ECOPNEUS

SUSTAINABILITY REPORT

The circular economy of End-of-Life Tyres





2025

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We are living in a period of constant and sudden changes that accompany the risk of losing the drive needed for the growth and the development of our economy and our society. It is a challenging scenario that forces us to constantly realign ourselves strategically and to revise our plans. It is a constant restart to overcome new obstacles and difficulties.

This is the challenge currently faced by the companies of the tyre sector and also by Ecopneus. Indeed, Ecopneus is to turn responsibility into concrete actions. It is also to give value to ELTs to benefit both society and our Country.

As tyre producers and importers, we are responsible for these objectives. We have chosen to act through Ecopneus thanks to the effort it offers based on a strong common foundation made of regulatory compliance, quality, efficiency, and ethics. Nowadays, we clearly know and experience how this approach allows us to deliver financially and operationally sound industrial projects, in line with the regulatory framework.

Precisely because it was originally based on these assumptions, Ecopneus can today navigate the complexities of the Italian ELT scenario, collaborating with all the players of the national management system that share our values.

Indeed, we believe in collaboration and constructive dialogue to face complex challenges and we strive to be a key interlocutor.

This effort naturally leads to changes. This year, between 2025 and 2026, there has been the definition and the initiation of the procedure for new management tools and revised regulatory guidelines thanks to the Italian Ministry of the Environment and Energy Security. The aim is to set up a national ELT management system that is increasingly comprehensive, thorough, and complying with the specific needs of the sector and its supply chain.

All this can be done starting from waste. It offers our society the valorisation of a resource capable of promoting financial, employment, and sustainability benefits for our Country.

Our journey has been set and even the ongoing crisis cannot prevent us from pursuing sustainability as the tool to face today's complex scenarios, linked to the increase of costs and the necessary energy independence that affect all companies and sectors.

As Ecopneus, we are committed to facing this challenge and we are proud to support these increasingly global objectives.

VITTORIO MARANGONI
President of Ecopneus



The solid goal of a circular economy for the future of our society is a landmark that will last in time. Italy has built quality skills on it, which have now become points of reference at European level. Every day, Ecopneus focuses on its objective of turning this assumption into an increasingly efficient system. The latter must not only comply with the regulatory requirements, but also fulfil the responsibility entrusted to us by our Partners and stimulate that unequalled creator of value for recycled rubber that is the market. We carry out our tasks keeping an eye constantly open to the challenges and the opportunities that may appear on the horizon. We are always open to dialogue, as we strive to make the right decisions by matching the regulatory standards and the needs of our stakeholders.

We have always attentively looked at the present to build a constantly better future for the performance of the Italian national ELT management system. We collaborate with those who believe in these objectives, contributing with our share of responsibility and with spirit of collaboration. We have recently contributed to the consultation process that will allow the Italian Ministry of the Environment and Energy Safety to issue new regulations for the Italian ELT management system, which will celebrate its 15th anniversary of operativity in 2026. As such, it has well explored and tested management mechanisms and modalities with room for growth and improvement. Our effort is multifaceted. We are active towards a complex network of operators present in every Italian region and 110 provinces all over the Italian territory. Our success is the result of accurate management and experienced planning. We have capitalized on the use of resources and we have worked with a network of highly qualified partners. All this has allowed us to comply with the needs of the system with results that have made us proud. We have gone beyond our legislative target and the extraordinary effort requested to us by the Ministry of the Environment and Energy Security. This is how Ecopneus works and has always worked. We integrate our efforts with research and development activities to profit from the opportunities offered by innovation and the market. Moreover, we contribute to raising citizens' interest and participation by the means of activities of awareness raising and dissemination. The people of Ecopneus are the heart and the motor of all these activities. This is in line with the mandate entrusted to us by our Partners, and, above all, with a strong personal drive for professionalism and ethics – pillars and certainties upon which we want to build credibility and results for the future.

GIUSEPPINA CARNIMEO
General Manager of Ecopneus

SCENARIO

End-of-Life Tyres: regulatory developments, potentialities and new challenges

by Edo Ronchi
President of the Sustainable Development Foundation

ELT-DERIVED RUBBER CAN BE USED IN KEY SECTORS SUCH AS: SPORTS SURFACES, INSULATING MATERIALS, URBAN FURNITURE, AND RUBBERIZED ASPHALTS.

With reference to circularity, End-of-life Tyres management has reached some very good results. ELT-derived rubber can be used in key sectors such as: sports surfaces, insulating materials, urban furniture, and rubberized asphalts. The EU restriction on microplastics will ban rubber granule infill for synthetic turf surfaces in 2031. This ban has forced an acceleration in the research and development of alternative uses of ELT-derived rubber with high added value. Examples may be the building and maintenance of road infrastructure and chemical recycling. These solutions are deemed necessary to increase material recycling and reduce the share destined to energy recycling, which is still about 50% of ELTs.
The new **EU Regulation on Ecodesign (2024/1781)** adopted by the European Commission includes tyres among the groups of priority products of the 2025-2030 work plan. A preparatory study is underway to define durability and recyclability criteria with a delegated act expected by 2027. With reference to digital traceability, instead, the creation of the European Digital Product Passport (DPP) is expected by July 2026.

The **revision of the ELT Regulation (MD 182/2019)** is currently underway. The aim is to strengthen the Extended Producer Responsibility (EPR) system. The scope of this improvement is to solve the structural criticalities of the chain. Examples may be: delays in ELT collection and the amassing of ELTs at tyre dealers'; illegal ELT dumping in the environment; the non-payment of eco fees online (especially from the part of foreign operators); the discrepancies between the quantities of tyres placed on the market and the ones effectively traced. Another issue is the fact that the EPR system has no specific obligations to incentivise the reconstruction and the reuse of second-hand tyres.
The Ministry of the Environment and Energy Security ended the consultation for the revision of the MD 182/2019 last February. With the proposal of a new MD, the ELT collection target will go from the current 95% to 100% of sold tyres. Moreover, a 45% minimum recycling target will be introduced. In addition to this, the minimum requirement of the management of 2,000 tonnes/year will be necessary to set up an ELT management system. However, this amount is too low for the operative system to be really efficient. Tyre retreading is provided for as a prevention tool. However, it is not formally listed among the obligations assured by the EPR. Finally, tyre collection systems will have to manage the tyre quotas deriving from online sales by the means of a calculation based on the data of the Tyre National Register.



The Ministry of the Environment and Energy Safety (MEES) has also defined the procedures to join the **National Register of Producers (NRP)**. It has decided that all tyre producers and importers, there included distance sales, have to register. The Registration Number will have to be quoted in all the documentation provided for. This should reduce illegal tyre sales. Moreover, a timely monitoring system of the amount of tyres sold on the market will be introduced thanks to this Register.

The **MD MEC for Roads** of 5th August 2024 states that all contracting authorities are to integrate the mandatory technical specifications of all tenders related to the design, building, maintenance and upgrade of road infrastructure. One of the objectives of such regulation is to build and maintain more sustainable and long-lasting roads with better acoustic performances. Technical specifications have been provided for with reference to the project (environmental sustainability requisites, noise emission reduction, longer life of road surfaces and selective demolition obligations). Moreover, the products, the materials and the building site management criteria have also been defined. The Decree introduced additional scoring criteria for the awarding of the works, such as: the adoption of environmental management criteria and the use of larger amounts of recycled material than the minimum mandatory ones. The MD of 11th September 2025 modified the minimum circularity threshold of the building materials for road surfaces introduced with the MD of 5th August 2024.
It was reduced from 50% to only 20%. Although nowadays the use of recycled rubber powder is still very limited, it is a valid material for road surfaces. Rubberized asphalts offer good duration performances and lower noise emissions, reduced costs, and greater convenience.



The revision process of the **MD End of Waste n. 78/2020** started in 2025. The aim is to stop defining ELT-derived vulcanised rubber as "waste". The technical evaluation should be completed towards the end of 2026. It is hoped that this modification may increase the use of rubber granules and powders in technical specifications and expand their use to other sectors.
Such regulatory evolution is strategic to increase material recovery and assure qualitative standards suitable for the reintroduction of recycled rubber into production cycles with high added value, such as the production of new tyres.

01

HIGHLIGHT

2025

199.408 tonnes

OF ELTS COLLECTED ALL OVER THE ITALIAN PROVINCES
+24% OVER OUR LEGISLATIVE TARGET (38,037 EXTRA TONNES)

GENERATION POINTS SERVED

20,382

COMPLETED COLLECTION REQUESTS

51,935

FINANCIAL VALUE DISTRIBUTED TO THE CHAIN

40.2 million €

EXTRAORDINARY COLLECTION OF ELTS IN THE SO-CALLED "LAND OF FIRES"

368t

ELTS COLLECTED FROM 2011 TO TODAY

APPROXIMATELY

3.2 million tonnes

OF WHICH **310,000 BEYOND OUR LEGISLATIVE TARGET**

EMISSIONS OF CO_2 EQ AVOIDED
Equal to the one absorbed by

17.5 million trees

51 % **Material Recovery** VS 49 % **Energy Recovery**

AVOIDED EXTRACTION AND CONSUMPTION OF NON-RENEWABLE FOSSIL RESOURCES
Equivalent to the energy necessary to light a football stadium for over

116,000 matches

PRESS RELEASES ON ONLINE WEBSITES, NEWSPAPERS, RADIO AND TV

1,995

USERS REACHED ON SOCIAL MEDIA

3.2 million

02

THE ECOPNEUS SYSTEM

2.1

The management of End-of-Life Tyres of Ecopneus



Ecopneus is a non-profit consortium founded in 2009 with the aim of organising and managing **the collection and recovery of all the End-of-Life Tyres they are responsible for**. The company was founded by the six main tyre producers and importers active on the Italian market – Bridgestone, Continental, Goodyear, Marangoni, Michelin and Pirelli. They chose to set up a consortium that could assure them an efficient and transparent management system that would also comply with the legislation in force. In the course of time, the partners progressively grew in number. On 31st December 2025, Ecopneus had 49 Partners. In this way, these companies can comply with all legal obligations that provide for the collection, transportation and recovery of an amount of ELTs corresponding in weight to 95% of the new tyres sold on the spare part market during the previous solar year.

The management of End-of-Life Tyres starts with the operators of the spare part market: tyre dealers, service stations, and workshops. They represent the contact point between the system and the end users.

Once the tyres are removed from the vehicles, they are classified as "end-of-life". These tyres subsequently enter the management chain run by Ecopneus. **Through the subsequent phases of collection, transportation, and treatment, ELTs are transformed into secondary raw materials ready to be used in new production cycles**.

Recycled rubber can be used in several applications of daily use. It is also an excellent alternative fuel in high energy consumption industrial processes, in particular, in the cement production sector in Italy and abroad.

EVERY ELT ECOPNEUS IS RESPONSIBLE FOR IS MONITORED FROM THE MOMENT IT IS TAKEN OFF A VEHICLE UNTIL IT IS EFFECTIVELY RECOVERED

The ELT management model adopted in Italy and in the majority of the European Countries is based on the principle of the **Extended Producer Responsibility – EPR**. The producer or importer of goods is responsible for the management of their end of life and must assure their correct recovery.

The system is supported by the so-called eco fees that are paid upon purchasing every new tyre. It is an amount paid by the end users that allow to cover all costs necessary to organise the activities of ELT collection, logistics and recovery. Thanks to this mechanism, Ecopneus assures the **free collection of ELTs to all registered spare part operators**. Ecopneus subsequently assures the transportation and the recycling of ELTs through a network of specialised companies.

The Ministry of the Environment and Energy Security is the Control Body of the whole national system. Through the control of all financial reporting and of the managed flows of ELTs, the Ministry monitors the correct use of the resources deriving from eco fees and the compliance with all regulatory requirements from the part of the authorised bodies, such as Ecopneus.

FOCUS

The evolution of ELT rules and regulations

ECOPNEUS PAYS GREAT ATTENTION TO THE RECENT REGULATIONS AND TO THE ONES CURRENTLY BEING DISCUSSED. ITS AIM IS TO OFFER THE ELT MANAGEMENT SYSTEM A FRAMEWORK AND ALL FUNDAMENTAL TOOLS TO ACHIEVE AN ELT CIRCULAR ECONOMY SUPPORTED BY THE MARKET OF RECYCLED RUBBER AND ITS MANY USES

THE CLEAN INDUSTRIAL DEAL

Presented on 26th February 2025, the Clean Industrial Deal is the new European industrial policy. It aims at making industry more sustainable and, at the same time, more competitive, transforming decarbonisation into a tool of economic growth. Some of the measures provided for, such as the Circular Economy Act, represent an opportunity also for the ELT chain. In particular, the harmonisation of the End of Waste discipline and the strengthening of the Producer Extended Responsibility are fundamental to incentivise the use of recycled materials, as well as to assure an ever more efficient waste management.

THE REVISION OF MD 182/2019

On 12th February 2026, the phase of public consultation related to the revision of the MD 182 was completed. This Ministerial Decree runs the management of End-of-Life Tyres. The Ministry of the Environment started the revision phase and will now analyse the observations they received. It will subsequently evaluate a revision of the scheme of the Decree based on the contributions of the various stakeholders.
The revision of the MD 182/2019 aims at updating the national system of ELT management. In the Ministry's proposal, it should contain several important pieces of news:

- Mandatory collection of 100% of what sold
- Establishing a minimum material recycling target
- Raising the minimum amounts for the individual/associated systems
- Regional division of collection targets
- Measures against the so-called "free riding" and inefficiencies

They are indications that agree with the proposals made by Ecopneus in the course of the years through a constant and constructive dialogue with the Ministry, as well as in all public spaces where these topics have been discussed. Indeed, the experience accrued in almost 15 years of activity highlighted some areas of improvement of the system– in particular with reference to the control of the territory, the rationalisation of the operating bodies, the fight against the irregular flows of ELTs and "cherry picking" . All these issues need constant updating of the regulatory framework.

THE NATIONAL REGISTER OF PRODUCERS – RENAP

The National Register of Producers is a fundamental tool for traceability and the correct management of ELTs in Italy. Tyre producers and importers have had to join the RENAP since May 2025.
The new measuresintroduced by the Ministry of the Environment and Energy Security is quite meaningful, because it shows how the Institutions are willing to promptly monitor the performance of ELT collection – even at provincial level.
The Decree urges all the players to act with even greater responsibility and precision and to communicate all requested data every three months. As such, it represents a clear signal of how important it is to put into place regular controls, in order to have a more transparent management and a more precise traceability of ELT flows .

THE COMMITMENT AND THE VALUES OF ECOPNEUS

Since its foundation, Ecopneus has chosen to be proactive. It has always gone beyond its legislative obligations and has **actively contributed to the development of an industrial chain of ELT recycling capable of generating environmental, financial, and social benefits**.

Through its activities, Ecopneus benefits all its ecosystem: its partners, the spare part operators, the companies of the chain, the institutions, and our citizens. Ecopneus promotes a constantly greater use of recycled rubber, supporting the development of new technological solutions and favouring the consolidation and the growth of the companies of the ELT chain.

ETHICS, TRASPARENCY, QUALITY, EFFICIENCY, LEGALITY, AND A CONSTANT DIALOGUE WITH ITS STAKEHOLDERS ARE THE PRINCIPLES THAT LEAD THE ACTIONS OF ECOPNEUS TOWARDS A CIRCULAR ECONOMY EVERYBODY CAN BENEFIT FROM .



DIALOGUE

ETHICS

EFFICIENCY

QUALITY

TRASPARENCY

LEGALITY

2.2 The sustainability strategy of Ecopneus

Ecopneus concretely contributes to the reaching of the national, European, and global objectives of climate-changing emissions. It also aims at contributing to the development of a circular economy.
As seen in the previous pages, this transition may be further boosted by the Clean Industrial Deal that will strengthen the role of the circular economy as a strategic lever for industrial competitiveness. Within this context, the ELT recycling chain may represent a particularly relevant area of interest, thanks to the **possibility of giving value to already existing materials. Moreover, it encourages the use of sustainable applications in several productive sectors**.

All these initiatives are being developed in compliance with the European Circular Economy Action Plan and with the Sustainable Development Goals (SDGs) defined by the United Nations within the scope of the 2030 Agenda. The latter represents a global action programme for people, the planet, and prosperity. It was signed by the governments of the 193 member countries of the ONU in 2015. 17 sustainable development goals were set within the 2030 Agenda. They were divided into 169 targets that lay the foundations of greater environmental, economic, and social sustainability at global level.

THE STRATEGY PILLARS

REGULATORY COMPLIANCE
Priority is given to the reaching of the collection and recovery objectives set by the Rules and Regulations. Maximisation of material recovery and application of the lowest possible eco fees.



LISTENING
We collaborate with our stakeholders to identify the areas of improvement of ELT management and the perspectives of the development of the system. The aim is to create synergies and collaborations throughout the whole chain.



DEVELOPMENT OF THE RECYCLED RUBBER MARKET
Research & Development on quality and safety of the products made with recycled rubber; creation of demonstration installations; publication of technical manuals and of the Catalogue of the products made with recycled rubber; contribution to the definition of the Minimum Environmental Criteria within the scope of the Green Public Procurement; information and awareness-raising activities.

ETHICS AND TRASPARENCY
Accurate reporting of all operative and financial activities; use of e-tenders managed by third parties for the impartial selection of our partner companies; constant monitoring of ELT collection and recovery flows through IT systems.



QUALITY CHAIN
Certain and timely payments; support to the development of the operators' entrepreneurial skills; quality and standard compliance audits for ELT management; support to the development of both process and product technical regulations and standards.

OUR STAKEHOLDERS

INSTITUTIONS

THE PUBLIC ADMINISTRATION

ASSOCIATIONS (ENVIRONMENT, SECTOR, CATEGORY ETC)

RESEARCH BODIES AND UNIVERSITIES

CITIZENS

To follow and orient its sustainability strategy, Ecopneus closely collaborates with its Partners, the Institutions, its chain operators, companies, the associations of reference, citizens, and the world of research. Ecopneus promotes the development of solutions and processes that can valorise the materials derived from ELT recycling at their best. As such, it aims at creating concrete environmental, financial, and social benefits.
For example, collaborating with the **Institutions** allows to timely adopt all the indications of the public decision-makers. Moreover, collaborating with them allows Ecopneus to solve any eventual criticality in the implementation of Rules and Regulations.
Ecopneus constantly and actively collaborates with the **Public Administration and Bodies**. For example, it organises activities of technical-specialistic training aimed at favouring the use of the applications of recycled rubber, such as rubberized asphalts. In the course of the years, Ecopneus has also set up a partnership with various **Associations** to carefully control some sectors and issues that are fundamental for reaching its strategic goals. Collaborating with environmental associations allows to consolidate the role of Ecopneus within the Italian circular economy system and develop synergies through networking. With reference to trade associations, instead, Ecopneus has focused on operative and legislative issues to overcome any eventual criticality of the chain and implement the overall system efficiency. With the sports world, instead, Ecopneus has set up a relationship related to the use of sports surfaces made with recycled rubber. Indeed, Ecopneus has created several professional sports surfaces made with this technology and also demonstration installations to evaluate their performances. Testing activities are carried out in collaboration with main **Research Bodies and Universities** to confirm the performances of these sports surfaces with scientific data and demonstrate the advantages offered by recycled rubber. Moreover, Ecopneus aims at identifying new application opportunities, improve the existing solutions, and test the performances of the materials in real operative contexts.
Finally, the Ecopneus system produces direct benefits for all **citizens** and territories. The correct management of End-of-Life Tyres has, indeed, contributed to meaningfully reduce illegal tyre dumping in the course of the years. This has had positive effects on the protection of the environment, urban decorum, and public health. At the same time, the use of recycled rubber allows to make several applications useful for the local communities, as well as urban furniture, insulating materials, and more silent and long-lasting asphalts. All this returns value in the shape of sustainable infrastructure and services – as better described in Chapter 7.

2.3

Ecopneus at the service of the whole chain

Based on the principles of transparency, operative efficiency, ethics, and legality, the Ecopneus model generates widespread benefits for all the parties involved in its chain: tyre producers and importers, tyre dealers, tyre collection and treatment operators, and companies that use recycled rubber.

PARTNERS

The Partners of Ecopneus are the producers and importers of tyres in Italy. Joining Ecopneus means being part of a solid and efficient system that allows to fully comply with all environmental rules and regulations and to consolidate their contribution to the circular economy of the tyre sector.
The operative model set up by the Partners of Ecopneus is based on traceability, control, and reporting. This allows to transparently manage the end-of-life of all tyres sold on the market with positive reflexes also on the Partners' own reputation. Moreover, a constant dialogue with the Italian and European institutions has allowed them to have a privileged point of view on the future directions of environmental regulations and on any legislative evolution that may affect their sector.





TYRE DEALERS

Spare part operators, such as tyre dealers, benefit from the Ecopneus system. The free collection of ELTs is assured all year thanks to a thorough logistics network that assures the service in every Italian province or town where a registered operator is located. An eco fee that is the same all over the Italian territory and the assurance that ELTs are treated according to the principles of legality and transparency contribute to improving the citizen-consumers' overall perception of the spare part sector.

THE COMPANIES THAT USE RECYCLED RUBBER

Ecopneus is a development partner for those companies that use recycled rubber in the sports, infrastructure, building, and manufacturing sectors. Ecopneus assures the availability of high quality secondary raw materials in large quantities. This represents a fundamental asset to develop innovative and sustainable products that may appeal the market. On the other hand, developing new products or redesigning and improving already existing applications represent the main way to further increase the amounts of recycled rubber requested by the market.
In the course of the years, Ecopneus has strived to stimulate and offer opportunities to both the market and the companies – in line with the mandate it was entrusted by the legislature. Ecopneus is focused on research, development, and promotion of the uses of recycled rubber, involving prestigious Institutes and Bodies to explore new valorisation and use opportunities for recycled rubber.

PARTNER COMPANIES

The partner companies involved in the activities of ELT collection, storage, transport, and treatment operate in a structured and regulated context. The awarding of the activities is made on the basis of criteria of reliability, technical skills, and adequate infrastructure. Thanks to the precise planning of the operative activities and the continuity of the flows managed by Ecopneus, these companies have been able to plan investments in technological innovation, safety, and upgrading of their plants. The whole system benefits from a better quality of the produced material that is subsequently more requested by the market.



2.4

The circular economy of the tyre sector

The tyre producers and importers that are Partners of Ecopneus are **structurally setting their strategies towards models of sustainability that can be integrated throughout the whole product life cycle, from its design to its use on the road**. A meaningful acceleration in this regard is represented by the EU Regulation n 2024/1781 on the Ecodesign for Sustainable Products (ESPR). This regulation includes tyres among the categories that need action to improve their durability, efficiency in resource use, reparability, and recyclability. Within this context, **the Partners of Ecopneus have put great effort into finding advanced design solutions that may reduce the use of non-renewable raw materials**.
They also want to expand the use of raw materials of biogenic origin, favour the integration of recycled materials, and improve their environmental performances upon use. Examples of the latter may be the reduction of rolling resistance and their related emissions. At the same time, industrial policies geared towards energy efficiency and the reduction of production emissions are being strengthened. Solutions like retreading allow, instead, to extend the life of a product, concretely contributing to reducing the use of virgin raw materials and waste generation.

It is a constant effort to reach an environmental and economic sustainability that may assure stability and development to the sector, in spite of the potential criticalities of obtaining virgin raw materials in the long term and the global uncertainties over supplies and energy costs.

Moreover, the introduction of the Digital Product Passport (DPP) provided for by the ESPR will represent further change, as precise information on tyre composition, performance, and sustainability will be made available. This will benefit both consumers in terms of transparency and awareness, and tyre traceability along the chain, as well as the management of tyre end-of-life. Regulatory evolutions, such as the Euro 7 Regulation, will accompany all of the above. Coming into force in 2027, the Euro 7 regulation will introduce new requisites in terms of durability and, for the first time, limits to micro emissions derived from tyre wear.

In a global scenario that sees a constant growth of the demand, companies are to identify ways to assure a productive development that may not compromise resource consumption, by thinking of new materials, processes, and circular models of use.
Within this scope, **one can read the activities of Ecopneus as an extension of its Partners' commitment towards a greater sustainability of their products**.
Their aim is to reach a concrete circular economy of tyres that, starting from Ecodesign, gets to a virtuous management of the product end-of-life. Indeed, tyre producers and importers are strongly committed to the optimisation and consolidation of new recycling processes. Among these, pyrolysis is the most promising. Many countries are already working on it – as we shall better see in Chapter 4.

THE ACTIVITIES OF ECOPNEUS CAN BE SEEN AS THE EXTENSION OF ITS PARTNERS' COMMITMENT TOWARDS GREATER PRODUCT SUSTAINABILITY

ECODESIGN AND PRODUCTION
Use of post-consumption materials or of natural origin (organic polymers, vegetable sources, recycled carbon black, recycled PET and steel for reinforcement); reduction of tyre weight; improvement of rolling resistance; greater durability and production waste reduction.

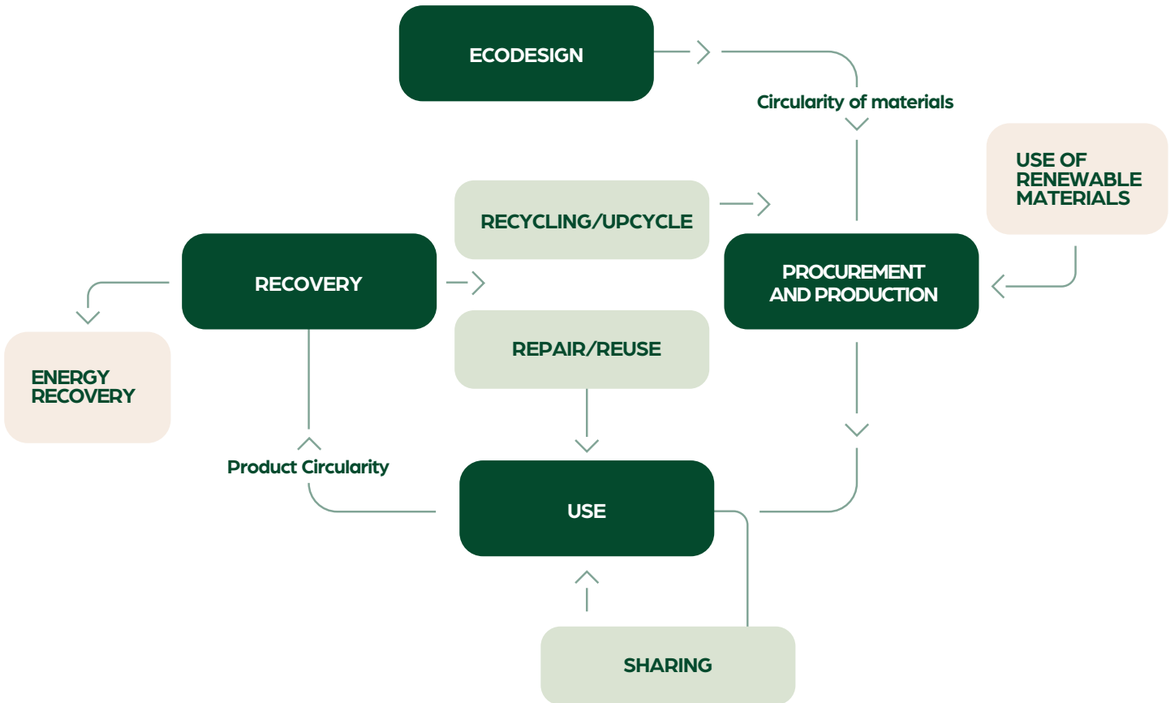
EMISSION REDUCTION ALONG THE CHAIN
Production plants powered with renewable energy and optimisation of logistics.

RECYCLING AND CIRCULARITY
Retreading lengthens the useful life of a tyre. Growing use of ELT-derived recycled rubber in new mixes, favouring a careful maintenance for tyres destined to special sectors (earthwork, quarries, mines).

TOWARDS NEW WAYS OF RECYCLING AND RECOVERY
ELT chemical recycling and, in particular, pyrolysis, allows the recovery of materials of great value for several sectors. Scientific research is constantly at work to maximise the recovery skills of contemporary technologies and develop new ones.

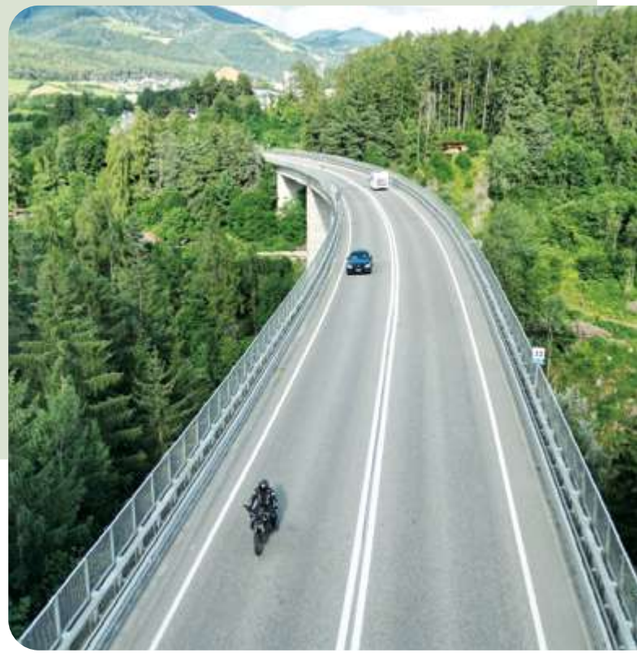


The contribution of the Partners of Ecopneus to sector sustainability



The Partners of Ecopneus on 31st December 2025

A.R. Pneumatici SRL Unipersonale
Amazon
Andreagomme Car & Tires SRLS
Arca SRLS
Asperti Pneumatici SRL
Autogomma Perego SRL
B.R. Pneumatici SPA
Bellotto SPA
Blackcircles
Bridgestone Europe NV/SA Italian Branch
Camso Italy SPA
Catania Gomme SRL
Continental Italia SPA
D.P. Commercial Tyres SRL
Dast SRL
Devalle Gomme SNC
Driver Servizi Retail SPA
Effetti SRL
Esse Group SL
Euromaster Italia SRL
Euroreifen MS SRL
F.A. Logistica SRL
Fapal SRL
Ferentino Tyre SRL
Gexpo SPA
Goodyear Tires Italia SPA
Groupe PSA Italia SPA
Harley – Davidson Italia SRL Unipersonale
Idio Ridolfi e Figli SRL
Just Business 2.0 SRLS
Just Business SRLS
Marangoni SPA
Mercedes Benz Italia SPA
Mes Gomme SRL
Michelin Italiana
Outlet Gomme SRL
Parise Gomme SRL
Perla Pneumatici Siena SRL
Pirelli Tyre SPA
Pneus Service Italia SRL
Pro.Lab. SRL
Re-Ta Gomme SRL
Rossi Lamberto SRL
S.A.R.A. Pneumatici SRL
Savoia Pneumatici SRL
Stellantis Europe SPA
Stilgomma di Cavuoti Pasquale e Figli SNC
Targetrobot SRLS
Volkswagen Group Italia SPA



03

THE MANAGEMENT OF END-OF-LIFE TYRES

3.1

38,000 Tonnes of ELTs collected by Ecopneus in 2025: + 24% above its legislative targets

During 2025, Ecopneus collected almost 200,000 tonnes of End-of-Life Tyres all over the Italian territory, of which 38,037 tonnes were above its legislative target. This corresponds to almost 24% (23.57%) above its collection target. According to what stated by MD 182/2019, the bodies in charge of ELT management are to assure the collection of an amount corresponding to 100% of the new tyres sold on the spare part market by its Partners during the previous solar year, net of a 5% of tread wear and the amount of exported tyres.

Since its foundation, Ecopneus has paid great attention to the concrete needs of the territory and to the spare part operators' working conditions. Indeed, they are often to manage large amounts of ELTs at their workshops. This situation has led to the efforts Ecopneus has always made to continue its ELT collection beyond its legislative target. As such, Ecopneus actively contributes to solving the operators' problems.

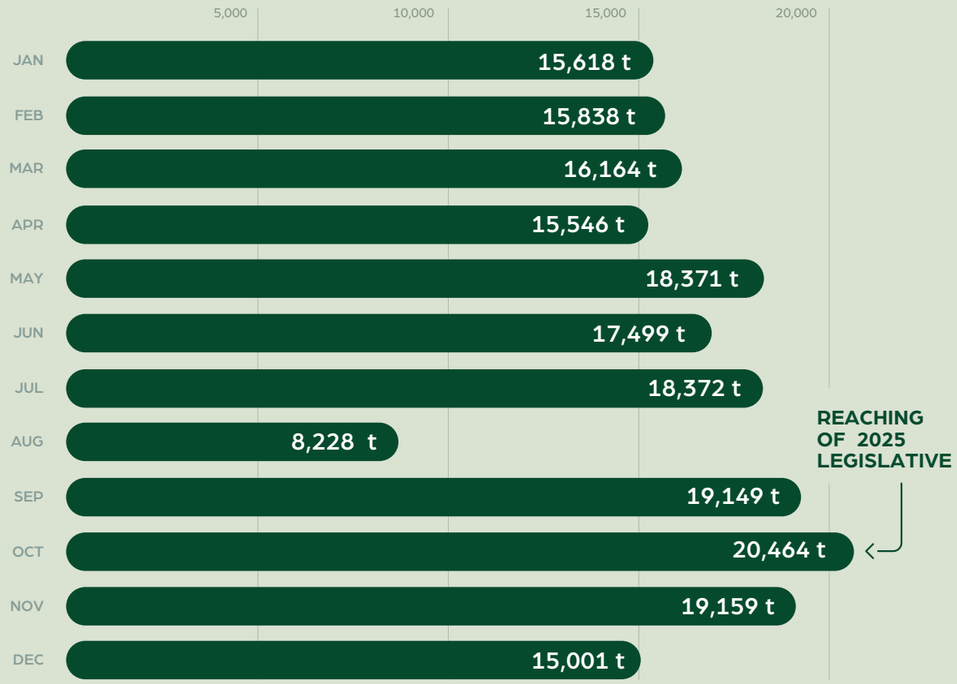
ECOPNEUS COLLECTED ABOUT 200,000 TONNES OF ELTS. + 24% ABOVE ITS LEGISLATIVE TARGET. IT IS A CONSTANT EFFORT FOR THE ENVIRONMENT, THE SPARE PART OPERATORS, AND ITALY'S CIRCULAR ECONOMY

Since 2011, Ecopneus has collected over 310,000 tonnes of ELTs beyond its legislative target.
Together with its ordinary daily collection carried out at ELT Generation Points all over Italy, Ecopneus continues its **activities of extraordinary ELT collection in the Provinces of Naples and Caserta**. These are carried out within the scope of the Memorandum signed with the Ministry of the Environment and the Local Administrations in 2013.

ELT COLLECTION TARGET AND EFFECTIVE COLLECTION IN 2025	QUANTITY (t)
COLLECTION TARGET SET BY THE LEGISLATION	161,371
ORDINARY MANAGEMENT COLLECTION	199,408
COLLECTION BEYOND LEGISLATIVE TARGET	38,037
PERFORMANCE FROM ORDINARY COLLECTION COMPARED WITH THE TARGET SET BY MD 182/2019 (%)	+24%
EXTRAORDINARY COLLECTION FROM THE MEMORANDUM OF THE PROVINCES OF NAPLES AND CASERTA	368
TOTAL OF COLLECTION	199,776

A CONSTANT SERVICE TO THE OPERATORS IN EVERY ITALIAN PROVINCE

Ecopneus is greatly committed to the planning of the operative activities on the Italian territory in order to **assure a constant and efficient service to the 20,382 ELT Generation Points (+8.6% compared to 2024) registered with Ecopneus**. They benefit from free ELT collection in all Italian provinces, there included all small islands. The collection requests follow the chronological order of their registration in the management software used by Ecopneus. No priority is given to any brand or activity. This **assures fairness and transparency of the service**.
In order to effectively manage all operations, Ecopneus plans ELT collection distributing its annual target month by month, based on the historical trend of the requests and the seasonal fluctuations linked to tyre changing. Indeed, the collection organisation is studied to **assure a thorough coverage of all Italian territory and a constant service all year.**
The progress of the activities is constantly monitored during the year. The volumes of collected ELTs are compared with the planning activities and the financial resources deriving from the eco fees are carefully monitored too. This allows Ecopneus to balance financial resources and the continuity of the collection services.
As highlighted in the graph here-below, the collection activities carried on regularly until the month of December, despite the legislative target had already been reached towards the end of the month of October.
Thus, the operative network of Ecopneus assured a thorough coverage of all the national territory, assuring service continuity from the North to the South of Italy, all year long.



THE COLLECTION DIVIDED INTO MACRO GEOGRAPHICAL AREAS

To assure a balanced distribution of the activities all over the Italian territory, the MD 82/2019 states that the ELT collection targets are to be divided into macro geographical areas. It defines specific percentage quotas and allows a maximum deviation of 10% without prejudice to the obligation of every body of collecting all ELTs they are responsible for.
The tables here-below show the effective distribution of the 2025 collection in the various areas of the country.

THE ECOPNEUS COLLECTION IS THOROUGH IN EVERY ITALIAN PROVINCE AND CONSTANT THROUGHOUT ALL YEAR. IT PROCESSES THE OPERATORS' REQUESTS ACCORDING TO THE ORDER OF CALL



They confirm the **capacity of the Ecopneus chain to operate all over the Italian territory in a balanced way**.

Indeed, the Ecopneus collection system intervenes in all Italian provinces based on criteria of territorial equity. This complies with what stated by the environmental legislation in force, without concentrating the activities in the most logistically or economically advantageous areas.

GEOGRAPHICAL AREA AS PER MD 182/19	% Allocation MD 182/19	2025 effective collection (t)	% of implementation on collection target
PIEDMONT – VALLE D'AOSTA – LIGURIA	11%	18,356	11.4%
LOMBARDY	15%	29,587	18.3%
TRENTINO-ALTO ADIGE – VENETO – FRIULI-VENEZIA GIULIA	12%	26,360	16.3%
EMILIA-ROMAGNA	8%	19,849	12.3%
TUSCANY – MARCHE – UMBRIA	11%	23,071	14.3%
LAZIO – ABRUZZO – MOLISE	13%	22,924	14.2%
CAMPANIA	9%	17,223	10.7%
APULIA – BASILICATA – CALABRIA	10%	20,488	12.7%
SICILY – SARDINIA	11%	21,550	13.4%
TOTAL OF COLLECTION	**100%**	**199,408**	**123.6%**

THE COLLECTION
PROVINCE BY PROVINCE

ABRUZZO		
Province	N° ELT GP	t
Chieti	257	2.533
L'Aquila	90	575
Pescara	132	1,129
Teramo	153	930
TOTAL	**632**	**5,167**

BASILICATA		
Province	N° ELT GP	t
Matera	61	532
Potenza	193	1,573
TOTAL	**254**	**2,105**

CALABRIA		
Province	N° ELT GP	t
Catanzaro	114	1,054
Cosenza	252	2,433
Crotone	73	1,255
Reggio Calabria	179	1,844
Vibo Valentia	62	437
TOTAL	**680**	**7,022**

CAMPANIA		
Province	N° ELT GP	t
Avellino	206	1,640
Benevento	124	917
Caserta	212	3,086
Naples	496	7,617
Salerno	348	3,964
TOTAL	**1,386**	**17,223**

EMILIA ROMAGNA		
Province	N° ELT GP	t
Bologna	433	4,180
Ferrara	122	1,144
Forlì-Cesena	122	1,613
Modena	329	2,747
Parma	210	2,380
Piacenza	95	1,212
Ravenna	108	1,796
Reggio nell'Emilia	268	3,442
Rimini	149	1,333
TOTAL	**1,836**	**19,849**

FRIULI-VENEZIA GIULIA		
Province	N° ELT GP	t
Gorizia	43	379
Pordenone	91	888
Trieste	71	233
Udine	116	669
TOTAL	**321**	**2,169**

LAZIO		
Province	N° ELT GP	t
Frosinone	242	2,291
Latina	218	2,435
Rieti	40	303
Rome	1,394	10,920
Viterbo	79	436
TOTAL	**1,973**	**16,385**

LIGURIA		
Province	N° ELT GP	t
Genova	322	2,317
Imperia	90	1,103
La Spezia	96	1,008
Savona	95	938
TOTAL	**603**	**5,367**

LOMBARDY		
Province	N° ELT GP	t
Bergamo	199	2,165
Brescia	443	5,442
Como	316	1,914
Cremona	139	1,238
Lecco	149	1,055
Lodi	96	737
Mantova	138	1,671
Milan	930	8,171
Monza e Brianza	330	1,961
Pavia	247	1,517
Sondrio	88	711
Varese	465	3,006
TOTAL	**3,540**	**29,587**

MARCHE		
Province	N° ELT GP	t
Ancona	248	1,878
Ascoli Piceno	106	1,034
Fermo	95	804
Macerata	181	1,432
Pesaro & Urbino	164	1,346
TOTAL	**794**	**6,494**

MOLISE		
Province	N° ELT GP	t
Campobasso	125	933
Isernia	50	438
TOTAL	**175**	**1,371**

APULIA		
Province	N° ELT GP	t
Bari	224	2,701
Barl.-Andria-Trani	59	1,026
Brindisi	85	990
Foggia	192	2,181
Lecce	289	2,863
Taranto	122	1,599
TOTAL	**971**	**11,360**

PIEDMONT		
Province	N° ELT GP	t
Alessandria	95	2,094
Asti	49	538
Biella	73	802
Cuneo	190	2,947
Novara	65	972
Turin	320	3,903
Verb. - Cusio - Oss.	71	751
Vercelli	52	554
TOTAL	**915**	**12,562**

SARDINIA		
Province	N° ELT GP	t
Cagliari	129	1,551
Nuoro	93	1,412
Oristano	76	733
Sassari	111	1,451
Sud Sardinia	151	1,288
TOTAL	**560**	**6,435**

SICILY		
Province	N° ELT GP	t
Agrigento	147	1,780
Caltanissetta	66	963
Catania	263	3,908
Enna	68	536
Messina	164	1,242
Palermo	108	1,354
Ragusa	87	1,277
Siracusa	108	1,799
Trapani	138	2,257
TOTAL	**1,149**	**15,115**

TRENTINO-ALTO ADIGE		
Province	N° ELT GP	t
Bolzano	207	1,922
Trento	279	3,443
TOTAL	**486**	**5,365**

TUSCANY		
Province	N° ELT GP	t
Arezzo	181	1,072
Firenze	480	3.283
Grosseto	133	982
Livorno	148	1,098
Lucca	239	1,892
Massa-Carrara	97	1,146
Pisa	137	1,173
Pistoia	171	1,788
Prato	152	783
Siena	129	655
TOTAL	**1,867**	**13,872**

VENETO		
Province	N° ELT GP	t
Belluno	39	455
Padova	455	3,920
Rovigo	99	737
Treviso	205	2,866
Venice	206	2,136
Verona	409	4,478
Vicenza	428	4,234
TOTAL	**1,841**	**18,827**

UMBRIA		
Province	N° ELT GP	t
Perugia	249	1,869
Terni	121	837
TOTAL	**370**	**2,705**

VALLE D'AOSTA		
Province	N° ELT GP	t
Valle d'Aosta	29	427
TOTAL	**29**	**427**

3.2

Collection and shredding partner companies

The operative model chosen by Ecopneus since the beginning of the national ELT management system provides for the awarding of ELT collection and treatment activities to specialised companies located on the Italian territory.
It is a strategic choice with a double objective. First of all, it favours the development and the consolidation of a national industrial chain dedicated to ELT management. As a consequence, this chain generates financial benefits and creates jobs on the Italian territory. Secondly, this modality allows to select the most qualified and technologically advanced operators that are already active in the sector. At the same time, this choice stimulates investments, innovation, and a constant improvement of the performances within the whole sector.
The selection of the partner companies is carried out by the means of **e-tenders** managed by an independent third-party company. This ensures the highest level of accuracy and transparency of the procedures.
The companies that possess specific technical, organisational, and ethical requisites can access the **supplier register of Ecopneus** and subsequently take part in the selections for the awarding of the services. The contracts last for three years and are set up to favour stable collaborations and mutual advantage.
On the one hand, **Ecopneus can rely on high quality services, reliability, and efficiency** to carry out its legislative obligations. On the other hand, **the partner companies benefit from constant flows of material to be treated, timely payments, and the stability** derived from belonging to a system that is known throughout Italy and in Europe.
The compliance with the standards requested upon e-tender is verified in the course of time. Ecopneus carries out extra audits on top of the ones provided for by the legislation. In the course of time, this process has contributed to strengthen the quality level of the whole chain. This has been demonstrated by the **growing number of certifications obtained by its partner companies** : 94% of them has the ISO 9001 quality certification and the ISO 14001 Standard for environmental management. 55% of partner companies has also obtained the health and safety on the workplace Standard (OHSAS 18001/ISO 45001).
Moreover, Ecopneus has carried out a specific analysis of the energy consumption of the shredding plants. It has monitored 10 plants of its chain. The study has allowed to identify energy efficiency opportunities. Among these are: the replacement of obsolete machinery; the installation of monitoring and remote management systems; the installation of photovoltaic systems, and the introduction of energy management systems certified as per the ISO 50001 Standard.

FOCUS

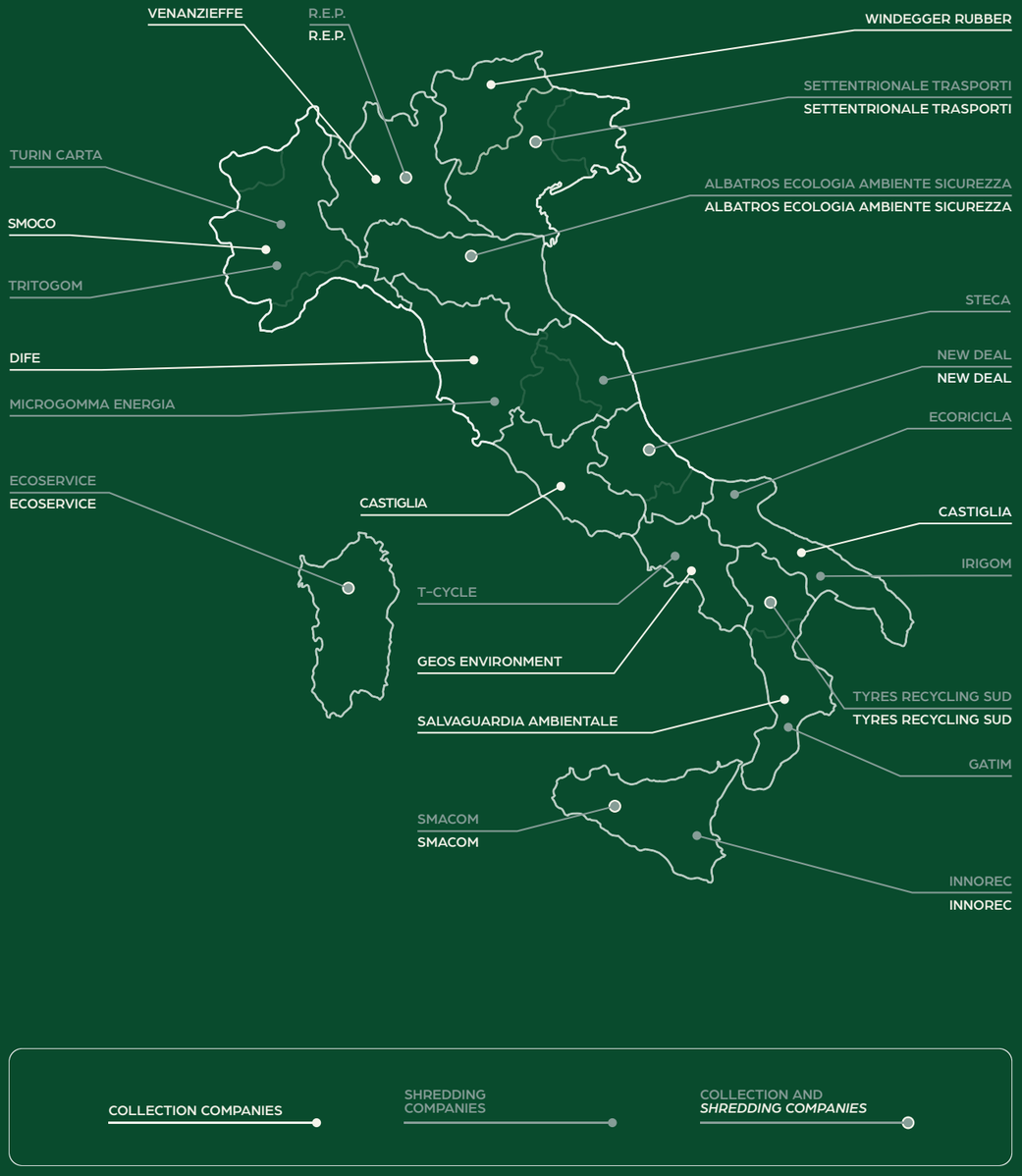
The Modal Shift Project: intermodal ELT transportation to improve efficiency and reduce emissions

The "Modal Shift" Project has been promoted by Ecopneus in collaboration with the Sustainable Development Foundation. This project aims at analysing the role of ELT transportation to improve logistic efficiency and reduce the emissions of the recycling and recovery chain. The passage from road transportation to railway represents a strategic lever for the decarbonisation of the sector. On top of the environmental impact of road transportation, it is necessary to consider the structural criticalities of the same, such as: load limits, more accidents, less convenience in the short distance journeys, road traffic and high climate-changing emissions. It is a European problem that is aggravated in Italy due to the lack of professional truck drivers and little generational change.
The first analyses carried out on the Ecopneus chain have highlighted concrete opportunities of intermodal transportation in spite of the fragmentation of ELT collection points, both at national and international level. The amount that can potentially be moved by train is estimated at about 16,000 tonnes/year of whole ELTs, shreds, and fabric.
A first case study related to the Northbound route Italy-Germany (about 700 km) represents a possible scenario with meaningful benefits. It has shown a 94% reduction of the emissions of greenhouse gases; -75% energy consumption; -55% external transportation costs and an important reduction of environmental pollutants: -90% of NOx and -82% of PM10.



THE ECOPNEUS PARTNER COMPANIES

On 31st December 2025



3.3 End-of-Life Tyre Recovery

Tyres are a technologically complex product. They are designed to resist very high mechanical and thermal stress during their use on roads. As they are the only item of contact between vehicles and road surfaces, their performance is fundamental to assure safety and reliability when driving. The chemical-physical characteristics of the materials tyres are made of – rubber, steel and textile fibres – remain mainly unchanged after their use. All this makes End-of-Life Tyres a precious resource for recovering materials that can be reintroduced in production cycles, thus contributing to the development of the circular economy.
After being taken off a vehicle, ELTS are sent to specialised treatment plants, where they are mechanically treated at room temperature. Before the shredding activities, the metal ring that assures tyre bead retention is removed. It will subsequently be recovered in foundries.

The materials ELTs are made of are separated through several phases of treatment. ELTs are subsequently reduced to shreds of increasingly smaller dimensions based on their end-use. Moreover, during this process, the textile fibres used to reinforce tyres are separated.

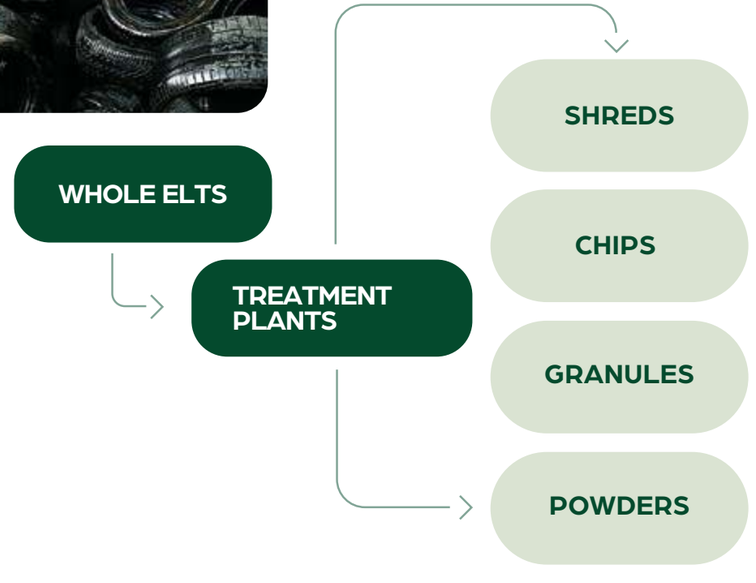
ELTS ARE A PRECIOUS RESOURCE FOR RECOVERING MATERIALS THAT CAN BE REINTRODUCED IN PRODUCTION CYCLES, CONTRIBUTING TO THE DEVELOPMENT OF THE CIRCULAR ECONOMY

Several rubber materials are obtained from ELT shredding, based on their dimension and purity:

- Shreds (up to 350 mm)
- Chips (up to 35 mm)
- Granules (0.8–18 mm, mainly smaller than 6 mm)
- Powders (0–0.8 mm)

In the Ecopneus chain, all treatment activities are carried out exclusively in plants located in Italy. The objective is to maximise the financial and occupational benefits generated by ELT management and optimise the logistics flows of transportation and treatment.





The materials deriving from the treatment of ELT shredding

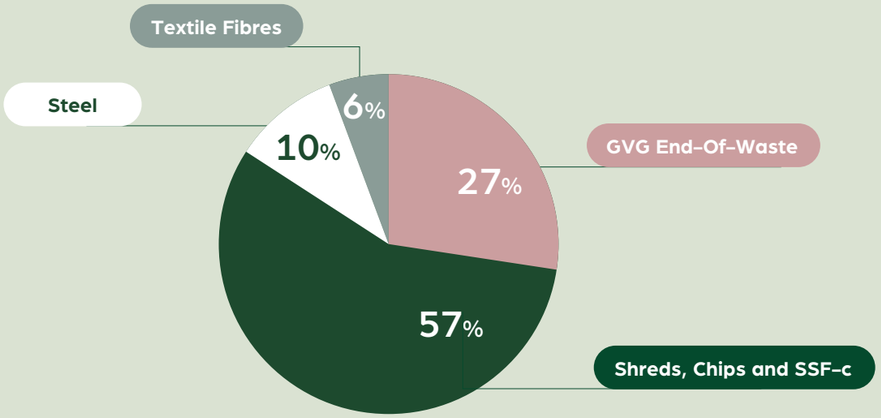
The various typologies of materials deriving from ELT shredding comply with the needs of the markets they are destined to. ELT shreds – and even chips to a smaller extent – still contain a metallic part and are mainly used for energy recovery in cement factories. The high calorific power of ELTs make this destination possible. Their use as alternative fuel offer benefits at emission level compared with traditional fossil fuels, such as pet coke.
By continuing in the shredding process, it is possible to separate also the steel and textile fibres. Steel will subsequently be recycled in foundries; whilst textile fibres are still mainly destined to energy recovery.
The main component, i.e. rubber, undergoes specific treatment in specialised plants that comply with the requirements set out in the End of Waste Decree (MD 78/2020). In this way, rubber can be classified as Granular Vulcanised Rubber (GVR).

GVR is a secondary raw material that can be used in a wide range of applications we can also find in our daily life. It can be used to make playgrounds and sports installations, rubberized asphalts, soundproofing and anti-vibration materials, and urban furniture products, up to several other industrial and civil applications.

RUBBER IS THE MAIN COMPONENT OF ELTS. AFTER BEING TREATED IN ACCORDANCE WITH THE RIGID PROVISIONS OF THE "END OF WASTE" DECREE, RUBBER BECOMES GVR – I.E.: GRANULAR VULCANISED RUBBER



ELT TREATMENT PREPARATION, 100% MADE IN ITALY



Over 198,000 tonnes of whole ELTs were sent to **treatment plants** within the Ecopneus System in 2025. These ELTs were destined to the following recovery operations according to several operational modalities. Of these:

- **183,687 tonnes were shredded** in plants located in Italy for their recovery as materials and/or fuel
- **14,265 tonnes were destined to be recovered as fuel** for the production of electrical power in a plant located in Italy
- **74 tonnes were used as material recovery** in engineering works.

Although the whole ELTs sent to the shredding plants were 198,027 tonnes, the treatment activities involved 183,073 tonnes in the course of 2025. This small difference between the collected, transported, and treated material and the one leaving the plants can be explained with the stocks already present in the treatment plants upon year end. This stock is usually treated during the following year. As such, residues from the previous year were treated in 2025.

From the 2025 shredding process, the Ecopneus obtained:

- **49,990 tonnes** of End of Waste Granular Vulcanised Rubber (GVR)
- **104,265 tonnes** of shreds, chips, and Secondary Solid Fuel (SSF)
- **18,355 tonnes** of steel, partially classified as End of Waste
- **10,375 tonnes** of textile fibres
- **88 tonnes** of treatment waste

3.4

The effective recovery of material and energy

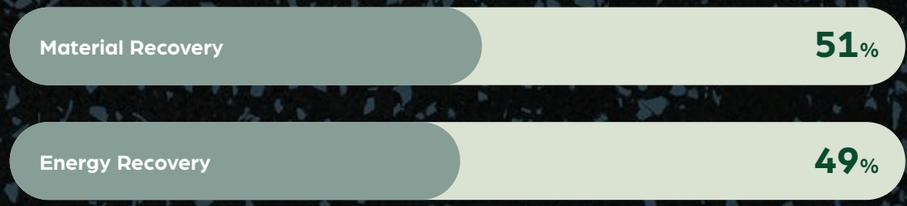
In the Ecopneus System, 100% of ELT shredding and preparation for material or energy recovery is carried out in plants located in Italy.
Energy recovery is mainly carried out in cement factories. 23% are located in Italy; 31% in the European Union and the remaining 46% outside the EU.
Overall, the End-of-Life Tyres effectively recovered were 188,853 tonnes in 2025, bearing in mind the joint material and energy contribution. An aspect that is worth mentioning is material recovery due to ELT combustion and co-combustion in energy recovery processes. These generate solid residues that can be used as secondary raw materials .

For example, ELT-derived ashes, oxides and metals are included in the end product in cement factories. Even the combustion processes destined to the production of electrical power generate solid residues that can be recovered.

The overall calculation of material and energy recovery within the Ecopneus System can be described as in the following table.

EFFECTIVE MATERIAL RECOVERY FROM ELTS	Tonnes
GVR FOR PRODUCTS AND APPLICATIONS	49,990
STEEL RECYCLED IN STEEL MILLS AND FOUNDRIES	18,355
WHOLE ELTS USED IN ENGINEERING WORKS	74
COMBUSTION ASHES FROM THE PRODUCTION OF ELECTRICAL POWER	4,850
STEEL AND ASHES FROM CHIPS AND SSF INCLUDED IN CEMENT PRODUCTION PROCESS	21,588
STEEL AND ASHES FROM CHIPS AND SSF INCLUDED IN CEMENT PRODUCTION PROCESS	1,154
TOTAL OF EFFECTIVE MATERIAL RECOVERY FROM ELTS	**96,012**
EFFECTIVE ENERGY RECOVERY FROM ELTS	**Tonnes**
WHOLE ELTS FOR ELECTRICAL POWER NET OF COMBUSTION RESIDUES	6,134
STEEL AND ASHES FROM ELT SHREDS INCLUDED IN CEMENT PRODUCTION PROCESS	68,362
CHIPS AND SSF IN CEMENT FACTORIES NET OF STEEL AND ASHES RECOVERED IN THE PROCESS	8,463
TEXTILE FIBRES IN CEMENT FACTORIES	9,882
TOTAL OF EFFECTIVE ENERGY RECOVERY FROM ELTS	**92,841**
TOTAL OF EFFECTIVE RECOVERY NET OF COMBUSTION RESIDUES	**188,853**
COMBUSTION RESIDUES TO RECOVER	**3,281**

THE EFFECTIVE RECOVERY OF MATERIAL AND ENERGY IN 2025



In 2025, the amounts of ELTs effectively recovered as material were more than the ones recovered as energy with a 51% to 49% ratio. The main contribution to material energy came from GVR recovery processes in plants located on the Italian territory. The ashes recovered in the cement production process and the steel recovered in steel mills and foundries are to be added to this amount.

For what concerns energy recovery, instead, the main component is the use of ELT chips in cement production process.

04

THE USES OF RECYCLED RUBBER

4.1

A constant commitment to the valorisation of recycled rubber

Going beyond the efficient management of ELT flows they are responsible for, the real strategic challenge for Ecopneus is the **development of a solid circular economy for recycled rubber**.
It is an articulated and constant effort with a double objective: consolidating the already existing and more widespread uses of recycled rubber and developing new applications for the growing amounts of GVR available. The strategy of Ecopneus is even more meaningful when considering the scarcity of virgin raw materials in Italy. The benefits deriving from the recovery of ELT-derived secondary raw materials and their use in productive cycles represent a concrete strategic lever to create even more competitive and sustainable products.
Within this scope, the management of End-of-Life Tyres is to be interpreted as an opportunity to generate value throughout the whole chain: not only through the compliance with all legislative obligations, but also favouring the growth of the markets of recycled rubber through research and innovation and contributing to the development of skills and qualified jobs.
These activities represent a fundamental element within the whole system, towards the creation of a fully circular industrial chain.

THE PILLARS OF THE STRATEGY



PRIORITY TO MATERIAL RECOVERY
Following the European waste hierarchy; favouring material recycling to energy recovery; stimulating the market, and promoting new uses to increase the demand for recycled rubber.

SUPPORT TO THE DEVELOPMENT OF THE INDUSTRIAL CHAIN
The aim is to assure high qualitative standards for the outgoing plants and favour company growth.



STRENGHTENING THE INTERNAL DEMAND OF RECYCLED RUBBER
Limiting as much as possible the use of foreign markets and promoting Made in Italy applications that can absorb all GVR available amounts.

PROMOTION AND DIFFUSION OF THE BENEFITS OF ELT-DERIVED MATERIALS
Through constant activities of communication, awareness raising, and technical divulgation aimed at public and private stakeholders.



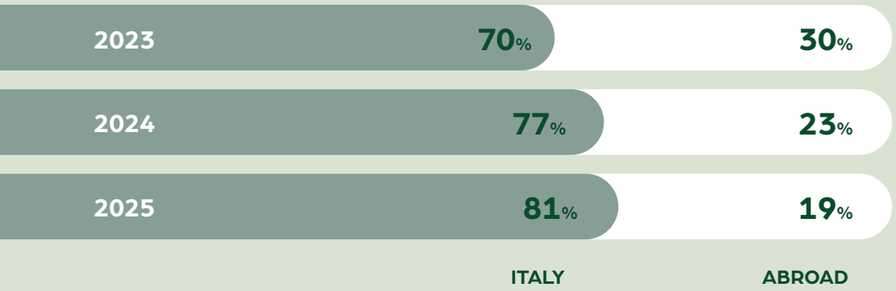
The reaching of these objectives goes through constant Research and Development activities. They are a fundamental tool to widen the applications of recycled rubber. **In line with the research and innovation objectives followed by its Partners, Ecopneus has supported projects for the development of high-potential technologies in the course of the years. These can open new scenarios and industrial uses for ELT-derived materials.** Among these, chemical recycling is a solution that may allow Italy to reintroduce growing amounts of ELT-derived materials in tyre production cycles, thus reaching full product circularity.

4.2

The market of Granular Vulcanised Rubber

In 2025, the Ecopneus chain sold **47,744 tonnes of Granular Vulcanised Rubber (GVR)**. This is a **+25% on 2024**, mainly due to a larger amount of collected ELTs. GVR is granules and powders derived from the treatment of End-of-Life Tyres in compliance with what stated by the End of Waste Regulation.
In line with the adopted strategy, the Italian market was the main output for GVR in 2025. It amounted to 81% of the total, thus showing an increase compared with 2024 (77%). This piece of information highlights a progressive growth of the Italian demand – a key element for the stability and development of the Italian national recycled rubber chain.

DESTINATION	t	%
ITALY	38.772	81%
ABROAD	8.972	19%
TOTAL	**47.744**	**100%**



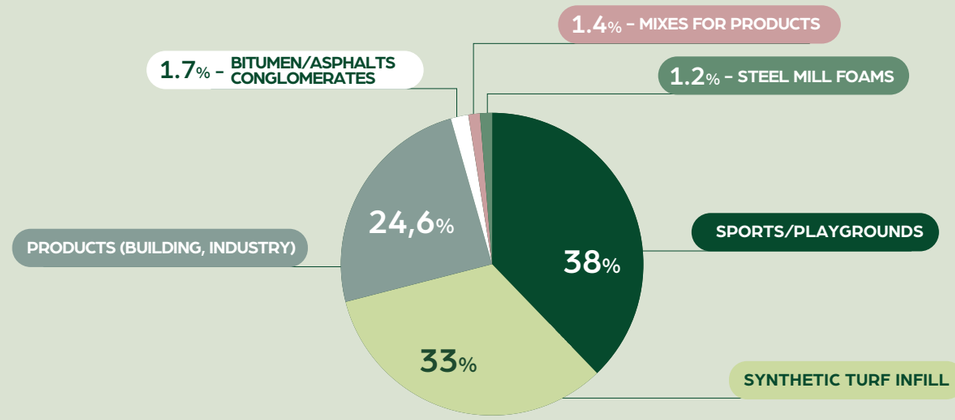
A contribution to the consolidation of the Italian demand for GVR may have come from the effects of the Minimum Environmental Criteria (MEC) for the road sector, although this is still difficult to estimate. MECs were approved at the beginning of 2025 and we shall be talking about them in greater depth in the following pages of this Chapter.

On the contrary, no effects linked to the EU 2023/2055 Regulation have been recorded. The EU 2023/2055 Regulation is also known as the Reach Regulation. It came into force on 17th October 2023. It introduced restrictions on the sale of microplastics on the EU market and banned the use of granules as infill for synthetic turf sport surfaces.

The Reach Regulation is currently not affecting the market volumes, mainly because of the transitionary period provided for before the entering into force of the Regulation (2031). Moreover, as of today, there are no alternative solutions that can assure similar levels of technical performance, financial sustainability, and operative management.

THE USES OF GVR

The **sports sector** is still the main market of reference for recycled rubber, thanks to its concrete financial and management benefits, as well as its intrinsic sustainability characteristics that are greatly appreciated on the market. In detail, the volumes of GVR used for producing sports surfaces saw a slight fall in the course of 2025 albeit still being the largest sector of use. On the contrary, the amounts of GVR used as infill in synthetic turf sport surfaces grew .
Moreover, the increase of the quota destined to "**bitumen, asphalts and conglomerates**" is to be highlighted. These are still modest amounts; however, they can be read as an impulse given by the MEC for Roads after a year from the entering into force of such Regulation.
The data were elaborated by Ecopneus according to the information provided by its partner companies for ELT shredding, and the amounts of sold GVR destined to several sectors of application.



	2024		2025	
USES OF GVR	**Tonnes**	**%**	**Tonnes**	**%**
SPORTS/PLAYGROUNDS	15,734	41.4%	18,125	38.0%
SYNTHETIC TURF INFILL	8,466	22.3%	15,758	33.0%
PRODUCTS FOR THE BUILDING SECTOR	5,515	14.5%	6,977	14.6%
PRODUCTS FOR THE MANUFACTURING SECTOR	5,196	13.7%	4,781	10.0%
BITUMEN/ASPHALTS/CONGLOMERATES/INFRASTRUCTURE	294	0.8%	835	1.7%
MIXES FOR PRODUCTS	1,294	3.4%	676	1.4%
STEEL MILL FOAMS	1,506	4.0%	592	1.2%
TOTAL	**38,006**		**47,744**	

POTENTIALITY OF THE PYROLYSIS OF END-OF-LIFE TYRES

The importance of **Chemical recycling** in the circular economy of ELTs is growing in importance. It is becoming an important alternative to the traditional recovery technologies. Differently from the mechanical processes that preserve the structure of the material, chemical recycling allows to intervene on vulcanised rubber at molecular level. This makes it possible to recover elements with high added value that cannot be easily obtained with conventional technologies.

As mentioned in Chapter 2, **several Partners of Ecopneus have been involved in the study of solutions that may allow to chemically treat ELTs**. Their objective is to obtain secondary raw materials that can be used in the production of new tyres. This is a fundamental step towards the closing of the recycling cycle. As such, it is being experimented in several European companies.
The drive towards these solutions is further strengthened by the global context, characterised by growing market volatility and geopolitical tension that affect the availability of raw materials. Thus, the possibility of recovering the resources present in the products that reached their end of life represents a strategic factor to assure the continuity of supplies, reduce costs, and strengthen industrial chain resilience.

Among the various chemical recycling technologies applied to ELTs, pyrolysis stands out for the advanced level it has reached and for its perspectives of development at industrial level. Several projects started mainly in North and Central Europe have contributed to demonstrate the technical and financial feasibility of pyrolysis in recent years. This has enhanced interest in this solution seen as a technology that can complement the existing mechanical recycling chains.
Pyrolysis is a process of thermal decomposition carried out in absence of oxygen. It allows to treat ELTs inside closed reactors. The chemical bonds of the vulcanised rubber composing ELTs break at temperatures between 400°C and 900°C. It is subsequently possible to **transform the material into several recyclable parts**:

- **Pyrolysis oil– it** can be used as virgin raw material in the chemical sector or as fuel;
- **Synthetic gas** (syngas), to feed the same process;
- **Recycled carbon black**, to be used in rubber products or in several industrial applications.

At international level, recycled carbon black represents one of the most strategic products of pyrolysis. Its applications are already at an advanced stage of development in the production of tyres and in other industrial sectors. In a similar way, pyrolysis oil is being progressively integrated in chemical and refining processes, contributing to replacing fossil virgin raw materials.
Despite these perspectives, pyrolysis still requires the overcoming of some criticalities, mainly at financial level, to consolidate sustainable industrial models, improve quality and product standardisation, and develop markets that can absorb them in a stable way.

THREE BRANDS, A SINGLE OBJECTIVE: TO VALORISE THE APPLICATIONS OF ELT-DERIVED RUBBER

To favour the use of ELT-derived rubber, Ecopneus has developed three brands dedicated to their main sectors of use.
This approach allows to communicate with the public in a clearer and more effective way. At the same time, it reinforces the position of ELT-derived materials towards the Public Administration, the operators of the sector, and the media.

TYREFIELD

It identifies the applications of GVR at sports level. Recycled rubber has many properties: it helps against shocks, it resists wear, and it is stable in all weather conditions. These properties make rubber particularly suited for the production of performing, innovative, and sustainable sports surfaces. Indeed, the sports sector is the main application for GVR, both at amatorial and professional level.

TYREPLAST

The Tyreplast brand characterises the materials obtained from mixing ELT-derived rubber and (recycled) thermoplastic polymers. These new composite materials combine the resistance, shock absorption properties and elasticity of recycled rubber with the workability of polymers. Thanks to their versatility, Tyreplast materials are used to produce slabs that compose removable sports surfaces for temporary or itinerant events. Moreover, Tyreplast can be used in several industrial sectors. Examples are: urban furniture, the building and automotive sectors, or livestock farming. Tyreplast contributes to the development of new technically advanced and sustainable products.

TYREFUEL

Tyrefuel is the brand that identifies the ELT-derived materials of the Ecopneus chain destined to energy recovery. Tyrefuel is characterised by high quality standards, careful management, and flow traceability. Indeed, End-of-Life Tyres are a high-calorific power alternative fuel. Tyrefuel is used exclusively in qualified plants, reducing the use of traditional fossil fuel in high energy-consumption processes.

A CATALOGUE TO PROMOTE THE PRODUCTS MADE WITH RECYCLED RUBBER

To favour the spreading and valorisation of the applications made with ELT-derived rubber, Ecopneus has prepared an online catalogue destined to the products made with GVR. The platform is freely accessible to producers and distributors, with the aim of enhancing the visibility of the available GVR-derived solutions and matching supply and demand.

The catalogue was made in collaboration with Matrec. It can be downloaded at: **https://catalogopfu.ecopneus.it/prodotti/**. It includes finished products, as well as sections dedicated to ELT-derived secondary raw materials, such as granules and powders. It also includes in-depth analyses on innovation, design, and technical documentation. All this contributes to raising the awareness about the opportunities offered by recycled rubber.

4.3

Long-lasting, more silent and safer roads thanks to recycled rubber

by adding ELT-derived rubber powder to bitumen or bitumen conglomerates, **highly-performing road asphalts with reference to duration, noise reduction and safety** are obtained.
The activities of Ecopneus have greatly contributed to the consolidation of this technology in Italy through its support to scientific research activities, pilot projects, and noise monitoring campaigns in collaboration with Universities, research centres, and experts. This commitment has allowed to analysed and confirm the concrete advantages rubberized asphalts can bring to the Italian road network. It has also better defined mixes and production processes specific for every intervention.

Moreover, the use of rubberized asphalts can be seen as a **particularly effective solution for the Public Administration**, because it allows to comply with regulatory requirements in terms of sustainability. At the same time, rubberized asphalts improve the technical performances of infrastructure .

THE ADVANTAGES OF RUBBERIZED ASPHALTS

NOISE REDUCTION
Rubberized Asphalts can reduce noise traffic from 3 to 5 dB, with concrete benefits on noise reduction, especially in urban areas.

GREATER SAFETY
Its resistance to cracks and deformations improves safety for both drivers and motorcyclists.

RECOVERY OF SECONDARY RAW MATERIALS
Recycled rubber replaces more expensive additives; it reduces the dependence on imports and avoids the extraction of virgin raw materials.

LONGER DURATION AND LESS MAINTENANCE
The elasticity of the modified binder increases asphalt resistance to cracks, thus assuring a longer life than traditional asphalts and lower maintenance.

THE MAIN EXPERIENCES IN ITALY

As of today, there are stretches of road made with rubberized asphalt in every Italian region. This page shows only the most relevant interventions, selected to show the efficacy of this solution in different Italian geographical and climate contexts.

MOTORWAYS
Stretches of rubberized asphalt have been laid on the A22 Autobrennero, A24 Autostrada dei Parchi, A33 Asti–Cuneo and others. They have confirmed good resistance and reduced maintenance, even after ten years.

TRENTINO-ALTO ADIGE
Several interventions on busy roads, where rubberized asphalts were chosen as an alternative to sound barriers. The results highlighted functional and noise reduction benefits, without visive impact on the landscape.



RIMINI, VIA MARECCHIESE
7.000 m² made with rubberized asphalt. The tests carried out by iPOOL, spin-off of Pisa's CNR, showed an approximately 5 dB(A) reduction of traffic noise, compared to the previous situation.

VARIANTE CANALI IN REGGIO EMILIA
Stretch of road made with ELT-derived rubberized asphalts. This project saved the emission of about 40 tonnes of CO_2. It also reduced energy costs by about 70,000 kWh and allowed a meaningful reduction of the overall life cycle costs. The surface is still in good condition after many years.

ANAS NETWORK, SS 73 "SENESE-ARETINA"
Stretch of road near Sansepolcro (AR) made within the scope of an experimental noise reduction plan coordinated by ANAS. Road surface with low noise emission and excellent mechanical performances.



THE LIFE SNEAK EUROPEAN PROJECT

LIFE SNEAK (Optimized Surfaces against Noise and Vibrations Produced by Tramway Track and Road Traffic) was a project co-financed by the European Union within the scope of the LIFE programme and coordinated by the Council of Florence. Ecopneus, ASSTRA, MOPI, the University of Florence, The Mediterranean University of Reggio Calabria and Vie en.ro.se. Engineering were members of this project.
Its aim was to develop and test innovative solutions for urban traffic noise and vibration reduction. In particular, it focused on the interaction between wheels and rail tracks (for trams) and tyres and road surface for vehicles, especially in densely populated areas.
The initiative consisted in designing and laying surfaces with low noise and vibration emissions made with recycled rubber (especially ELT-derived rubber) and innovative technologies.
In addition to road surfaces, the LIFE SNEAK project provided for the designing of noise-absorbing devices to be installed on trams, such as bogie skirts, as well as the development of an innovative system for the reduction of squeal noise .

THE PROJECT ENDED AT THE BEGINNING OF 2026 WITH THE PRESENTATION OF THE RESULTS. IT AIMED AT BEING A REPLICABLE MODEL APPLICABLE TO OTHER URBAN SCENARIOS THANKS TO AN INTEGRATED VISION THAT COMBINES TECHNOLOGICAL PROGRESS, ENVIRONMENTAL RESPONSIBILITY, AND URBAN WELLBEING IMPROVEMENT.

FOCUS

The MEC for Roads a year after they came into force

2025 marked the first year since the coming into force of the Ministry Decree of 5th August 2024. This MD introduced the Minimum Environmental Criteria for road infrastructure from 21st December 2024. This Regulation represents a meaningful step towards the integration of the principles of sustainability within Public Works, because it defines those environmental requisites that are to be applied during the whole life cycle of infrastructures – from their design to their creation, maintenance, and upgrading.

Examples of the qualifying elements introduced by the Decree are:

- **The extension of the useful life of surfaces**, set at 20 years for all new roads
- **The obligation of adopting solutions that can improve noise performance,** reducing rolling noise.

The MEC for Roads include complementary interventions to road infrastructure, such as the creation of noise reduction barriers with low environmental impact. Recycled rubber can be used in this case thanks to innovative solutions that shall be described in Chapter 8. For the recycled rubber chain, MEC for Roads represent a strategic lever to strengthen the recovery of material from ELTs, valorising GVR in high-added value applications. It is hoped that this Regulation may contribute to reinforce and give continuity in time to an ever greater use of GVR in this valid technological solution.
The free training programme aimed at the Public Administration organised by Ecopneus in collaboration with Punto 3 falls within this frame. Punto 3 is a consultancy company specialised in sustainable development, Green Public Procurement (GPP) and the Minimum Environmental Criteria (MEC).
The programme offers three operative tools that can be adapted to the specificity of the various interventions. They represent a valid support to translate the Ministerial guidelines into concrete and operative indications: a sample procedural guideline that sets modalities, rules, and criteria of tenders; a sample of tender specifications that describes technical requisites, materials and modalities of work execution, and a check list, useful to verify the correct implementation of the MEC for Roads.
Even if the MEC for Roads are a crucial tool to implement sustainable practices in public tenders, for many Administrations their implementation is still challenging. For this reason, Ecopneus has always believed in training and offering qualified support to the PA as a strategic lever to facilitate the adoption of rubberized asphalts.

4.4

Tyrefield: sports surfaces made with recycled rubber

The reason why the sports sector is the main market for recycled rubber is that GVR offers concrete and effective advantages in terms of management, financial, and environmental performances.
The Tyrefield surfaces comply with the high needs of both athletes and sports Federations. They allow to comply with the Minimum Environmental Criteria for the requalification of Councils' schools, playgrounds, and sports centres. Tyrefield is a valid solution for the Public Administration in case of projects of urban regeneration, school building or the creation of inclusive and safe playgrounds.

THE ADVANTAGES OF THE SURFACES MADE WITH RECYCLED RUBBER

PERFORMANCE IMPROVEMENT
Return of elastic energy calibrated for every sports discipline.

SAFETY
Reduced impact on articulations and muscles; prevention of micro shocks and fatigue.

DURABILITY
Resistance to rain, ice, intense heat and UV rays without deteriorating, with benefits on management costs.

ENVIRONMENTAL SUSTAINABILITY
High quality secondary raw materials replace virgin raw materials, reducing energy consumption and dependence on imports.

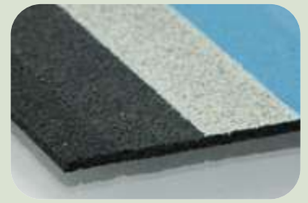
VERSATILITY
Indoor and outdoor installations, adaptable to all forms and dimensions, to fixed or removable solutions.

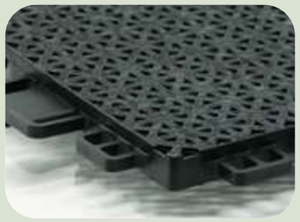
HOW ARE THE TYREFIELD SURFACES MADE?



CAST IN PLACE
A mix of rubber granules and resins is laid directly onto the ground, creating a seamless surface used mainly in athletics, children's playgrounds, and multipurpose surfaces.

PREFABRICATED MATS
Mats made with recycled rubber are joined together to create an elastic and anti-shock base surface. The finishing is then applied on top of this. It is a versatile solution for fixed or temporary installations; ideal for basketball, tennis, padel, athletics, volleyball and multipurpose surfaces.





MODULAR SLABS
Surfaces made with interlocking removable and reusable slabs. They can be used for temporary installations or for surfaces that need moving. They are normally used for 3x3 basketball, 5-a-side football, weight lifting, and holistic activities, such as: yoga, Pilates, muscular warm-up etc.

INFILL FOR SYNTHETIC TURF SURFACES
In synthetic turf pitches for football or rugby, rubber granules are placed among the grass blades to absorb shocks, protect the structure and keep it in place, prevent injuries and assure the maximum of playability and an excellent rolling of the ball.



SCIENTIFIC RESEARCH AND CERTIFICATIONS

Ecopneus has scientifically studied the properties and advantages of the surfaces made with recycled rubber with the aim of expanding the use of ELT-derived rubber in the sports sector. This has been a winning strategy, considering the positive feedback received and the growing amounts of GVR used in this sector. In collaboration with the **University of Tor Vergata**, for example, comparative studies on athletes' functional and postural response on several sports surfaces have been carried out. They have confirmed similar or even higher performances compared with other sports surfaces.

Biomechanic analyses on Tyrefield surfaces for football, basketball, athletics and padel have been carried out in collaboration with **Professor Mauro Testa of Biomoove**. He is an international expert in the sector of biomechanics. The results have shown a reduction of articular shocks, reduced muscular fatigue, and a better response to athletes' biomechanic needs. Together with the **Department of Veterinary Studies of the University of Perugia**, Ecopneus has carried out a research on horse riding surfaces using the Equinosis Q Lameness Locator system. This sophisticated tool measures horses' gaits, and confirmed performances that are similar to the best sand fields normally used – or even better. Moreover, there was a reduction in silica dispersion. Thanks to the constant effort of Ecopneus and the results of the studies they carried out, the Tyre-field surfaces comply with the standards expected by sports federations and national and international bodies.

- **FIBA** (International Basketball Federation) for regular basketball courts
- **FIP** (Italian Basketball Federation) for the homologation and use of the Tyrefield basketball surfaces in Italy
- **FITP** (Italian Tennis and Padel Federation) for XPadel Tyrefield
- **EN 1177** (European Regulation) for antishock playground surfaces
- **MEC Building sector** for interventions on public buildings and schools



BASKETBALL

ATHLETICS





VOLLEYBALL

PADEL AND TENNIS





HORSE RIDING

PLAYGROUNDS





FOOTBALL AND RUGBY

SAILING



4.5

The applications in the building sector, urban furniture, livestock farming and the automotive sector



BUILDING SECTOR

GVR is an effective solution for soundproofing and the absorption of vibrations in buildings. Its elastic and shock absorption properties allow it to stop noise transmission and reduce vibrations, improving general comfort – both at residential and industrial level. The products containing ELT-derived rubber are widely used for the soundproofing of lofts and walls. They are also excellent to reduce the vibrations of air conditioning or ventilation installations or even elevators. Moreover, the properties of rubber assure stable performances for decades, without deterioration or maintenance needs.



URBAN FURNITURE

GVR is resistant to all weather conditions and to shocks. Its deforming properties make it an ideal material for the creation of urban furniture such as: racks, benches, planters or relaxation areas. Even road signs can benefit from the properties of recycled rubber. Moreover, the afore-mentioned properties make rubber an excellent material for producing lane dividers, speed bumps, road cones, pedestrian areas and much more.



LIVESTOCK FARMING

Recycled rubber is used to make flooring surfaces and protections for the hooves of those anumals affected by pathologies or undergoing rehabilitation. Rubber offers hygiene, protection and comfort, above all in productive farming environments and livestock farming.



AUTOMOTIVE

GVR is used to produce several components such as the finishings of vehicles, mats, wheel arch liners, and insulating items. Its mechanical resistance, flexibility and noise absorption properties allow GVR to be used in technical solutions that unite performances and sustainability.

4.6

Tyrefuel and the combined recovery of ETL-derived material and energy



Within the scope of a greater valorisation of the characteristics of ELT-derived rubber, Ecopneus considers energy recovery a fundamental destination to assure the correct recovery of the ELTs they are responsible for. It also takes into consideration the fact the Italian internal market of recycled rubber is still not big enough to use all the available GVR. If we add to this the fact that there are regulatory limits and limited production of certain sectors of applications, it becomes clear how **energy recovery is a fundamental lever to avoid ELT accumulation and make sure that they are effectively valorised**.
The material deriving from the ELTs of the Ecopneus chain destined to energy recovery, Tyrefuel, is mainly destined to cement factories, where it replaces traditional fossil fuel. End-of-Life Tyres are characterised by high calorific power, which is necessary in high-energy consumption plants such as cement factories. Moreover, ELT- derived ashes and steel are included in the end product. This avoids the use of other virgin raw materials.
ELT-derived shreds and chips are mainly used for energy recovery in cement factories, together with textile fibres. Whole ELTs, instead, are valorised in plants for the production of electrical power.

THE ADVANTAGES OF THE TYREFUEL MATERIALS

HIGH CALORIFIC POWER

Rubber calorific power is comparable to the one of pet-coke, the fuel traditionally used in high-energy intensity industrial processes.

COMBINED RECOVERY OF ENERGY AND MATERIALS

The combustion residues in cement factories are not discarded, but directly incorporated in the cement itself, thus replacing virgin raw materials.

REPLACEMENT OF FOSSIL FUELS

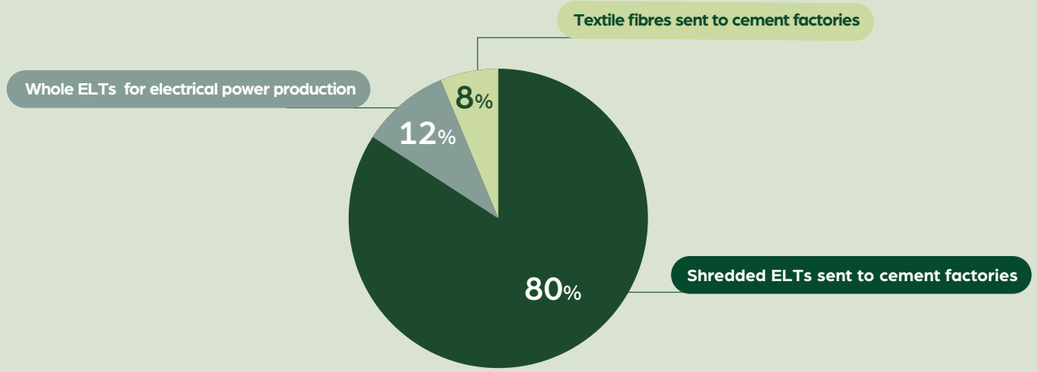
Tyrefuel reduces the use of more polluting imported fuel, improving the overall emission scenario of the plants that use it.

QUALITY AND TRACEABILITY

The Ecopneus chain assures that the Tyrefuel materials comply with rigorous Standards. They are exclusively sent to qualified and authorised plants with full tracing of all flows

THE FIGURES OF THE 2025 ECOPNEUS ENERGY RECOVERY

123,715 tonnes of End-of-Life Tyres were destined to recovery as fuel in 2025. They were both whole ELTs or materials derived from ELT treatment. 99,567 tonnes (80%) were shreds, chips, and SSF sent to cement factories. 9,882 tonnes (8%) corresponded to the textile fibres recovered as fuel in cement factories. 12%, instead, amounting to 14,265 tonnes, were whole ELTs used by plants for the production of electrical power.



Turkey's cement factories absorb the largest amount of shredded and chipped ELTs (65%). Textile fibres, instead, are recovered as fuel in cement factories mainly located in the European Union (81%) and in Italy (the remaining 19%).

THE ONLY PLANT FOR THE PRODUCTION OF ELECTRICAL POWER WITH WHOLE ELTS IS LOCATED IN ITALY.

	CEMENT FACTORIES				PROD. ELECTRICAL POWER	
TYPOLOGY OF RECOVERY PLANT	Italy	EU	Extra EU	TOTAL	Italy	TOTAL Energy Recovery
NUMBER OF PLANTS	3	4	6	13	1	14
WHOLE ELTs				0	14,265	14,265
SHREDS, CHIPS + SSF-c	35,335 35%		64,233 65%	99,567		99,567
TEXTILE FIBRES	1,882 19%	8,000 81%		9,882		9,882
TOTAL	37,217	8,000	64,233	109,449	14,265	123,715

05

ENVIRONMENTAL BENEFITS

5.1

Life Cycle Assessment certified by the Ecopneus chain

To quantify the environmental footprint of the activities of the Ecopneus chain, Ecoinnovazione srl – a spin-off of Enea – carried out an in-depth Life Cycle Assessment study. It followed standards of reference*. The study was carried out in 2024 and was already discussed in the Sustainability Report of Ecopneus last year. Its objective was to quantify the potential environmental impacts of the phases of collection, treatment, and valorisation of the ELTs managed by Ecopneus. They were subsequently compared with the benefits linked to material recovery obtained from ELT treatment.
During 2025, the **LCA study on the Ecopneus chain was certified by RINA**, following a verification process on the methodology used and its results. The certification was awarded to the methodology, procedure, and data set used to calculate the footprint, as well as the final result of the process. It is an important goal and demonstrates how Ecopneus is willing to go beyond simple waste management by **concretely contributing to the Italian circular economy in a measurable and positive way**. To quantify the environmental benefits with a LCA, the environmental credit deriving from the replacement of virgin raw materials with ELT-derived recovered materials was calculated, bearing in mind the impact related to their production. As we shall see in the following pages, **the results of the study show a positive environmental contribution for all the impact categories taken into consideration**.

MAIN PARAMETERS FOR THE CALCULATION OF GVR VALORISATION

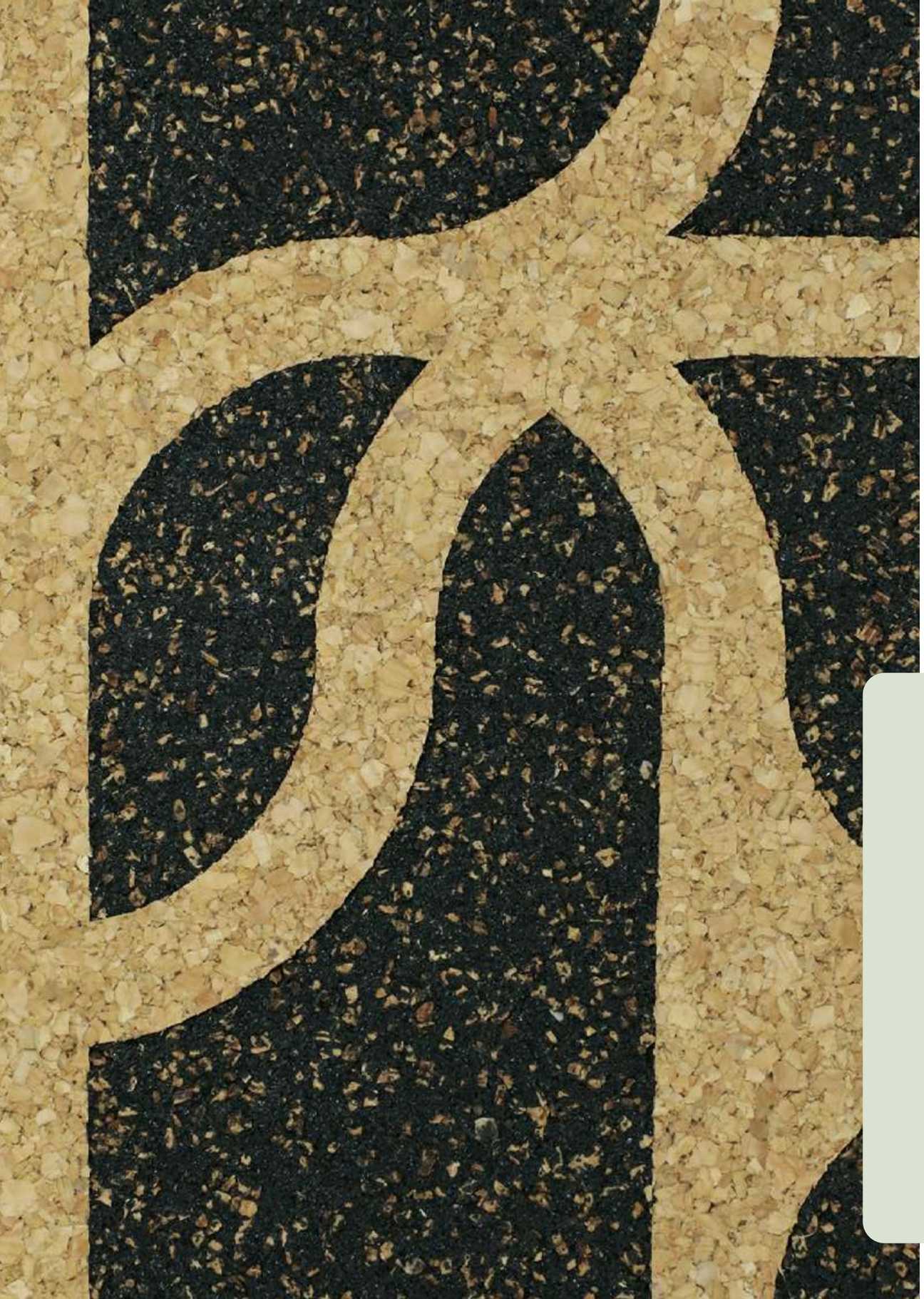
RECOVERED MATERIAL	%	Quantity (t)	Destination	REPLACED MATERIAL
GVR	1.7%	835	Bitumen, asphalts conglomerates,	Styrene Butadiene binder
GVR	33%	15,758	Synthetic turf infill	Elastomer PP/EPDM
GVR	38%	18,125	Sports, playgrounds	Elastomer PP/EPDM
GVR	14.6%	6,997	Products for the building sector (sound proofing)	Polyurethane
GVR	10%	4,781	Products for manufacturing	Polyurethane
GVR	1.4%	676	Mixes for manufacturing	Polyurethane
GVR	1.2%	592	Steel mill foams	foaming (metallurgical-coke)

MAIN PARAMETERS FOR THE CALCULATION OF RECOVERED MATERIAL VALORISATION

RECOVERED MATERIAL	Destination	REPLACED MATERIAL
SHREDS	Cement factories (Extra-EU)	76% pet coke** 24% reinforcing minerals (clinker) **
CHIPS	Cement factories (Extra-EU)	Pet coke **
TEXTILE FIBRES	Cement factories (ITA, EU)	Pet coke **
METAL	Foundries (ITA, EU, Extra-EU)	Recovered and reused steel scraps

* ISO 14040:2006 Environmental management – Life Cycle Assessment – Principles and framework; ISO 14044 Environmental management– Life Cycle Assessment – Requirements and guidelines. Implementation of the methodology provided for by the Product Environmental Footprint (PEF) as per the 2021/2279 Commission Recommendation.

** 76% of shreds are not classified as energy recovery as such. They are seen as fuel recovery to produce energy (pet coke). The remaining 24% is used in the production of cement (clinker reinforcing minerals).



5.2

The scope of the LCA analysis on the Ecopneus system

To calculate the environmental footprint of the Ecopneus system, the Environmental Footprint 3.1 (EF 3.1) methodology was used. Defined by the European Commission, the EF 3.1 methodology considers impact categories such as, for example, soil consumption, climate change and toxicity for human beings.

These impact categories were evaluated during each phase of the whole life cycle of the End-of-Life Tyre management system of Ecopneus:

- Collection (from ELT GP to Collection Centres - CC)
- Transportation (From CC to Shredding Centres - SC)
- Shredding Centres
- Distribution (From SC to valorisation plants)
- Chips (energy valorisation in cement factories)
- Textile Fibres (energy valorisation in cement factories)
- Shreds 76% (energy valorisation in cement factories)
- Shreds 24% (material valorisation in cement factories)
- GVR -Granular Vulcanised Rubber (material valorisation)
- Metal (material valorisation)

AFTER CREATING THE MATRIX WITH THE IMPACTS GENERATED BY EVERY PHASE FOR ALL THE 16 CATEGORIES PROVIDED FOR BY EF 3.1, THE FOUR MOST RELEVANT IMPACT CATEGORIES WERE IDENTIFIED:

FOSSIL RESOURCE CONSUMPTION

(Measurement Unit: MJ) This indicator measures the impact linked to the use of non-renewable energy resources, such as: petroleum, natural gas, and coal. As they are non-renewable resources, their intensive use implies that lower quality resources will have to be used in the future, or resources that are more difficult to reach. This will cause an increase in energy and financial costs as well as in the overall environmental impacts.

CLIMATE CHANGE

(Measurement Unit: CO_2eq) It evaluates the contribution to the changing of global climate deriving from the emission of greenhouse gases, such as: CO_2, CH_4 and N_2O. The main human cause is the combustion of fossil fuel. This causes an increase in the average temperatures and in the growing number of extreme climate events on a global and regional scale.

ECOTOXICITY OF FRESHWATERS

(Measurement Unit: CTUe) It measures the potential impact of toxic substances on freshwater ecosystems. The effects may be immediate (acute ecotoxicity) or in the long run (chronical ecotoxicity), compromising ecosystem functionality and the survival of water organisms.

PARTICULATE EMISSIONS AFFECTING HUMAN HEALTH

(Measurement Unit: disease incidences) This indicator evaluates the effects of particulate emissions in the atmosphere on human health. Particulate matter is generated also by SO_2 and NO_X. It contributes to the creation of aerosols and it is linked to relevant impacts, in particular on the respiratory system, based on the levels of exposition and the composition of pollutants.

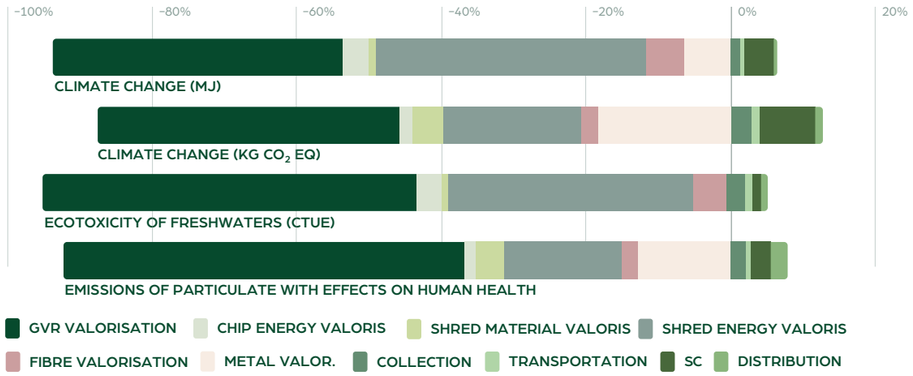
5.3

The environmental Impacts of the Ecopneus ELT management system

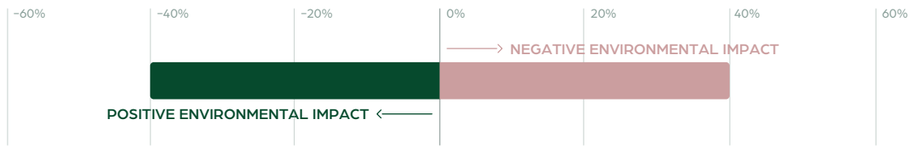
In the Ecopneus system, **the main positive contribution to the environment is the valorisation of GVR and the use of shreds as fuel in cement factories**. This is also due to the quantities recovered for these two waste categories that amount to over 70% of the total of recovered materials. GVR represents 27% of the total with 49,990 tonnes; whilst shreds represent 47% of the total with 89,950 tonnes.

Making an in-depth analysis of the environmental impact, GVR and shred recovery have a 77.4% positive contribution to the "Use of fossil resources" category. Their impact on "climate change" category, instead, amounts to 60.5% and their impact on "Ecotoxicity of freshwaters" is of 85.6%. 71.6% , instead, is their effect on the "particulate emissions affecting human health" category.

THE GRAPH HERE-BELOW ALLOWS US TO CLEARLY SEE WHAT PHASES OF THE ELT LIFE CYCLE POSITIVELY OR NEGATIVELY CONTRIBUTE TO THE OVERALL ENVIRONMENTAL IMPACT OF THE SYSTEM .



As it can be observed, the values of some phases of the ELT cycle are above 0. As such, they increase the system environmental impact. By way of example: the phases of collection, transportation, shredding and distribution.
Other phases, instead, have negative values, i.e.: they reduce the environmental impact . Examples are: GVR and metal or shred energy recovery.
By adding the contribution of each phase, it is possible to calculate how the Ecopneus system affects the environment for each specific category.



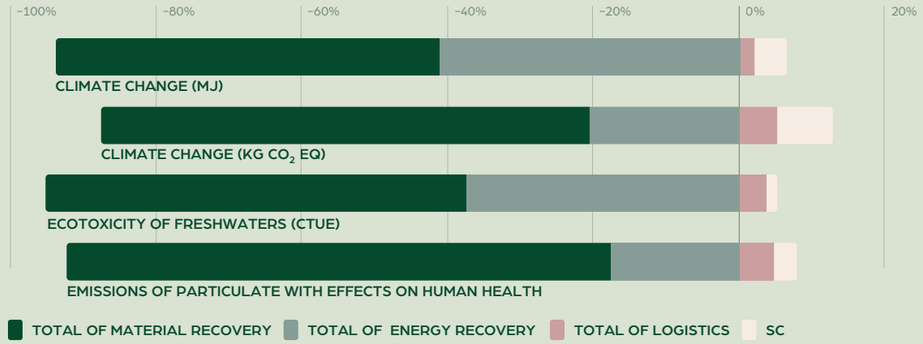
The results show that the modalities **adopted for the treatment and recovery of ELTs contribute to reduce the environmental impact of the life cycle phases related to the end of life of tyres for all the four relevant environmental impact categories analysed**. This is due to the efficiency reached in the operative logistics and treatment phases and also to the benefits achieved with the valorisation of materials and energy.

THE ENVIRONMENTAL BENEFITS OBTAINED FROM THE RECOVERY OF GVR AND THE USE OF SHREDS FOR ENERGY RECOVERY ARE BY FAR HIGHER THAN THE ENVIRONMENTAL IMPACT CAUSED BY THE PHASES OF COLLECTION, TRANSPORTATION, TREATMENT, AND DISTRIBUTION OF ELTs.

Simplifying, we can group the ELT life cycle phases into homogeneous activities, to better understand how each macro phase affects the various impact categories.

We can group the various activities into 4 macro phases:

- **Total of logistics** = collection + transportation + distribution
- **SC** = shredding centres
- **Total of material recovery** = shreds for material recovery + GVR + metal
- **Total of energy recovery** = chips + fabrics + shreds for energy recovery



FOR ALL FOUR IDENTIFIED RELEVANT ENVIRONMENTAL IMPACT CATEGORIES, THE MODALITIES ADOPTED FOR THE TREATMENT AND THE RECOVERY OF END-OF-LIFE TYRES CONTRIBUTE TO REDUCE THE OVERALL ENVIRONMENTAL IMPACT OF THEIR LIFE CYCLE

It is even more evident how the environmental benefit of the recovery phases is way greater than the impacts of the operative phases of collection and treatment.

Finally, we can turn these data into equivalences. By unifying the several categories of impact, these equivalences give us a single value for the environmental impact referred to the amount of ELTs effectively collected, transported, treated in Shredding Centres and valorised by the Ecopneus chain :

The overall Ecopneus system avoided the extraction and consumption of non-renewable fossil resources equal to 1,204,249 MWh in 2025. These correspond to:

- the MJ/MWh used to light a football stadium for over **116,500 matches**
- the MJ/MWh used to **heat over 14 million m2 of apartments in a year**

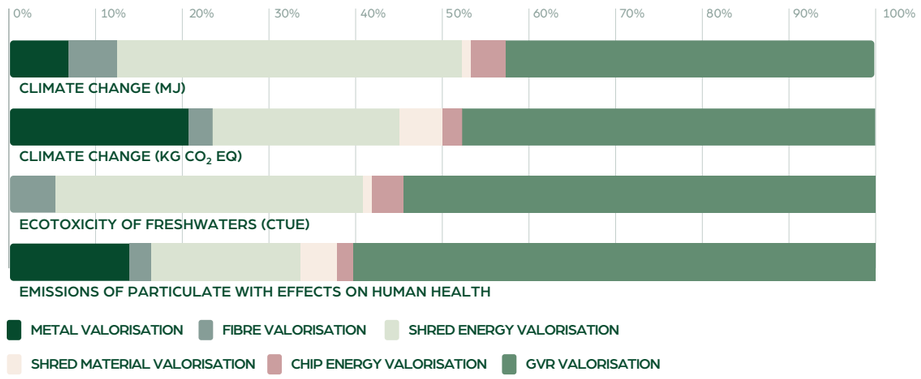
Moreover, it has avoided the emission of 131,338.35 t of CO_2 equivalent.

- This corresponds to the emissions of CO2 equivalent of **over 812 million km travelled with a medium-capacity automobile**.
- The absorption of CO2 equivalent of **approximately 17.5 million trees**.

5.4

The LCA results for energy and material valorisation

We can further analyse the contributions of every ELT-derived material for each relevant environmental impact category, in order to better appreciate the environmental value of each recovered material. Moreover, this allows us to read the operative results of the Ecopneus chain in the light of the environmental impacts of every outgoing material.



For every impact category, the main contribution derives from the use of Granular Vulcanised Rubber as secondary raw material. Its contribution goes from 43% for the "Fossil resource consumption" category , to 60% for the "Particulate Emissions" one. The use of shreds as alternative fuel in cement factories has offered a great environmental contribution.

THE MAIN CONTRIBUTION DERIVES FROM THE USE OF GVR AS SECONDARY RAW MATERIAL. THE USE OF SHREDS IN CEMENT FACTORIES OFFERS AN IMPORTANT ENVIRONMENTAL CONTRIBUTION TOO. THIS FURTHER CONFIRMS THE ENVIRONMENTAL SUSTAINABILITY OF ENERGY RECOVERY.

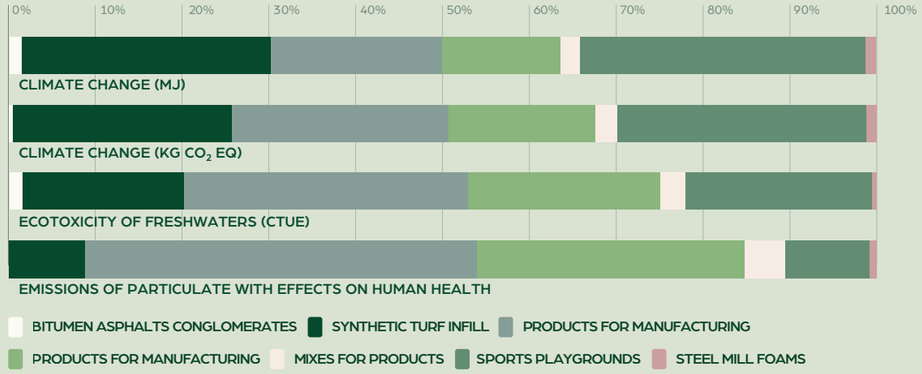
This further demonstrates the environmental sustainability of energy recovery. The main contributions for shreds go from 40% for the "Fossil resource consumption" category, to 36% for "Ecotoxicity of Freshwaters".

The contribution of metals is non-negligible too. Indeed, it affects the "climate change" category by 21%, and the "Particulate Emissions" category by 14%.



The graph in the page here-aside shows how GVR brings a greater positive contribution even with smaller amounts than the shreds used for energy recovery (49,990 tonnes of GVR vs 89,950 t of shreds). This confirms the environmental benefit of material recovery compared with energy recovery.

It is interesting to understand how the various applications of GVR affect the environmental balance of the Ecopneus system. In this case, the results are affected by the amounts used in the various applications (the larger the amount, the greater will be the deriving benefit), and by the material it replaces (the more critical the material it replaces, the greater the benefit from the use of GVR will be). All this is based on the parameters described at the beginning of the chapter.



Overall, the greatest contributor is "Products for the Building sector". It has a 45% impact on the "particulate Emissions" category; 33% on "Ecotoxicity of freshwaters"; 25% on "Climate Change", and 20% on the "Fossil resource consumption" category. At the level of aggregated contributions for the various impact categories, the applications for "Sports / Playgrounds" come second. This is followed by: "Products for Manufacturing", "Synthetic Turf infill", "Mixes for Products", "Bitumen, asphalts, conglomerates", and "steel mill foams".

06

FINANCIAL BENEFITS

6.1

The financial value of the materials recovered from End-of-Life Tyres

The contribution generated by the Ecopneus chain can be measured even from a financial point of view. It is possible to calculate the savings generated for Italy from the use of ELT-derived materials that replace imported virgin raw materials such as: elastomers, polyurethane, pet coke, and iron ore.

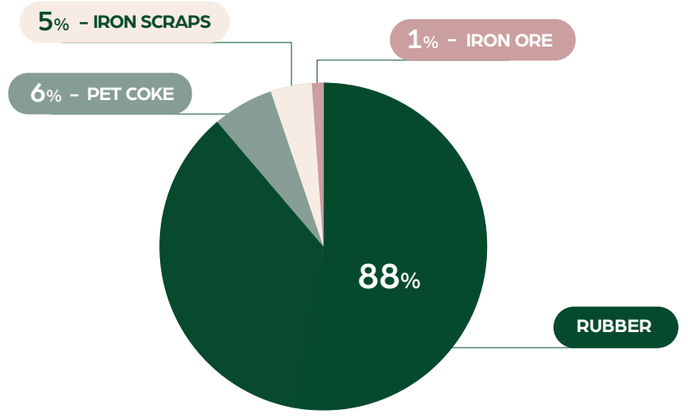
The Ecopneus chain generated savings estimated at 69.7 million euros in 2025.

NATIONAL SAVINGS ON VIRGIN RAW MATERIAL IMPORTS THANKS TO THE MATERIALS RECOVERED FROM ELTS IN THE ECOPNEUS CHAIN

VIRGIN RAW MATERIALS REPLACED WITH ELT-DERIVED MATERIALS	REPLACED MATERIAL
RUBBER (GVR replacing elastomer, polyurethane, styrene, etc)	61.5
PET COKE (recovery of ELT-derived fuel)	4.3
IRON SCRAPS (steel recovery in steel mills)	3.0
IRON ORE (steel recovery in cement)	0.8
TOTAL	69.7

IN 2025, THE ECOPNEUS CHAIN ALLOWED TO SAVE AN ESTIMATED 69.7 MILLION EUROS

The most relevant share of this amount is due to rubber, thanks to the volumes produced by the Ecopneus chain, and to the market cost of the materials it can replace, such as: elastomer, polyurethane and styrene. It is, thus, evident, how the Ecopneus chain represents a true source of secondary raw materials requested by the market. They offer important financial benefits associated with the environmental ones created by their correct recovery.



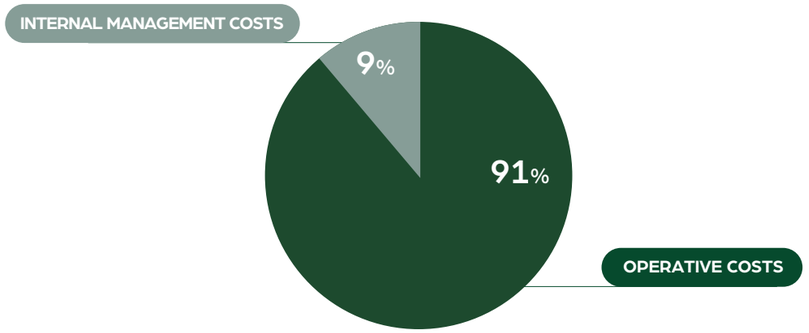
THE GENERATED AND DISTRIBUTED FINANCIAL VALUE

In 2025, the Ecopneus system generated a **financial value of 49.4 million euros** thanks to eco fees. Of this amount, **44.4 million euros were redistributed for covering the operative costs** of the whole system.

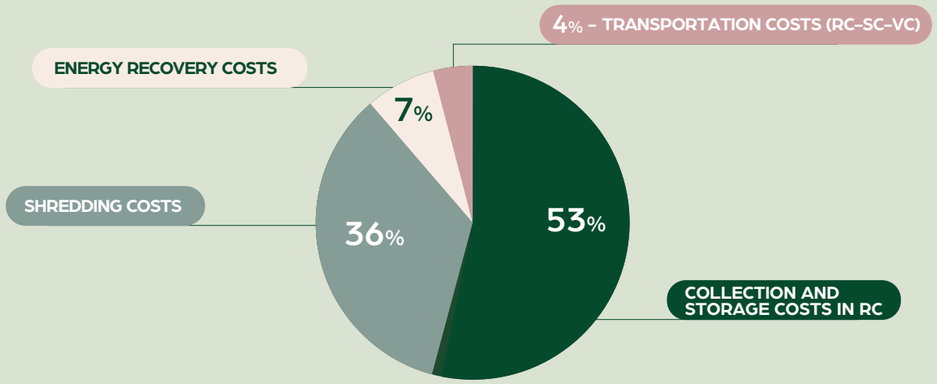
91% of the total, corresponding to **40.2 million euros**, was used to **support the operative costs** linked to the daily management of End-of-Life Tyres, such as the activities of collection, transportation and treatment.

The remaining 9% of the total (4.2 million euros), was allocated to **the operative costs of the consortium**, there included the expenditure for its employees, fiscal duties, the activities of research and development and all communication activities.

This allocation of resources shows a management model strongly oriented towards operative efficiency, where the majority of eco fees is directly reinvested in the core activities of the system



DETAIL OF OPERATIVE COSTS



ECO FEES

The functioning of all the End-of-Life Tyre management system is based on the so-called **eco fees**. This is an amount to be pain upon purchasing any new or second-hand tyre.
It is used to finance all activities necessary to assure a correct tyre end-of-life.
Eco fees are based on tyre weight and they are to be indicated in the sales invoice.
This assures transparency towards the end user.

The system implemented by Ecopneus follows the indications set by **MD 182/2019** that divides tyres into **15 typologies** based on specific weight intervals. In their turn, they are divided into three macro-areas:

- **P (Small)**
- **M (Medium)**
- **G (Large)**

The values of the eco fees applied by the companies partner of Ecopneus have remained unchanged since January 2021. They can be seen in the table here-below.

CATEGORY	TYPOLOGY	TYRE WEIGHT (KG)	ECO FEE
P	1	0 – 4.999	1.00
P	2	5 – 7.999	1.80
P	3	8 – 12.999	2.60
P	4	13 – 15.999	3.70
P	5	16 – 24.999	4.70
P	6	25 – 34.999	7.70
M	7	35 – 64.999	14.50
M	8	65 – 104.999	18.70
M	9	105 – 154.999	32.70
G	10	155 – 224.999	56.30
G	11	225 – 314.999	79.70
G	12	315 – 424.999	112.30
G	13	425 – 554.999	148.00
G	14	555 – 704.999	184.30
G	15	> 705	266.60

07

SOCIAL BENEFITS

7.1

Recycled rubber: a precious resource for today's and tomorrow's cities

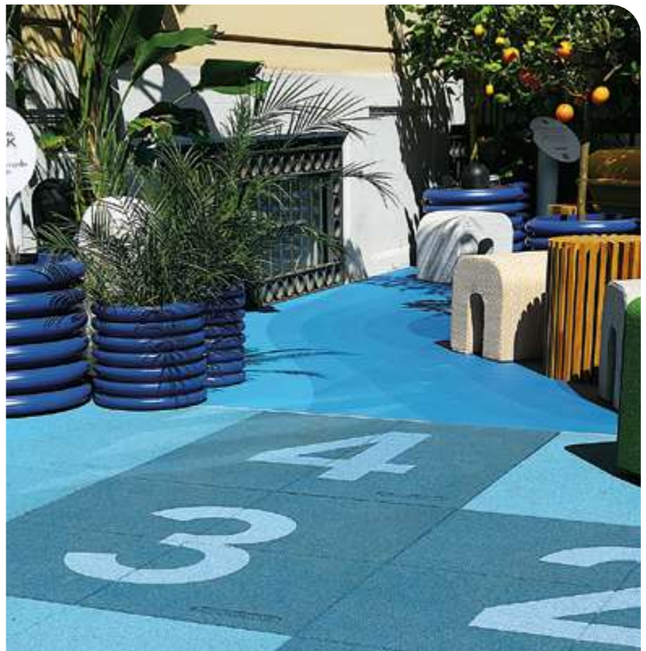
In addition to the positive impacts from a financial and environmental point of view, the Ecopneus recovery of End-of-Life Tyres offers many advantages from a social point of view too. They mainly derive from the **use of recycled rubber in solutions that make our cities more sustainable, inclusive, and welcoming**.
There are many examples of initiatives and activities that Ecopneus has promoted in collaboration with the local Public Administration in the course of time. In particular, Ecopneus has contributed to interventions on viability and public spaces. Examples may be: the creation of roads with rubberized asphalt, the renovation and requalification of buildings, aggregation and pedestrian areas, children's playgrounds, school installations, sports surfaces, and spaces dedicated to events.

Indeed, the use of recycled rubber allows to turn the modern and diversified needs of sustainable development of our cities into concrete solutions that are at everybody's reach and that can be adapted to every use. At the same time, these activities reduce the use of virgin raw materials favouring circular materials. As such, what was once considered waste is now turned into an innovative and technologically advanced resource.

As a private, non-profit consortium operating for public interest purposes, **Ecopneus has always promoted various forms of public-private collaboration to support the PA in the use of recycled rubber** and to freely offer support and consultancy activities to facilitate the identification of innovative and eco-sustainable solutions.
This effort and resources have given wide visibility to the characteristics of recycled rubber. They have also valorised its many sectors of application. On the other hand, they have given the Public Administration a tangible example of the advantages of the solutions made with GVR and offered a made-to-measure technical-operative consultancy, thus favouring other future interventions.

Thanks to the collaboration between Ecopneus and the Local Administrations, several sports surfaces, and playgrounds have been created all over Italy. They are structures open to the public and socialisation points that did not exist before. They offer communities aesthetically nice and functional aggregations centres and they also represent a real example of circular economy.

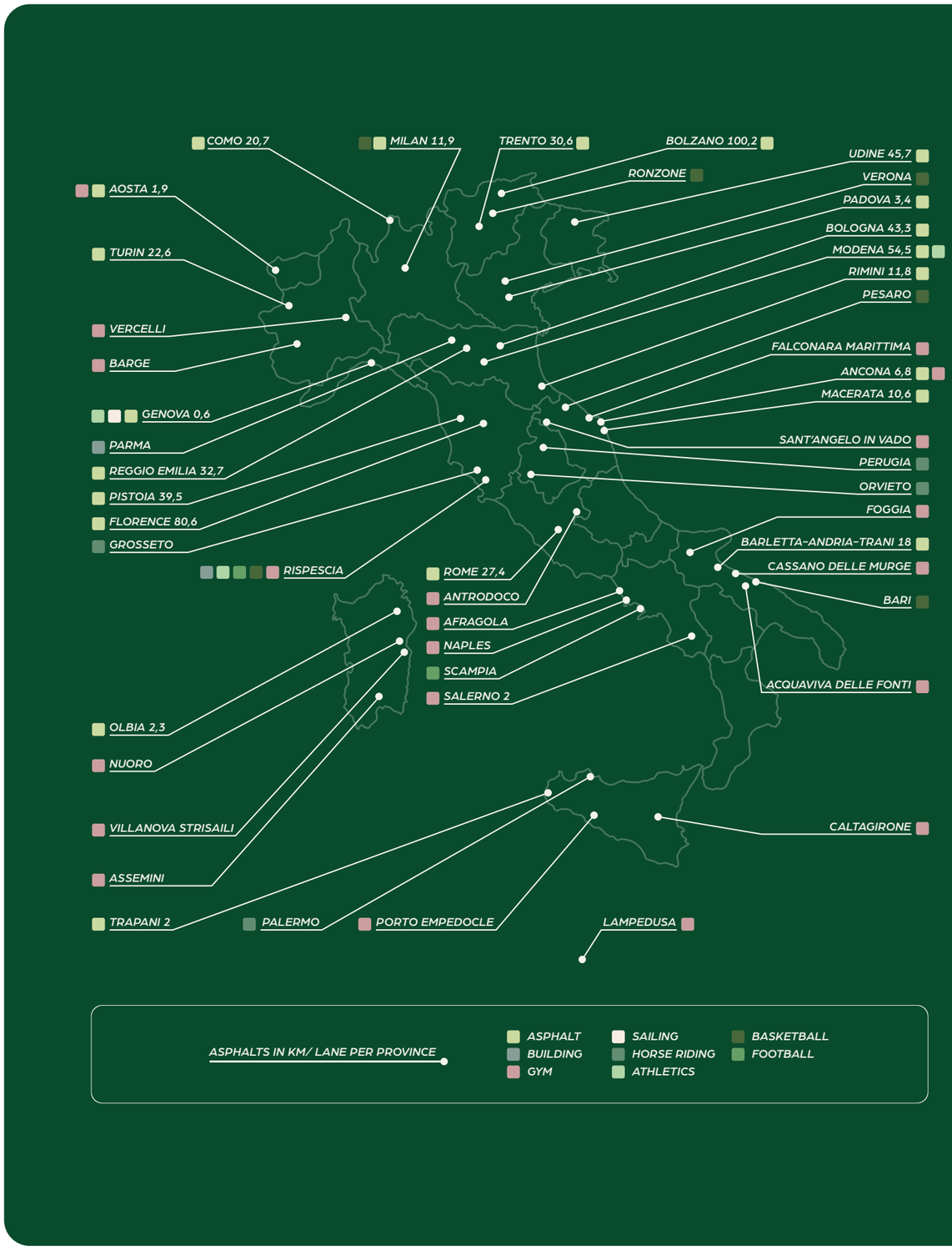
Made with fully recycled materials, they transmit an important message especially to the younger generations: material recovery is essential not only for sustainable financial growth, but also for the wellbeing of the whole community and the environment. They are also fundamental for consolidating a widespread culture of recycling.



ROAD SURFACES, URBAN FURNITURE, SCHOOLS, PLAYGROUNDS, SPORTS SURFACES: RECYCLED RUBBER IS THE KEY TO MAKE OUR CITIES MORE SUSTAINABILE, INCLUSIVE AND WELCOMING

RECYCLED RUBBER IN ITALY

The main installations made with GVR in collaboration with Ecopneus



THE CULTURE OF RECYCLING STARTS FROM SCHOOL

In the course of the years, Ecopneus has been concretely committed to schools thanks to the **educational project promoted in collaboration with Legambiente "for a correct recycling of End-of-Life Tyres"**. The project was born with the aim of making boys and girls more aware of the importance of a correct ELT recycling and of the benefits derived from precious materials like recycled rubber.

Every year the project focuses on a different region. The participating schools are sent information material that the educators of Legambiente use to explore the issues of recycling. On top of frontal lessons in their classrooms, students are also able to visit ELT treatment plants. This allows them to effectively see how waste can be turned into a precious resource.

A **contest** is linked to this educational project.

Every year this contest awards sports surfaces and furniture made with recycled rubber to the schools that creates the best video on the recycling of ELTs.

With this project, Ecopneus has created 11 state-of-the art sports surfaces (of which: 2 in the towns of Spoleto and Narni in 2025) made with recycled rubber in 11 comprehensive schools, from the North to the South of the country, islands included. Moreover, Ecopneus has also offered furniture and relaxation areas. These interventions have often been carried out in complex environments, where it is not possible to have access to places of aggregation or sports surfaces – or they do not exist at all. For the new generations, this is a concrete testimony about the value of the correct recovery of ELTs.



LEGALITY AND CIRCULAR ECONOMY FOR THE SO-CALLED "LAND OF FIRES"

Started in 2013, the "Memorandum for the implementation of collection interventions and management of the End-of-Life Tyres illegally dumped in the territory of the Provinces of Naples and Caserta" is a measure that has allowed to give concrete answers to a territory too often vexed by illegality.

Signed by the Ministry of the Environment, the person appointed by the Interior Ministry to fight against the phenomenon of waste arsons in the Region of Campania, the Prefects of Naples and Caserta, the Mayors of Naples and Caserta, and Ecopneus, this Memorandum has allowed to **collect over 24,000 tonnes of ELTs from the roads of the territory. This has been made possible thanks to over 4 million euros provided for by Ecopneus.**

This commitment is to be added to the daily collection activities at the over 2,000 ELT GP in the Campania Region.

Within this context, great attention has also been paid to initiatives of information and awareness raising.

From the communication campaign "I choose the right way" against the off-the-books purchasing of tyres that originate their illegal dumping, to public initiatives for the citizens. Examples of the latter may be: contests for choosing areas to be requalified with recycled rubber, or the Relay for Legality from Naples to Caserta.

THE FIGURES OF THE MEMORANDUM FOR THE LAND OF FIRES

- **87 councils involved** in the provinces of Naples and Caserta
- **24,257 tonnes of ELTs collected from 2013 to today**
- **3 historical stocks emptied**, in Scisciano (NA), Naples, Villa Literno (CE)
- **Extraordinary recovery intervention** in the archaeological area of Cales, in the town of Calvi Risorta (CE)
- **Creation of surfaces made with recycled rubber**: 11-a-side football pitch in Scampia, Naples; playground and multipurpose surface in Caivano's Parco Verde neighbourhood (NA); 2 football pitches made with recycled rubber in Caserta's Vanvitelli neighbourhood; 1 basketball court made with recycled rubber in Caserta; one 5-a-side football pitch in Casapesenna (CE) on an area confiscated to the Camorra.

08

RESEARCH, DEVELOPMENT AND INNOVATION

8.1

From waste management to the production of new materials



Ecopneus has always been seriously committed to Research and Development activities. R&D is a strategic lever to support the recovery of material from End-of-Life tyres and favour the consolidation of the markets of recycled rubber. In the course of time, Ecopneus has promoted several collaborations with companies, universities, research centres, trade associations and the Public Administration. It has, thus, contributed to the development of new applications and to the improvement of the performances of the already consolidated ones.

The commitment of Ecopneus is not limited solely to support and promote technical-industrial experimentation. It is a **constant presence at the main Italian and international technical regulatory tables**. These are considered a fundamental tool to strengthen credibility, quality, and the industrial awareness of ELT-derived materials.
Since its creation, Ecopneus has been part of UNI work groups and the CEN European roundtables dedicated to the **drafting of the technical standards for the materials derived from End-of-Life Tyres**. In Italy, Ecopneus operates within the **UNI GL14** group, "Materials recovered from End-of-Life Tyres", that mirrors the CEN/TC 366 "Materials obtained from End-of-Life Tyres" group. The latter is the European technical committee in charge of drafting common rules for the characterisation and the use of the materials derived from ELTs.
Moreover, Ecopneus coordinates one of the TC366 European work groups, directly contributing to the drafting of the technical standards of this sector.

CONSOLIDATING THE ROLE OF ELT-DERIVED MATERIALS WITHIN MANUFACTURING CHAINS AND CREATING THE CONDITIONS FOR THE OPENING OF NEW MARKETS OF APPLICATION

These activities have contributed to create a technical vocabulary shared all along the chain, defining testing methods, classification criteria, and the performance requisites necessary to make recycled materials more reliable, recognisable, and easily usable in the various markets of applications. A fundamental step to accompany the evolution of the sector: **from an activity mainly linked to waste management, to an industrial sector capable of producing technically advanced materials and destined to specialised uses**.

On top of the regulatory activities dedicated to materials, Ecopneus participates in **technical tables related to the end applications of recycled rubber too**. For example, in the sports world, Ecopneus follows the works of the **UNI GL3 group** dedicated to sports surfaces, and the **GL20** group for padel courts. In this way, Ecopneus contributes to the definition of performance requisites, safety standards, and testing methodologies for indoor and outdoor sports surfaces.

Moreover, the activities of Research and Development of Ecopneus are turned into a constant work of technical dissemination and support to its Stakeholders, aimed at favouring the spreading of a culture of recycling based on quality, performance and sustainability. Through studies, experimental testing and activities of awareness raising, Ecopneus contributes to consolidate the role of ELT-derived recycled materials. It also helps to create the conditions for the opening of new markets of applications, reinforcing the contribution of the circular economy to the competitiveness of the productive system.

8.2

The main scopes of research and innovation in 2025



TEMPORARY, MODULAR AND RECYCLABLE SPORTS SURFACES

A new Tyrefield surface was born from the synergy between sports and research & development. It is composed of modular slabs made with recycled rubber. The project involved the counsellor of the Italian Basketball Federation and former captain of the National Italian basketball team, Giacomo "Gek" Galanda, the biomechanics expert, Prof. Mauro Testa, and the company SP Plast. The latter took care of the production of the sports surface. Ecopneus supported the project offering its technical know-how on ELT-derived materials.
This solution is based on a modular interlocking surface. It is designed to be easily installed, removed and completely recycled at the end of its life. The elastic and performance properties of recycled rubber allow to obtain surfaces that can assure comfort, shock absorption and high athletic performances. At the same time, they assure resistance to wear and can be used in several weather conditions during all year.
The system versatility allows its use in several sports and recreational environments. This surface can be used for 3x3 basketball, athletics, pickleball, and 5-a-side football, as well as activities linked to wellbeing and motor activity, such as: yoga, Pilates, and gymnastics. Thanks to the technical and qualitative characteristics developed during the project, these surfaces have been FIBA (International Basketball Federation) certified. This further confirmed the validity of this solution at professional level.



NOISE BARRIERS MADE WITH RECYCLED RUBBER

Designed and produced by Innorec, Ruconbars are the innovative noise barriers made with recycled rubber and concrete. Innorec is a partner company of Ecopneus for the collection and the recycling of ELTs in Sicily and is the patent holder of Ruconbars. Thanks to a soundproofing technology that uses recycled rubber as a structural component for the mitigation of road noise, these barriers combine high soundproofing performances and durability. Moreover, they represent a valid example of Research and Development within the scope of the circular economy. Its peculiarity is due to the absorbing layer. 40% of it is made with a conglomerate of rubber granules that intercepts and dissipates part of the noise produced by road traffic, thus improving the acoustic benefits of the same barrier. One kilometre of 3-metre-high barrier valorises over 65 tonnes of ELTs. This corresponds to the recovery of more than 7,800 automobile tyres. It is a noise barrier that represents also a useful tool for material recovery and the reduction of the use of virgin raw materials. Thanks to these characteristics, Ruconbars are a valid and sustainable choice for the noise reduction plans of the Public Administration.



INNOVATIVE HORSE RIDING SURFACES MADE WITH RECYCLED RUBBER

In recent years, racing or training fields for horse riding have noticeably improved from the point of view of the used surfaces – both for show jumping and dressage. A horse riding surface made with prefabricated rubber slabs was made at the "Happy Horse" riding centre in Orvieto in 2017. Recycler rubber granules were placed on top of the slabs. In collaboration with the Department of Veterinary Medicine of the University of Perugia, Ecopneus carried out a number of tests and activities to develop the ideal composition and formulation. The study led to the definition of the correct mix and amount of recycled rubber and sand necessary to assure the best possible conditions to horses' legs and articulations. It also led to a reduction of dust dispersion in the air. The latter often causes respiratory diseases, such as silicosis, both in horses and riders.



A SAFETY DEVICE TO PROTECT MOTORCYCLISTS

Anas, a company of the Italian Railway Group FS, has positively tested an innovative protection system for motorcyclists to be installed on traditional guardrails. This system has been UNI CENT/TS 17342 certified. The device is made with an ELT-derived rubber compound. It has been designed to increase motorcyclists' safety in case of impact thanks to the elastic properties of rubber and its capacity to absorb shock energy. This contributes to reduce the worst consequences for motorcyclists.
The project is called **D.s.m.U. Ecofriendly**. It has been internally developed by Anas with the support of Ecopneus for the selection of the most appropriate materials. This solution is characterised by a flexible and modular structure that can be adapted to the various radii of curvature of road infrastructure. Moreover, the structure returns to its original shape after the impact thanks to rubber properties. This reduces maintenance interventions and assures performance continuity in time.
The system is designed for being easily hooked onto the barrier pillars and assures continuity along the track thanks to a specific interlocking mechanism.



EVEN LIVESTOCK ANIMALS CAN BENEFIT FROM RECYCLED RUBBER

In livestock farming such as dairy cows, animals' comfort is usually assured through the use of bedding materials such as hay or chips. However, these solutions may complicate the activities of stable cleaning and management, with potential consequences on the hygienic-sanitary conditions of the structures.
Rubber recycled from End-of-Life Tyres can help also in this sector. Thanks to the biomechanics study carried out by Professor Testa and the collaboration with the University of Perugia, a PhD was created with the aim of developing recycled rubber surfaces destined to milking stations, walkways, and housing space. The objective is to contribute to the prevention of foot disorders and cow lameness, as well as avoiding sudden slipping.
During 2025, the first experimental slabs were installed. Biomechanic tests and the analysis of the collected data from the part of the podiatrist and the veterinarians of the University of Perugia presented positive results that encouraged the continuation of the study even in 2026.

09

TRANSPARENT COMMUNICATION

9.1

Propagating the advantages of ELT recycling

The central idea of all the activities of Ecopneus is a communication plan aimed at its Stakeholders that may propagate the many benefits offered by the recycling of End-of-life tyres.
It is a consolidated and articulated path to reach the public with clear and transparent messages that may **contribute to strengthen the perception of Ecopneus as a reliable and authoritative interlocutor. It also aims at making people appreciate the many advantages offered by the solutions made with recycled rubber**.
This commitment is to be seen as a growing awareness of not being a body exclusively in charge of effective waste management, but also a player that collaborates with a manufacturing chain that generates new materials. As such, Ecopneus wants to actively get involved in many objectives. Indeed, the Consortium constantly strives to find new occasions of visibility coherent with its strategic objectives. Ecopneus looks for technical-specialistic stages where it can illustrate the properties of ELT-derived materials within their many applications.
Ecopneus also aims at creating initiatives where the members of the public can be involved in order to carry on building and consolidating a culture of recycling and legality.

TARGET

- Control bodies
- the Public Administration
- Law enforcement bodies
- Companies of the chain
- Sectors of application
- World of Academia
- Media
- Public Opinion
- New Generations

OBJECTIVES

- Informing on the activities of Ecopneus
- Promoting the applications of recycled rubber
- Raising the awareness on the correct recovery of ELTs
- Supporting a culture of recycling, ethics and legality

TOOLS

- Website
- Trade fairs and events
- Speaking platforms
- Special Projects
- Publishing tools
- Press office
- Advertising
- Social & web

OMMUNICATION KPIs

WEBSITE ECOPNEUS.IT

- Page views: **79,034**
- Single users: **24,987**

SOCIAL MEDIA

- Overall reach: **3.2 million**
- Views (FB + IG): **7.6 million**
- Contents in collaboration with FIPE, Rimini Wellness, Massimiliano Rosolino, athletes, influencers and media such as Lifegate and GreenMe
- Facebook: **10K followers**
- Instagram: **1.3K followers**
- Linkedin: **3K followers**

PRESS OFFICE

- Total of releases: **1,995**
- Distributed press releases: **15**
- Main media outlets reached: **Rai 2, Studio Aperto, TGCom, TGR, Il Sole 24 Ore, Adnkronos, Askanews**

PRODUCT CATALOG

- Page views: **7,191**
- Unique users: **3,005**

9.2

The events

For Ecopneus, events are the main and most involving occasion of getting in contact with its public. From corporate events where Ecopneus can meet the representatives and the operators of the chain, the Institutions, and the stakeholders of the sector of the circular economy, to the events for the public, where it is possible to see and try the many faces of recycled rubber and its advantages.

CORPORATE AREA



ECOMONDO

Ecomondo represents one of the main moments of discussion and relation with the world of the Italian circular economy. This event is a strategic moment for Ecopneus to consolidate its dialogue with the Institutions, the companies, the trade associations, the Public Administration, the world of research and the stakeholders of the chain, favouring networking and the sharing of experiences on the topics of sustainability, innovation, and valorisation of ELT-derived materials.
During the 2025 edition, Ecopneus promoted moments of in-depth analysis dedicated to the regulatory evolution and the new potential applications of recycled rubber. In this way, Ecopneus confirmed its active role in the Italian debate on the circular economy. Particular attention was paid to the MEC for Roads, almost a year after their coming into force. A discussion among the representatives of the institutions, the operators of the sector and its stakeholders was organised to analyse the opportunities offered by this Regulation for the development of more sustainable, long-lasting and safe infrastructures.
The presence of Ecopneus at Ecomondo was an occasion to present the new communication campaign : "The only trace we want to leave in the future". It was a project developed to describe the value of the ELT recycling chain in a contemporary and accessible way. Through images, sounds and innovative languages, this campaign relates the ELT transformation process with the many applications that return value to territories and people – from road infrastructure to sports surfaces, urban spaces, and playgrounds.



AUTOPROMOTEC

Autopromotec was an occasion for Ecopneus to valorise its daily commitment to ELT responsible management. It shared results, projects and visions that make the Ecopneus model a point of reference in Europe with Italian and European operators.
This trade fair was also an important stage for Ecopneus, as it allowed to further stress its commitment towards a chain that is increasingly innovative, sustainable, and traceable. The General Manager of Ecopneus, Giuseppina Carnimeo, talked about the contribution of Ecopneus at two important events. The first talk was "The RFID ecosystem in tyres". It is a strategic topic for the traceability and sustainability of the tyre chain. Ms Carnimeo talked about the vision and the experience of Ecopneus with reference to the digitalisation of the ELT chain .
The second appointment was the "Conference on the future of tyre recycling " that saw the participation of all the main international players of this sector. Ecopneus described its approach to recycling and the reuse of ELT-derived rubber, highlighting the importance of the circular economy and technological innovation as fundamental levers for the future of the sector.

APPLICATIONS AREA



ACEA RUN ROME THE MARATHON

Ecopneus was the Sustainability Partner of the Acea Run Rome The Mara-thon. It was an occasion to valorise the applications of ELT-derived rubber within the scope of a very relevant running event at international level. The key point of the partnership was the creation of the final stretch or road reaching the finish line with a surface made with Tyreplast materials. This solution was installed by the company Waterproofing and was created thanks to the technical skills of the company SP Plast. This Tyreplast surface was designed to assure comfort, safety and shock absorption.
On this occasion, Ecopneus organised also moments of discussion and awareness raising linked to the topics of sustainability, sports performances, and material innovation. Moreover, a Tyrefield basketball court made with recycled rubber was installed in the Marathon Village. It was used for sports activities and meetings with athletes and stakeholders.



A WORKSHOP ON MOBILITY AND SUSTAINABLE INFRASTRUCTURE

In collaboration with ASSTRA and with the contribution of Vie en.ro. se. Engineering, Ecopneus promoted a technical workshop dedicated to the applications of recycled rubber for the mitigation of noise and vibrations in urban environments, within the scope of the LIFE SNEAK European project. It was an important moment of discussion among institutions, operators of the sector, universities and Italian and European experts on the topics of infrastructure innovation and sustainable urban mobility. During the two days, the results of the LIFE SNEAK project were presented. They confirmed the role of recycled rubber as a strategic resource to make cities more silent, resilient and attentive to the quality or urban life.



A "PARADISE CITY" MADE WITH RECYCLED RUBBER AT MILAN'S DESIGN WEEK

The project "Paradise City" was presented within the scope of Solferino 28 during the 2025 Milan's Design Week. With this project, Ecopneus wanted to offer a reflection on the role of ELT-derived rubber in the transformation of urban spaces and the construction of safer and more sustainable and liveable cities. This immersive installation was developed in collaboration with MCA Study– Mario Cucinella Architects. It showed how the materials deriving from the recovery of End-of-Life tyres can be used for urban furniture, surfaces, playgrounds, and sports surfaces. As such, it can contribute to the regeneration of urban environments thanks to solutions that are able to match design, innovation, and sustainability. Inside the Ecopneus Green Lounge, the visitors were able to directly test the performances of recycled rubber in terms of shock absorption, comfort, resistance and noise reduction. The Ecopneus Green Lounge was created with the technical partners Casei Ecosystem and Ecoplus.



RECYCLED RUBBER AT RIMINIWELLNESS

The participation of Ecopneus in RiminiWellness 2025 was an important occasion to discuss the role of sport in the ecological transition and social wellbeing. Organised in collaboration with Ecomondo, during the talk "Sports Forum and Sustainability– the Challenge to win the future", Ecopneus contributed to the dialogue among institutions, sports organisations, companies, and Stakeholders. The participants talked about the circular economy applied to the world of sports.
During the event, the guests discussed topics linked to sports infrastructure sustainability, material innovation, and the opportunities offered by ELT-derived rubber to create performing sports surfaces with low environmental impact.



2025 SPORTS JUBILEE

On the occasion of the 2025 Sports Jubilee, Ecopneus participated in the Sports Village set up in Piazza del Popolo in Rome. Ecopneus contributed to one of the main events of the Jubilee dedicated to sport by turning it into a point where sustainability, innovation, and sports meet. This initiative fell within the scope of the project GiocaFIPE set up in collaboration with the Italian Weightlifting Federation. This project aims at promoting physical activity and the educational values of sports. Ecopneus installed over 100 m^2 of sports surfaces made with ELT-derived rubber. They were used to host sports activities, and introductory sports sessions dedicated to children and teens. Recycled rubber absorbs shocks, is comfortable, and resistant. As such, it was used to create a safe, versatile, and sustainable space in the heart of the city.



SPORT, SUSTAINABILTY AND TERRITORY

Ecopneus was the Sustainability Partner of the "To The Tower" event in Castel Beseno (TN). It offered a removable Tyrefield sports surface made with ELT-derived rubber. This surface was spectacularly airlifted and was a practical example of the willingness of Ecopneus to promote innovative solutions to give new life to ELT-derived materials and to valorise the several applications of recycled rubber. High level games were played during the event. NBA champions, 3x3 basketball Olympic medallists, and European young basketball talents played on this surface. This initiative was also the occasion to reflect on the role of recycled materials in the designing of more innovative sports and urban surfaces that pay greater attention to the quality of life.



2025 SPORTS FESTIVAL

Ecopneus was the Sustainability Partner of Trento's 2025 Sports Festival. This was an important occasion to make sports, sustainability, and innovation dialogue. Thanks to the Tyrefield surfaces, Ecopneus transformed the spaces of the Festival into areas dedicated to basketball, volleyball and weightlifting. The surfaces made with recycled rubber hosted training sessions, exhibitions, tournaments with great national and international sports protagonists. It involved athletes, families and visitors in a direct experience of recycled rubber sustainable applications.
This edition of the Sports Festival saw over 200 international guests that transformed Trento into a great sports stage. Ecopneus contributed to spreading a sports vision that is increasingly more attentive to material innovation, the circular economy, and people's wellbeing.



AN AWARD TO THE TECHNOLOGICAL INNOVATION OF RUBBER APPLICATIONS

The 20th edition of the ASI Sports & Culture Award was held in CONI's hall of honour in Rome. CONI is the Italian National Olympic Committee. On this occasion, Ecopneus was given an award in the section "Technological Innovation" thanks to the contribution it made with its ELT-derived applications. This award acknowledged the efforts Ecopneus has always made in finding solutions that can match sustainability, innovation, and sports performances. In particular, it recognised the work Ecopneus has carried out in the course of time to develop recycled rubber applications for sports, urban furniture, and infrastructures through activities of Research & Development in collaboration with Universities, research centres, sports federations, and experts of the sector.



TECHNICAL WEBINARS FOR THE PA TO SUPPORT THE MEC FOR ROADS

The new Minimum Environmental Criteria (MEC) for Road infrastructure came into force in 2024. As a consequence, Ecopneus has **further reinforced its commitment in communication, training, and technical awareness-raising activities for the Public Administration**. The aim is to favour a wider knowledge of the opportunities offered by rubberized asphalts. Ecopneus has supported local bodies, designers and contracting authorities for years. This is done through activities of technical support dedicated to the drafting of tender specifications that may welcome innovative materials and high performing technologies. This activities are carried out also through webinars, meetings on the territory, technical workshops and trade fairs, mainly aimed at supporting the PA of smaller towns often characterised by limited technical and organisational resources.

Following the coming into force of the MEC for Roads, this path was further consolidated through a **structured programme of technical-informational meetings** developed in collaboration with Punto 3, a company specialised in training and consulting on the Green Public Procurement. The initiatives involved the Public Administration, technicians, and operators of the sectors. They offered operative tools and moments of reflection dedicated to the concrete implementation of the new Minimum Environmental Criteria in Public tenders and in the phases of road infrastructure design.

2025 was considered a key year for the full implementation of the MEC for roads. Ecopneus promoted moments of discussion and awareness-raising aimed at focusing on the strategic role of sustainable infrastructure – as we have seen in the previous pages. Through activities of information, technical contents and networking occasions with institutional and industrial stakeholders, Ecopneus contributed to further divulging the benefits of rubberized asphalts, both from an environmental point of view and for their technical performances, durability, and traffic noise reduction.

Technical information activities represent a fundamental tool to **accompany the legislative evolution and to support a wider use of recycled materials in Public Works**, thus contributing to more resilient and performing infrastructures, in line with the national objectives of the circular economy.

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