can remain in safe use for a long time thanks to professional repair, which contributes to environmental protection and saves costs in the long term. Regrooving increases the mileage of commercial vehicle tyres by up to 25 percent.**

### **Tyre repair – resource-saving and safe**

With professional repair, worn or damaged tyres can be made safe for the road again. Around 37.5 percent of passenger car tyres can be repaired and are worth repairing. The repair potential is also high for commercial vehicles. Modern repair technologies and high-quality materials now make it possible to reliably repair even complex damage.

According to § 36 of the Road Traffic Licensing Regulations (StVZO), the repair of pneumatic tyres is permitted under certain conditions. Repairs should always be carried out by qualified specialist companies in order to ensure safety on the road. Professionally repaired tyres offer a level of safety comparable to that of new tyres – even at high speeds.





### **Regrooving – more mileage, fewer emissions**

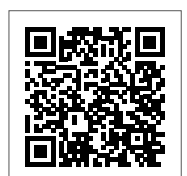
Regrooving commercial vehicle tyres is another way to extend the service life of tyres. In this process, trained specialists remove rubber from the existing tread to renew the tread pattern and increase the tread depth. After regrooving, a new tread structure with fresh edges is created, which improves traction and thus contributes to driving safety.

This can increase the mileage of truck and large tyres by up to 25 percent. In addition, fuel consumption can be reduced due to lower rolling resistance – a noticeable economic advantage with reduced environmental impact. When carried out professionally, regrooving is an economically attractive and environmentally friendly measure within the framework of sustainable tyre management.

### **Award-winning technology from BEAR Machines**

BEAR Machines was honored with the European Transport Prize for Sustainability 2026. With the BEARCUT semi-automatic re-profiling machine, the AZuR partner is setting new standards in the sustainable use of commercial vehicle tyres. The innovation actively contributes to extending the life cycle of commercial vehicle tyres, and thus also to conserving resources and reducing CO<sub>2</sub> emissions.

**Watch now:  
Retreading of  
Commercial  
Vehicle Tyres**



## RETREADED TYRES REDUCE THE CLIMATE IMPACT OF TYRE OPERATING COSTS FOR ALL TYPES OF VEHICLES

The purchase, maintenance, and replacement of tyres account for up to five percent of the total operating costs of a vehicle fleet. In order to reduce these costs in the long term, more and more fleet operators are equipping their vehicles with retreaded tyres. With premium tyres being retreaded twice, the cost of tyres is reduced by almost 30 percent. Retreaded tyres are EU taxonomy-compliant, offer the same quality, safety, mileage, and performance on all axles as comparable new tyres, and also have clear environmental benefits.

Retreading is a sustainable solution in line with the NKWS and meets the requirements of the EU Taxonomy Regulation. According to an AZuR/DBU study by the Fraunhofer Institute UMSICHT, the production of retreaded tyres saves over 60% of CO<sub>2</sub> emissions, two-thirds of raw materials, and around 50 percent of energy compared to the production of new tyres. A retreaded commercial vehicle tyre causes around 135 kg less CO<sub>2</sub> emissions than a new truck tyre.



*“Tyre retreading is a promising, forward-looking manufacturing process that has been tried and tested for over 100 years. It not only makes economic sense, but is also environmentally and socially beneficial.”*

*(Christina Guth, AZuR network coordinator, March 2025)*



### Retreading reduces operating costs for tyres

A recent performance-cost analysis has shown that retreading also pays off economically. The reference scenario was based on the triple use of premium new tyres. With the double retreading of a premium new commercial vehicle tyre, the ratio of mileage to cost achieved by far the best value. With identical quality, safety, and mileage, tyre costs can be reduced by almost 30 percent in this scenario. By retreading your own casings, you can also save on disposal costs.



## PERFORMANCE-COST ANALYSIS: COMMERCIAL VEHICLE TIRES

### COMPARISON

#### REFERENCE SCENARIO



3× Premium New Tires

#### TIRE CONCEPT 2



2× Quality Tires  
 1× Premium Retread

#### TIRE CONCEPT 1



1× Premium New Tires  
 2× Premium Retread

#### TIRE CONCEPT 3

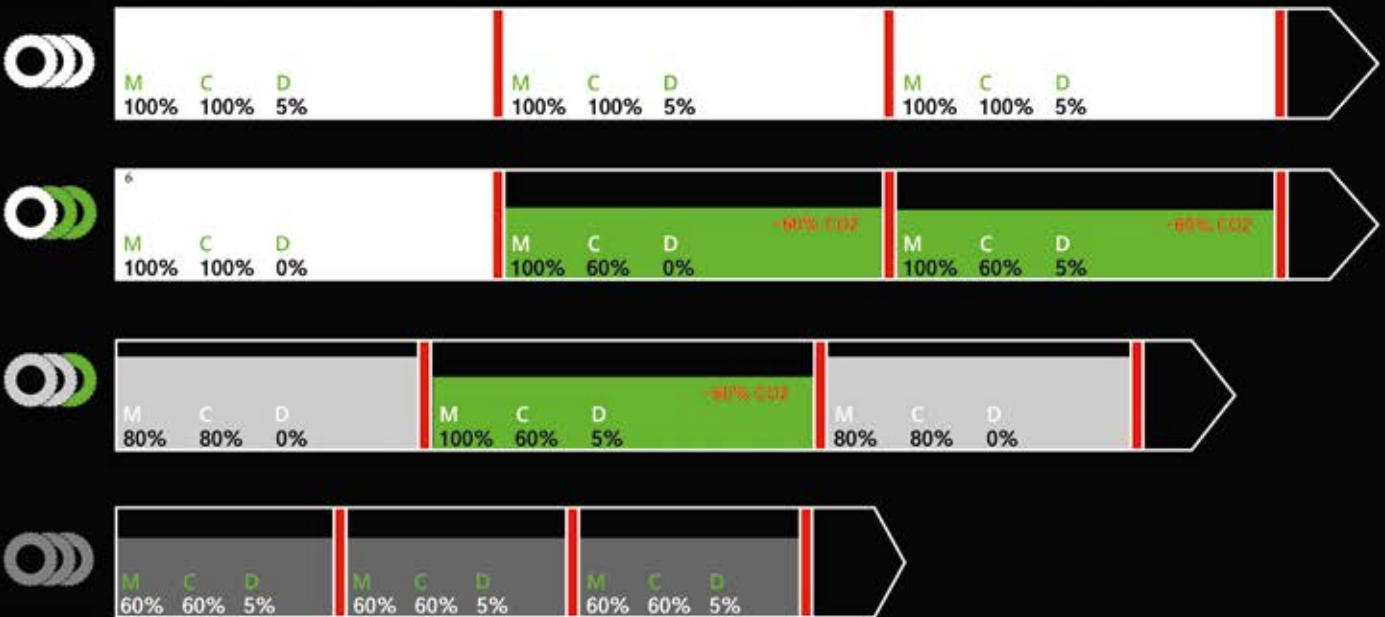


3× Economy Tires  
 (not suitable for retreading)

### MILEAGE

### COSTS

### DISPOSAL



### EVALUATION



Mileage	100%	1
Total Costs	100%	
CO <sub>2</sub> Impact		100%
Downtime-Index		100%



Mileage	86.7%	1.21
Total Costs	71.4%	
CO <sub>2</sub> Impact		80%
Downtime-Index		113%



Mileage	100%	1.40
Total Costs	71.4%	
CO <sub>2</sub> Impact		60%
Downtime-Index		103%



Mileage	60%	0.97
Total Costs	61.9%	
CO <sub>2</sub> Impact		166%
Downtime-Index		140%

## Retreading meets high quality and safety requirements

During retreading, high-tech machines are used to renew only the tread and sidewalls of the high-quality tyre base (casing) with high-quality rubber compounds. Retreaded tyres are manufactured for almost all types of vehicles and areas of application. Their tread patterns correspond to those of new tyres. They undergo numerous safety and quality checks and meet the high requirements of ECE R109/108. The tread variants cover all areas of application and axle positions. Tyres for commercial vehicles can be retreaded up to three times.

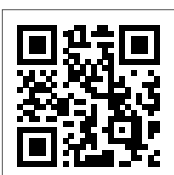
## Milestone for retreading in Europe

AZuR partner RIGDON is building a state-of-the-art plant in Pfaffenhofen for the retreading of car and truck tyres. Up to one million retreaded car tyres are to be produced there annually in the future with the help of AI. RIGDON is thus setting standards for car retreading in Europe – technically innovative, ecologically pioneering, and economically strong.



## NERO project group at TH Köln promotes sustainable retreading

The NERO project (Sustainable and Efficient Optimization of Retreading) aims to improve the reuse of old tyres through innovative retreading processes. Through the use of new materials, optimized processes, and digital technologies, the efficiency and quality of retreading is to be further increased. NERO combines materials science, engineering, and digitalization to promote the circular economy in the tyre industry. The project is being implemented in close cooperation with industry partners, research institutions, and authorities.



Retreading  
from A to Z



Life cycle assessment of retreading by  
the Fraunhofer Institute UMSICHT

Retreaded tyres  
in fleet use



## CATALOG OF DEMANDS ON EU POLICY: SECURING THE FUTURE OF RETREADING IN EUROPE

**Tyre retreading is a prime example of the implementation of a sustainable circular economy that also offers economic advantages. Nevertheless, the SME-based retreading industry suffers from overregulation, bureaucracy, high energy prices, cheap imported tyres, and a lack of support from politicians.**

Since June 2023, EU criteria for public procurement in the road transport sector have allowed all vehicles to be legally equipped with retreaded tyres if they are type-approved in accordance with ECE R 108/109 guidelines. In June 2025, the EU Commission officially confirmed that retreaded tyres meet the requirements of the **EU Taxonomy Regulation** – a significant success for sustainable mobility and the fulfillment of a key AZuR demand. This clearly means that retreaded tyres are sustainable in terms of the EU taxonomy and may be **used in compliance with the law**.

Nevertheless, retreaded tyres are being displaced in Europe by imported tyres from the Far East. According to figures from the European Tyre & Rubber Manufacturers Association (ETRMA), the Europe-wide market share of retreaded commercial vehicle tyres plummeted from 34.2 percent (2012) to 20.1 percent (2022) within ten years.

### **The retreading of brand-name tyres also has a future in Europe**

A recent study from the US predicts that the global retreading market will grow from US \$11.2 billion to US \$20 billion by 2033. In the US, retreading is set to receive a boost from the government: a recent draft bill provides for tax credits for the purchase of retreaded tyres. From AZuR's point of view, fair framework conditions and consistent support for climate-friendly technology from politicians are more important than subsidies in Europe.

### **List of demands to EU policymakers to secure the future of retreading, adopted at the first AZuR Retreading Summit:**

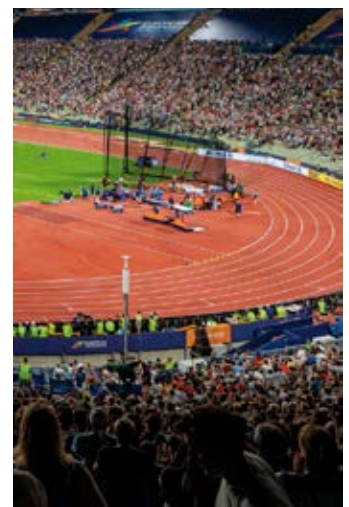
- End-of-life tyres generated in the EU must also be retreaded in the EU
- Tyres imported into the EU must be suitable for retreading
- A tax reduction should be granted for the use of retreaded tyres
- Retreaded tyres must be given preference in public tenders.
- The dimensions for passenger car retreading must be regulated, etc.

List of demands  
Complete overhaul



## CLIMATE-FRIENDLY MECHANICAL RECYCLING OF TYRES AND THEIR RAW MATERIALS

Once tyres have reached the end of their intended use on the road, they are broken down into their constituent parts using modern technology. This allows the valuable secondary raw materials from tyres (steel wire, textile fibers, and above all rubber) to be kept in circulation instead of being disposed of or burned as secondary fuel.



The textile fibers recycled from tyres (approx. 10% of the tyre) have excellent insulating properties compared to rock wool or mineral wool. The steel wire recycled from tyres (approx. 15%) is suitable for remelting in steelworks. The recycled tyre rubber granulate is used to manufacture a variety of high-quality products for various industries and applications. Products made from tyre rubber granulate are robust, weatherproof, durable, and require only minimal care/maintenance. Manufacturing – made in Germany – takes place with short transport routes, in compliance with the highest environmental and quality standards.

The range of products made from recycled rubber granulate extends from weatherproof flooring for terraces, balconies, and paths to elastic fall protection flooring for playgrounds and running tracks to building protection for flat roofs with greenery and/or PV systems, noise protection, and impact sound insulation. At the end of its second life cycle, tyre rubber can be recycled again in bound rubber products, used as a raw material, and kept in the recycling cycle.

Climate-friendly recycled products made from tyre rubber granulate improve the ecological balance, can be used in a variety of ways around buildings, open up new design possibilities with variable colors and shapes, and also pay for themselves quickly in economic terms, as they are low-maintenance, easy to care for, weatherproof, and extremely durable.

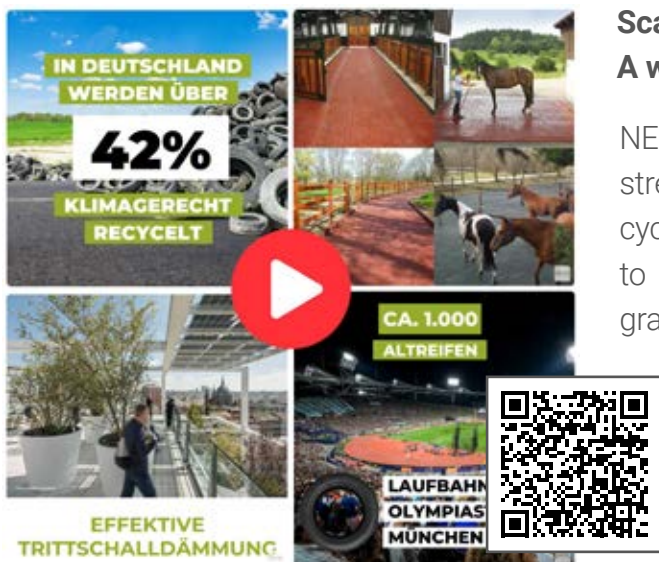
**Products made from  
tyre rubber granulate  
for municipalities,  
landscaping, trade fair  
construction, building  
protection, playgrounds,  
sports and fitness**



Products made from tyre rubber granulate have a recycling content of up to 95%. According to a study by the German Federal Environment Agency, the manufacture of products from the secondary raw material tyre rubber granulate saves between 1.0 and 3.2 tons of CO<sub>2</sub> equivalent per ton of tyres recycled, depending on the application, compared to the manufacture of comparable products from primary raw materials<sup>1</sup>.

<sup>1</sup>Final report on the evaluation of the collection and recycling of selected waste streams for the further development of the circular economy  
 Publisher: Federal Environment Agency (2022)

Furthermore, mechanical tyre recycling strengthens regional economies, preserves and creates jobs, reduces dependence on raw material imports, and supports the achievement of the United Nations Sustainable Development Goals (SDGs).



**Scan QR-Code to watch:  
 A well-rounded approach to climate protection**

NEW LIFE has compiled ten facts about the advantages, strengths, and opportunities of climate-friendly material recycling of ELTs in video clips; from the ecological benefits to high-quality recycled products made from tyre rubber granulate.

**Scan QR-Code to watch:  
 1001 ideas for the city of the future**

The film takes the audience on an imaginative journey into a climate-positive, green vision of tomorrow's urban metropolitan areas. The heroine of the film is the benevolent tire fairy TIRELLA, who uses her magic wand to perform recycling magic and transform urban spaces into climate-friendly, livable environments.



**Currently, around one third of end-of-life tyres in Germany are recycled mechanically, with this figure set to rise to 75% in the future. In order to achieve this target across the EU by 2030, the following measures must be implemented:**

- Tyres that can no longer be retreaded must preferably be sent for mechanical recycling.
- The export of used tyres to non-EU countries must be prohibited.
- ELTs that are still thermally recycled must be sent for mechanical recycling in the future.
- As part of the EU Commission’s review of applicable PAH limits, migration- and emission-based measurement methods must be implemented at the EU level.
- The use of recycled materials must be promoted.



Under the motto “NEW LIFE macht Schule” (NEW LIFE goes to school), we support trainers and teachers at vocational colleges in teaching tomorrow’s skilled workers and decision-makers about the importance of environmental protection, the circular economy, and sustainable recycled products – in a clear, understandable, and 100 percent practical way. To this end, we have prepared an online course offering for horticulture and landscaping, roofing, and administrative assistants, which vocational schools and training companies can use free of charge.

**online learning  
platform:  
NEW LIFE  
macht Schule**



## OPTIMIZING EUROPE'S ROADS SUSTAINABLY WITH RUBBER-MODIFIED ASPHALT

In 2024, transport contributed around 143.1 million tons to Germany's total emissions. This exceeded the climate target by 18 million tons. Across Europe, annual CO<sub>2</sub> emissions from road transport increased by 23% between 1990 and 2023. Across Europe, annual CO<sub>2</sub> emissions from road traffic increased by 23% between 1990 and 2023. The renovation of the European road network with rubber-modified asphalt can make an important contribution to reducing emissions and sustainably improving infrastructure.

For over twenty years, binders for road construction have been increasingly modified with new polymers. Additive-modified rubber powder from recycled tyre rubber is particularly well suited for modifying road construction bitumen and asphalt in accordance with GmBA. The application of asphalt modified with additive-modified rubber powder is successful without sticking or clumping.

### Sustainable improvement in the quality and durability of roads

Adding approximately 15% of the additive-enhanced recycled rubber powder to the bitumen improves road quality in many ways. In the dry process, the additive-enhanced rubber powder (< 0.8 mm) is added directly to the mixer during asphalt production. Both processes prevent weather-related cracking as well as joints or ruts in the roadway. This helps to significantly increase the service life of roads and highways, minimize maintenance costs, and avoid construction sites or traffic jams. Rubber-modified asphalt is therefore also more economical than conventional asphalt in the long term.

- Rubber-modified asphalt is suitable for reducing road noise.
- Rubber asphalt reduces harmful vapors/aerosols during processing.
- According to a study by Heiden Labor GmbH, recycled rubber asphalt can be easily recycled for new asphalt pavements.
- In order to promote the use of rubber-modified asphalt throughout the EU, it must be possible to offer it in public tenders – this requires appropriate legal requirements and standardization.
- The district of Recklinghausen has been using rubber-modified bitumen for road construction asphalt since 2007. Since then, around 60,000 m<sup>2</sup> of road has been renovated with rubber-modified asphalt – approx. 40% of the annual renovation area.



Scan to watch:  
**Durable asphalt  
for sustainable  
road construction**

## DEVULCANIZATION OF TYRE RUBBER: HIGH-QUALITY SECONDARY RAW MATERIALS FOR CLOSED MATERIAL CYCLES

Devulcanization is currently still in the transition phase to industrial applications. It opens up the possibility of not only mechanically recycling tyre rubber, but also reusing it as a secondary raw material with high added value in tyre and rubber production, for example in retreading or in selected new tyre applications.



The biggest challenges lie in scalability, process stability, and standardization. Diverse tyre types, formulations, and additives make it difficult to achieve consistent material quality. Robust industrial processes are currently under development.

The process developed by Professor Costas Tzoganakis (University of Waterloo) for the production of a tyre-derived polymer (TDP) does not require any chemical solvents, is energy-efficient and enables rapid conversion of the devulcanized material.

The use of TDP can achieve significant greenhouse gas savings compared to primary rubber materials.



Scan to watch:  
**Tyre Derived  
Polymer for  
OTR retreading**

### Strengths and advantages of devulcanizing tyre rubber:

- **High-quality material cycle:** Depending on its quality and application, devulcanized rubber can be integrated directly into new rubber compounds.
- **Resource conservation:** The use of devulcanized materials reduces the demand for natural and synthetic rubber as well as other fossil raw materials.
- **Climate protection:** By partially replacing primary materials, the carbon footprint in tyre and rubber production can be significantly reduced.
- **Economic potential:** The reuse of high-quality secondary raw materials can reduce raw material costs and strengthen value chains.
- **Innovation and location factor:** The development of industrial devulcanization processes strengthens technological expertise and opens up new fields of application.

## END-OF-LIFE TYRE PYROLYSIS: SECURING SECONDARY RAW MATERIALS, GRADUALLY REPLACING FOSSIL RESOURCES

**The pyrolysis of end-of-life tyres helps to avoid waste, recover secondary raw materials, and gradually replace fossil raw materials. It thus complements existing mechanical recycling processes and makes a measurable contribution to the further development of the circular economy.**

In industrial pyrolysis plants, processed ELT rubber is thermochemically broken down into its main components at high temperatures in the absence of oxygen. The process differs fundamentally from combustion, as the carbon remains largely intact. The resulting pyrolysis oil can be used as a substitute for crude oil in various industrial processes. The pyrolysis residue can be used as a substitute for coal in power generation.

This produces high-energy process gas, pyrolysis oil, and a solid carbon residue, which is further processed into recovered carbon black (rCB). The gas produced in the process is usually used directly to supply the plant with its own energy and can cover a significant portion of its energy requirements.

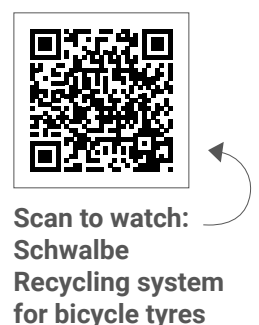


The condensable gas fraction is condensed as pyrolysis oil. This allows a large proportion of the carbon from the polymers in the tyre compound to be recovered.

Pyrolysis oil can be used in the chemical industry as an alternative carbon carrier. It Using recognized mass balance approaches, it is further processed together with fossil feedstocks in existing plants and used to produce basic chemical building blocks. In this way, fossil carbon can be gradually replaced by recycled carbon without having to build new industrial infrastructure.

### Best practice: Holistic recycling of bicycle tyres

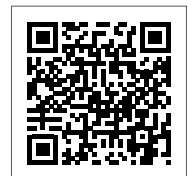
*The Schwalbe recycling system provides a practical example of industrial implementation, enabling the first-ever cross-brand, holistic recycling of bicycle tyres. The system is based on a closed-loop recycling process in which used tyres are shredded, melted down, and then extruded into new bicycle tyre treads. The process is environmentally friendly and energy-efficient, as it does not require any additional raw materials.*



Recovered carbon black enables the recovery of industrial carbon black contained in tyres. After processing into a fine, homogeneous particle structure, rCB can be used as a secondary raw material in the tyre and rubber industry. Depending on the application, significant greenhouse gas emissions can be saved compared to fossil carbon black, as energy- and emission-intensive primary processes are replaced. This also strengthens the security of supply of strategically relevant raw materials.

**The following framework conditions are crucial for scaling up tyre pyrolysis across the EU:**

- Recognition of pyrolysis as a material recycling process in European waste and chemicals legislation
- Promotion of investment in industrial plants for market upscaling
- Support for quality standards and certification systems for pyrolysis products (especially rCB and pyrolysis oil)
- Further development of mass balance and crediting systems for integration into existing industrial processes



Pyrum  
Innovations:  
end-of-life-tyre  
pyrolysis



## HIGH TIME TO TAKE ACTION TO ACHIEVE THE GOALS OF THE CLEAN INDUSTRIAL DEAL

*“The future is not linear—and neither is the path to a better world. We are at a crossroads: a throwaway economy on one side and a circular, inclusive, resilient future on the other. Let us choose wisely.”*

*(German President Frank-Walter Steinmeier, June 2024)*

The future of the sustainable (tyre) circular economy in Europe is threatened by bureaucracy, overregulation, high energy prices, cheap imported tyres, and legal requirements. In order to realize a sustainable circular economy for tyres across the EU as a model for other industries and waste streams, immediate action and an adjustment of the framework conditions are necessary:

- As there are currently no uniform **end-of-waste (EoW)** criteria, valuable secondary raw materials continue to be legally classified as waste. This leads to legal uncertainty, hinders investment, and prevents the market integration of sustainable recycled materials. We call for comprehensive, clear, and binding EoW regulations for Germany and all of Europe.
  - ▶ **Retreaded used tyres** must be classified as a product – not as waste.
  - ▶ Mechanically recycled tyre **rubber granulate/rubber powder** must be made more economically viable as an important secondary raw material through a clear end-of-waste status.
- **New tyres** should be recyclable, retreadable, and low in pollutants. They must be electronically readable via a labeling system (RFID chip). Data collection (with information on chemical composition, design, etc.) will optimize the entire tyre recycling process in a sustainable manner.
- **Self-sealing or noise-reducing tyres** hinder recycling and must therefore be labeled or avoided.



wdk position:  
End-of-waste  
property –  
Regulation for the  
tyre recycling  
industry

- **Used tyres** may only be collected by **certified disposal companies (ZARE)** and pre-sorted according to their intended use. This ensures that the carcasses can be reused through repair or retreading or sent for environmentally friendly mechanical or chemical recycling as a source of raw materials.
- Tyre **carcasses** that can be retreaded must be considered a **commodity**, classified as recyclable material (not waste), and sent for retreading, which leads to savings in raw materials, energy, CO<sub>2</sub> emissions, and waste.
- The **waste hierarchy** must be observed. Non-retreadable tyres from Europe must preferably be sent for mechanical recycling into rubber granulate and rubber powder in Europe.
- The **export** of untreated waste tyres to non-EU countries must be prohibited.
- Mandatory recycling quotas must be introduced for new tyres and car parts.
- The EU Commission's stricter **measurement method for PAH content** in consumer products jeopardizes the use of environmentally friendly recycled products made from rubber granulate, even though these have been proven to pose no risk. Therefore, **migration- and emission-based measurement methods** must be implemented at the EU level. This risk-based approach has always been used for other products that come into contact with food and drinking water. So why not for non-critical products made from tyre granulate as well?
- The EU Commission's indefinite postponement of the amendment to the **REACH Regulation** jeopardizes the use of almost all environmentally friendly recycled products made from rubber granulate. The lack of planning security threatens the existence of numerous SMEs in the tyre recycling industry.
- Innovative, resource-saving **devulcanization and pyrolysis processes** must be further researched, promoted, and optimized both ecologically and economically. The secondary raw materials **recovered carbon black (rCB) and tyre pyrolysis oil (TPO)** produced in the chemical recycling of scrap tyres must be recognized as fully-fledged secondary raw materials through clear end-of-waste regulations.



AZuR-Greenpaper  
EU-Taxonomie-  
verordnung

## **FATAL CONSEQUENCES OF THE EU'S INACTION CLIMATE TARGETS AND THE CIRCULAR ECONOMY**



### **NEGATIVE IMPACT 1**

With the growing number of vehicles and the need for tyre replacement, more and more CO<sub>2</sub> emissions are entering the atmosphere. Material recycling of used tyres alone can save around 700 kg of CO<sub>2</sub> per ton. Each retreaded truck tyre saves 135 kg of CO<sub>2</sub>.

### **NEGATIVE IMPACT 2**

The exploitation of natural resources is increasing, as is dependence on raw material imports. The SME-based tyre recycling industry can help to keep valuable raw materials in circulation, shorten supply chains, and drastically reduce the need for raw material imports.

### **NEGATIVE IMPACT 3**

Partially illegally disposed of scrap tyres, which lead to growing waste problems, and scrap tyres exported to non-EU countries, which are mainly used as fuel, endanger the climate and environment worldwide.

### **NEGATIVE IMPACT 4**

Entire industries and thus tens of thousands of jobs in the SME-dominated tyre recycling industry are facing extinction. This also means that valuable expertise and knowledge are being lost.

## GOALS AND BENEFITS OF A SUSTAINABLE TYRE CIRCULAR ECONOMY



ALIGNING LAWS  
 WITH NATIONAL  
 CIRCULAR ECO-  
 NOMY STRATEGY  
 (NKWS)



CONSUMER,  
 MANUFACTURER,  
 AND LEGISLATOR  
 SAFETY



ACHIEVING THE  
 CLEAN DEAL'S  
 CLIMATE GOALS



EXPANDING THE  
 CIRCULAR  
 ECONOMY IN  
 LINE WITH NKWS



SUPPORTING  
 MUNICIPALITIES  
 IN SUSTAINABLE  
 PROCUREMENT



CONSERVING  
 NATURAL  
 RESOURCES



SAVING MILLIONS  
 OF TONS OF CO<sub>2</sub>  
 EMISSIONS



PREVENTING  
 MILLIONS OF  
 TONS OF WASTE



REDUCING ENERGY  
 CONSUMPTION  
 (ELECTRICITY  
 AND GAS)



SECURING FUTURE  
 INVESTMENTS



REDUCING DEPENDENCE  
 ON RAW MATERIAL  
 IMPORTS



RETAINING VALUE  
 CREATION WITHIN  
 THE EU



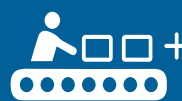
MAINTAINING AND  
 CREATING JOBS IN  
 SMES



INCREASING PRO-  
 DUCION CAPACITY



SECURING REGIONAL  
 LOCATIONS



EXPANDING TO  
 NEW PRODUCTS



PRESERVING KNOWLEDGE  
 AND EXPERTISE IN SMES



ALLIANZ ZUKUNFT  
REIFEN



NRW-PREIS  
RESSOURCEN  
SCHONUNG <sup>20</sup>/<sub>25</sub>

## JOINT COMMITMENT TO THE CLEAN DEAL

If politics, business, and society pull together and agree on joint action for the Clean Deal by 2030, new opportunities will arise for the entire continent. Of central importance here is the positive influence on legislation at the EU level in the interests of a sustainable circular economy. The Europe-wide introduction of migration measurement of the PAH content of recycled products alone would have multiple positive effects.

*„Ask not what your planet can do for you.  
Ask what you can do for your planet.“*

*(paraphrased from John F. Kennedy)*

