Sustainability Driven: TIP's Progress Towards SDGs

2021-2024 KPIs

World Business Council *for Sustainable Development*

Tire Industry *Project*

CONTENTS

Foreword

WBCSD & TIP

Formed in 2005, the Tire Industry Project (TIP) is a voluntary, CEO-driven initiative aiming to anticipate, understand, and address global environmental, social, and governance (ESG) issues related to the tire industry and its value chain. TIP brings together 10 leading tire companies that represent more than 60% of the world's tire manufacturing capacity as of 2024. Its work reflects their commitment to the principles of sustainable development. One of its key areas of focus is to drive transformation within the industry towards the achievement of the United Nations Sustainable Development Goals (UN SDGs).

UN SDGs & TIP SDG Roadmap

The 17 SDGs, and the 169 associated targets supporting them, represent a global blueprint for peace and prosperity for people and the planet, now and in the future. They were adopted by UN member states in 2015, and aim to address by 2030 some of the most pressing social, environmental, and economic issues facing the global community. The private sector plays an essential role in the global community's ability to achieve the SDGs as a source of innovation and employment, and a contributor to environmental and social sustainability.

In 2021, a multi-stakeholder group from the World Business Council for Sustainable Development (WBCSD, TIP's umbrella organization), TIP members, and the automotive and tire sectors launched a framework known as "**Sustainability Driven: Accelerating Impact with the Tire Sector SDG Roadmap**". This actionable framework identified eight SDGs where TIP members could contribute, and outlined seven high-impact sustainability opportunities, known as Impact Pathways (IP), by which to do so.

The purpose of this report

Annually, TIP publishes its "**Sustainability Driven: TIP's Progress Towards SDGs (2021–2024 KPIs)**" report, which reflects members' progress towards the TIP SDG Roadmap goals by disclosing against 16 Environmental, Social and Governance (ESG) KPIs.

A key commitment made by TIP members in 2021, when embarking on the SDG Roadmap, was to re-engage with industry stakeholders (e.g. tire trade associations (TTA)) on an ongoing basis to critically evaluate TIP members' contribution to the 2030 SDG agenda via the framework it had developed. In keeping with this commitment, in late 2024, TIP members conducted consultations with stakeholders from industry associations, non-profit organizations, and subject matter industry experts who had been previously involved in the development of the SDG Roadmap, and whose expertise is recognized in the tire value chain. This consultation reflected the need for more transparency in critical areas like sustainable sourcing, TRWP, ELT management, circularity, and decarbonization, all of which TIP continues to address.

This report has been developed to address the above-mentioned stakeholder feedback. It represents an enhanced version of the annual KPI report that also serves as an SDG Progress Report. This is in response to a commitment that TIP members made in the SDG Roadmap to update the public about their progress towards the SDGs before 2026. In addition to keeping its commitment, by issuing this report, TIP aims to enhance transparency in the tire sector and to encourage all tire companies to adopt best practices, innovate, and invest in sustainable solutions. As industry leaders, TIP members are committed to working together with sector peers and key stakeholders to navigate sustainability challenges and drive sustainable growth for the whole industry.

Commemorating 20 years of the Tire Industry Project (TIP)

2025 marks a significant milestone for TIP. What began as a visionary idea from a group of leading tire company CEOs in 2005 is now a strong reflection of a long-term commitment that has stood the test of time.

Today, TIP has evolved into a global platform for the tire industry's engagement on ESG matters — advancing scientific knowledge, driving stakeholder collaboration and improving industry practices.

TIP brings together 10 leading tire companies that represent more than 60% of the world's tire manufacturing capacity, 8 affiliate members who amplify our reach and impact, and a distinguished Assurance Group of independent experts, all united by a common vision. Together, we are working toward building a more sustainable future.

A message from Dr. Larisa Kryachkova, Executive Director

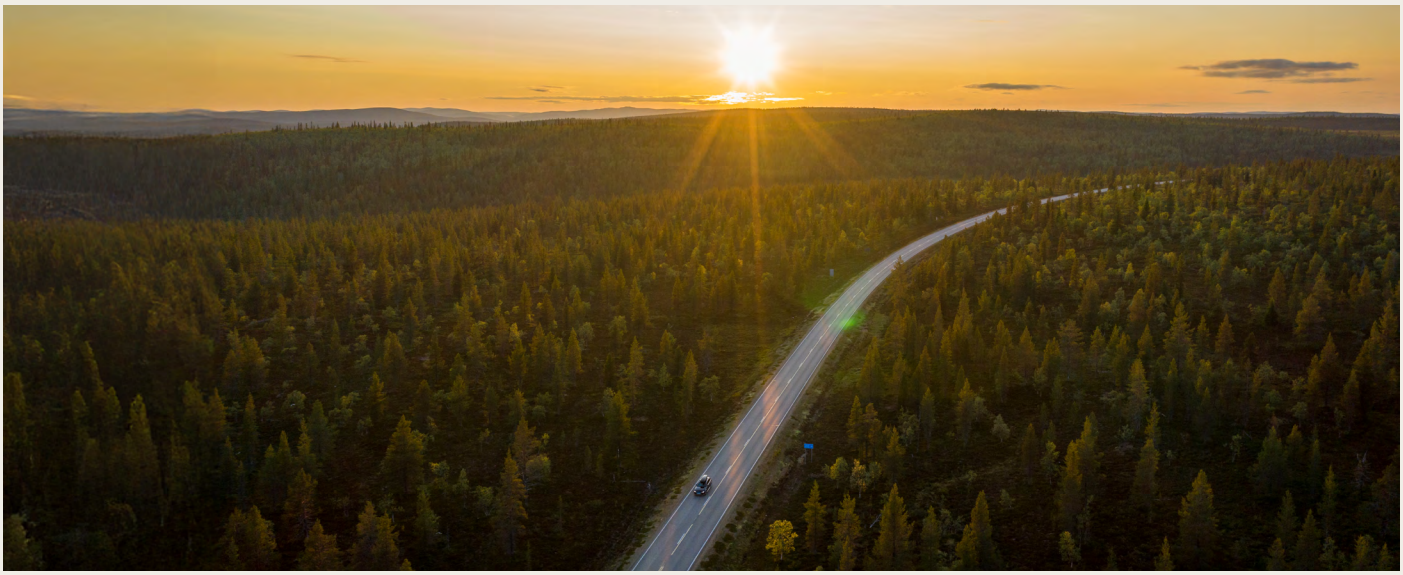
"TIP took shape 20 years ago, at a time when few people were talking about sustainability. The Sustainable Development Goals came seven years later, demonstrating how the idea of TIP was nothing short of pioneering.

I'm proud of what TIP has achieved in the last few years — from establishing the Global Platform for Sustainable Natural Rubber, to creating and nurturing a research ecosystem that can strengthen our science base and guide future developments, to engaging with stakeholders across the board to drive mitigation measures and industry best practices.

None of this would have been possible without our members, affiliates and partners. I'm deeply grateful for their continued commitment and active involvement in our mission.

As we look ahead to the next 20 years and beyond, I'm confident that we can go even further to deepen our impact and accelerate the pace of change together."

20 years Tire Industry Project



Two decades of driving progress

We have come a long way in the last 20 years — learning, evolving and innovating together. Our journey has been filled with successes, new and exciting opportunities, as well as some challenges and uncertainties. As we reflect on our progress, we recognize that there is still much to do. We are committed to driving sustainability across the entire tire lifecycle and building on past achievements that have shaped our journey so far.

1. Creating a solid, scientific foundation

TIP was founded on the belief that credible, independent science is the foundation for sound decision-making. Over the last two decades, we have partnered closely with the scientific community to support numerous independent, peer-reviewed studies to better understand the environmental impact of tires — particularly during their use phase.

Notably, TIP-sponsored studies have been cited thousands of times, demonstrating our ongoing contribution to advancing scientific understanding of the most pressing sustainability issues. We continue to nurture a collaborative ecosystem not only through our own research but through funded programs, open calls for projects and global research conferences, while also helping shape globally recognized standards and methodologies — including ISO frameworks and Product Category Rules (PCRs) — to improve sustainability assessments across the tire lifecycle.

2. Driving sustainability — right from the start

Sustainability in the tire sector begins with responsible sourcing. At TIP, we recognized early the significance of natural rubber — one of the most important raw materials used in tire manufacturing — and took decisive action by bringing together stakeholders from across the rubber value chain to create in 2018 the Global Platform for Sustainable Natural Rubber (GPSNR). The GPSNR is dedicated to building a fairer, more equitable and environmentally sound natural-rubber value chain. Today, it operates independently, with over 200 members across the rubber value chain representing more than 55% of global natural rubber volume.

3. Advancing end-of-life tire management

At TIP, we see and view end-of-life tires (ELTs) as a valuable resource for the circular economy — one where a used tire can be given a second life. Over the last 20 years, we have been working to turn our ELT insights into real-world action — from identifying knowledge gaps with our Global State of Knowledge reports, to developing sustainable ELT management standards and methods with our ELT Management Toolkit. We have brought together hundreds of stakeholders, including governments, and equipped them with the tools, knowledge, and networks to act on ELT, building capacity and awareness. While more work on ELT is needed in many parts of the world, today the tire sector aspires to be one of the most advanced industries in end-of-life product management.

4. Enhancing industry transparency through reporting

Transparent, data-driven reporting is the cornerstone of credible progress. Without this, ambitions and commitments are no more than just words. For nearly a decade, we've mobilized our members to track and report on shared sustainability KPIs, driving accountability and industry-wide improvement. This year's report shows continued progress in key production areas. TIP members have notably improved on energy consumption, CO_2 emissions electricity sourced from renewable sources, and water withdrawals.

5. Setting a vision for the future

Complementing our reporting is a clear vision for the future, which we set out in the first-ever UN SDG Roadmap for the tire sector (2021). The Roadmap provides a shared framework for action that outlines how the industry can contribute to the ambitions of the UN SDGs. Today, it guides ongoing decision-making and reflects our belief that together, we can accelerate progress for people and the planet.

Want to see how far we've come? Discover the highlights of our 20-year journey on our ***timeline.***

Thank you to our members and partners.

As we look to the road ahead, we want to thank all our members, affiliates, and scientific advisors, whose dedication and shared purpose have shaped our journey. Together, we look to the next 20 years with optimism and resolve.

Executive Summary

01.

Sustainability Driven: TIP's Progress Towards SDGs (2021-2024 KPIs)

01. Executive Summary

This report discloses TIP members' progress towards addressing their ESG impact between 2021 and 2024, specifically against the 2021 TIP SDG Roadmap. It does so through an analysis of members' aggregated quantitative performance data as well as a qualitative overview of their ongoing efforts in critical areas like tire and road wear particles (TRWP), ELT management, sustainability assessment, and sustainable natural rubber. It also identifies areas for focus in the future. Below is a summary of the most noteworthy developments.

Key achievements by Impact Pathway

Impact Pathway 1

Supply Chain — Natural Rubber Sustainability:

100% of TIP members are members of the GPSNR and all report annually under GPSNR's mandatory policy framework, introduced in 2023. Having consistently achieved this KPI, they are also collaborating to introduce new and ambitious KPIs, and engaging on the EU Regulation on Deforestation-Free Products (EUDR), reinforcing contributions to SDGs 4, 8, and 12.

Impact Pathway 2

Supply Chain — Responsible Sourcing:

As of 2024, 80% of TIP members had defined time-bound targets associated with their responsible sourcing policies, up from 40% in 2021; 70% had embedded these into supplier contracts; and 30% had completed third-party audits to validate their progress towards sustainable procurement.

Impact Pathway 3

Operations — Manufacturing:

Between 2021 and 2024, TIP members achieved a 26% reduction in CO_2 intensity, a 2.3% drop in energy intensity, and a 121% increase in renewable energy use. Eight members now have validated science-based targets, demonstrating their commitment to climate action and SDG 13. Water withdrawals fell by 14% and 97% of TIP members' sites are ISO 14001 certified. While water intensity has risen slightly since 2021, this trend reversed in 2024 with a 1.2% year-on-year drop.

Impact Pathway 4

Operations — Employees:

Since 2021, TIP members have increased their share of sites with externally-audited health and safety management systems from 33% in 2021 to 59% in 2024. They also achieved a 97% audit coverage in 2024, up by 7 percentage points compared to 2021.

Impact Pathway 5

Product & Services — Tire and Road Wear Particles (TRWP):

Reflecting their leadership in TRWP-related R&D, TIP members had sponsored 28 related publications by 2024, up from 16 in 2021. At the same time, the total number of citations increased by 175% to 720, reflecting TIP members' commitment to the development of solutions to TRWP in support of SDG 12.

Impact Pathway 6

Product & Services — Sustainable Mobility & Digital Solutions:

TIP members are accelerating sustainable mobility through innovations in intelligent and connected tires, digital solutions, and user awareness campaigns, in support of SDGs 3, 9, 11, and 12.

Impact Pathway 7

Product & Services — Low Carbon, Circular Solutions, and End-of-Life Tires (ELT):

TIP members are working on finalizing a comprehensive ELT management hierarchy to inform sustainable recovery practices. They are engaging in collaboration, policy advocacy, and research to support circular and low-carbon solutions amid a fast-changing regulatory and sustainability landscape.

Road to 2030

Achieving the SDGs at the scale and pace required by 2030 is beyond the reach of any one company individually. TIP members recognize the collective role they have in driving forward the actions in the TIP SDG Roadmap. The Roadmap will remain at the core of TIP's sustainability action plan until 2030, with the KPIs used to disclose progress towards the SDGs potentially refined over time to reflect continued stakeholder feedback and TIP members' priorities.
All the organizations in the tire value chain are encouraged to continue to incorporate the components of the SDG Roadmap into their operations to accelerate progress towards the SDGs.

The structure of this report

This TIP report contains the key progress updates towards contributions to SDGs since 2021 and also the annual KPIs performance for 2024. The next chapter in this report is a brief overview of the SDGs and the tire sector and serves as a visual backdrop to illustrate the links between the Impact Pathways and the SDGs. Then follow a detailed table of the KPIs in the report and the seven main chapters of the document. Each chapter corresponds to one of the seven Impact Pathways and elaborates on TIP members' progress towards the associated KPIs.

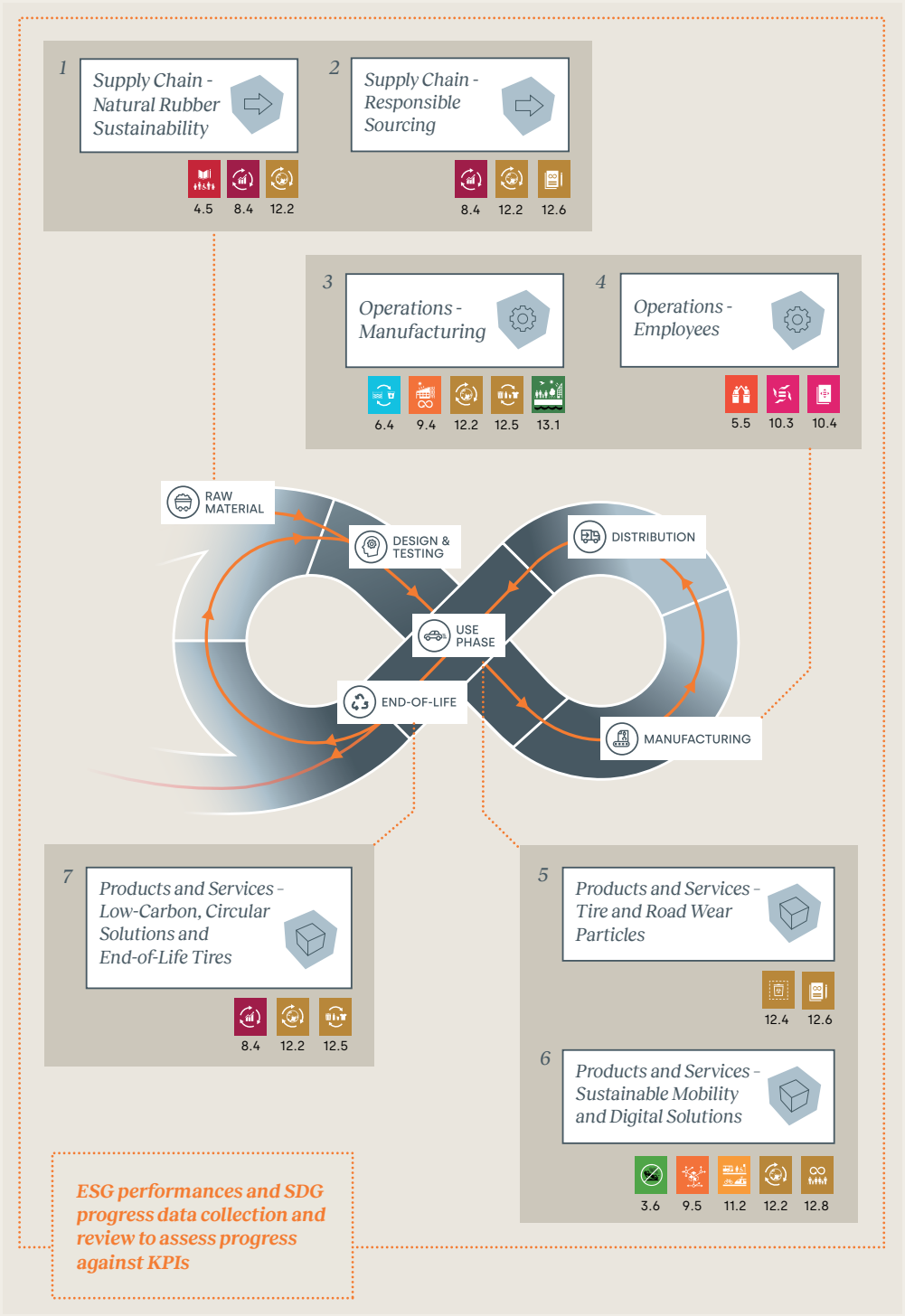
After the Conclusion, the two annexes contain links to more information about individual TIP members' efforts towards the SDGs and a list of TRWP-related publications sponsored by TIP members.

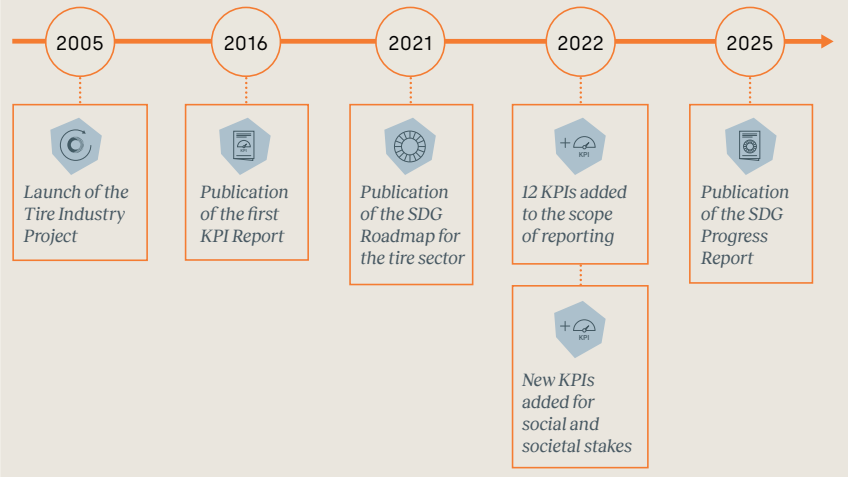
SDGs and the Tire Sector

02.

Sustainability Driven: TIP's Progress Towards SDGs (2021-2024 KPIs)

02. SDGs and the Tire Sector





In 2024, the UN published the "**Sustainable Development Goals Report**" which revealed that the world is off-track to achieve the 2030 Agenda and meet the 169 associated targets, 135 of which can be assessed using available data on global trends. The industry-agnostic report notes that, globally, "*just 17% of the SDGs are on track to be completed by the year of 2030, making the need for corporate participation urgent and essential*"[1] .

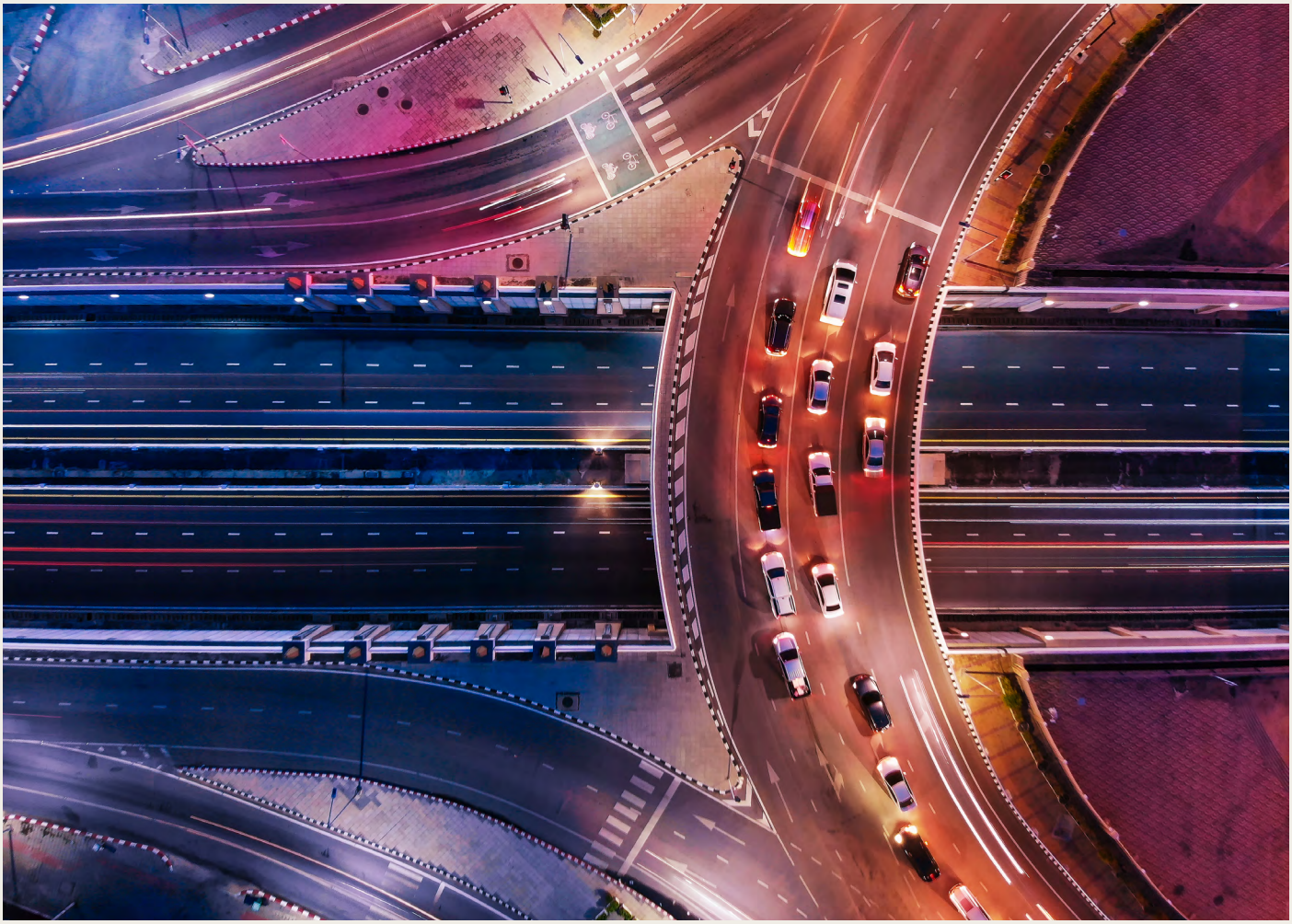
TIP members recognize the strategic value of aligning with the SDGs, embedding them into core corporate and operational strategies to enhance business resilience and drive sustainable growth. To demonstrate their contribution to the SDGs, companies need measurable indicators to track their ESG impacts over time.

The 7 Impact Pathways identified in the 2021 "**Sustainability Driven: Accelerating Impact with the Tire Sector Roadmap**" outline the key opportunities for TIP members to contribute to the SDGs and serve as a framework to articulate their broader ESG performance. For that reason, the KPIs disclosed in this report are organized along the seven IPs, which include:

1. Natural rubber sustainability
2. Responsible sourcing
3. Manufacturing
4. Employees
5. Tire and Road Wear Particles (TRWP)
6. Sustainable mobility and digital solutions, and
7. Low-carbon, circular solutions and end-of-life tires (ELT)

TIP members' commitment towards transparency extends to the collection of baseline performance data, essential for tracking progress against industry-specific benchmarks. Starting in 2016, TIP members began to disclose against four ESG KPIs annually. To them, they added 12 additional KPIs in 2022 and 2023 to reflect the need for more granularity and coverage of value-chain impacts; this brought the total number of KPIs to 16.

TIP is committed to adapting these KPIs over time, where appropriate, to ensure that their monitoring of progress is based on up-to-date and impactful ESG metrics that are relevant to the tire sector.



2.1 KPI performance summary

SDG target contribution	Theme	Impact Pathway (IP)	KPI	Performance 2021	2022	2023	2024	Unit
4.5 8.4 12.2	**Supply chain**	*IP 1* Natural rubber sustainability	1. Members that disclose to the GPSNR*	100	100	100	100	%
8.4 12.2 12.6	**Supply chain**	*IP 2* Responsible sourcing	2. Members with sustainable or responsible sourcing policies covering all materials	80	80	80**	80	%
			Members with timebound targets for responsible sourcing	30	70	70	80	
6.4 9.4 12.2 12.5 13.1	**Operations**	*IP 3* Operations; including Manufacturing	3. Energy consumption	172.1	168	161.5**	158.7	PJ NCV*
			4. Electricity from renewable sources	25.7	28.4	53.1**	56.9	%
			5. CO_2 emissions	12.6	11.3	9.3	8.9	Mt CO_2e
			6. Members with validated SBTs*	30	30	60	80	%
			7. Total water withdrawals	106.8	101.8	95.7**	92.1	million m^3
			8. Water withdrawals from water-stressed areas	21.0	19.6	17.3**	15.2	million m^3
			9. Waste generation	1.12	1.11	1.12	1.10	Mt
			10. ISO 14001 certification rate	97	99	97	97	%
5.5 10.3 10.4	**Operations**	*IP 4* Employees	11. Sites with externally audited H&S* management system	56	63	67**	59	%
			12. Women in total employees	14	15	15	15	%
			13. Women on Boards of Directors	20	20	24**	24	%
			14. Members with public commitments to D&I*	100	100	100	100	%
12.4 12.6	**Products & services**	*IP 5* Tire and Road Wear Particles (TRWP)	15. Cumulative number of TIP-sponsored publications on TRWP	16	20	24	28	Number
			16. Annual number of citations of TIP-sponsored TRWP publications	262	510	538**	720	Number
3.6 9.5 11.2 12.2 12.8	**Products & services**	*IP 6* Sustainable mobility and digital solutions	Qualitative disclosure					
8.4 12.2 12.5	**Products & services**	*IP 7* Low-carbon, circular solutions and end-of-life tires (ELT)	Qualitative disclosure					

** GPSNR = Global Platform for Sustainable Natural Rubber*
SBTs = science-based targets
PJ NCV = petajoule net caloric value
H&S = health and safety
D&I = diversity and inclusion

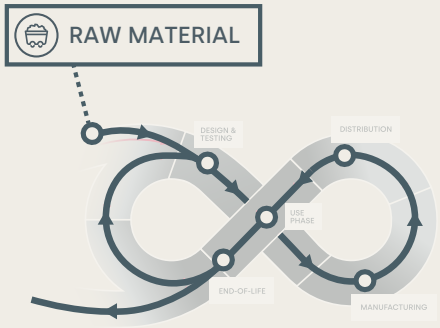
***Historical data was updated by a few members using improved calculation techniques to ensure greater accuracy and reliability*

Impact Pathway 1:
Supply Chain - Natural Rubber Sustainability

03.

03. Impact Pathway 1

Supply Chain — Natural Rubber Sustainability: *Accelerate and scale activities to achieve a fair, equitable and sustainable natural rubber value chain — including ensuring decent work and upholding human rights.*



TARGET 4-5
Eliminate all discrimination in education

TARGET 8-4
Improve resource efficiency in consumption and production

TARGET 12-2
Sustainable management and use of natural resources

TARGET 12-2
Sustainable management and use of natural resources

INDIRECT CONTRIBUTIONS

17 PARTNERSHIPS FOR THE GOALS

Established in 2018, GPSNR is a global collaboration that aims to enhance the socio-economic and environmental performance of the natural rubber sector. It brings together companies working with natural rubber, as well as smallholder farmers and civil society. Recognizing their significant role in the natural rubber value chain, TIP members collectively demonstrate their commitment to sustainability through their membership of the platform.

Since annual mandatory reporting to GPSNR was introduced in 2023, it has demonstrated TIP members' adherence to its foundational Policy Framework, which looks at their impact and contribution to the areas of human rights, livelihoods, and sustainable production.

Recently, GPSNR has also brought the natural rubber industry together in engaging with regulators, including in dialog around the EU Regulation on Deforestation-free Products (EUDR). This engagement further strengthens TIP members' ability to contribute to the SDGs. Building on their initial contributions to SDGs 4, 8, and 12, this collaborative approach indirectly supports SDG 17 (Partnerships for the Goals) by fostering critical multi-stakeholder engagement and policy coherence.

The KPI for this Impact Pathway has now consistently reached its target for the last two years. TIP members, aspiring to continue to progress, are therefore exploring possibilities for replacing it with a new KPI, in close collaboration with GPSNR.

Shared Investment Mechanism

The Shared Investment Mechanism (SIM) is an initiative by the Global Platform for Sustainable Natural Rubber (GPSNR) designed to equitably distribute the costs and responsibilities of implementing sustainable practices across the natural rubber supply chain. Through this mechanism, GPSNR manufacturer members – which include TIP members along with other companies using natural rubber as an input – contribute to an annual fund that will be used to finance capacity building, resilience, and livelihoods for natural rubber smallholders. Among the activities eligible for funding are training smallholder producers on fighting diseases, agroforestry, and good agriculture practices. The SIM was launched at the end of 2024.

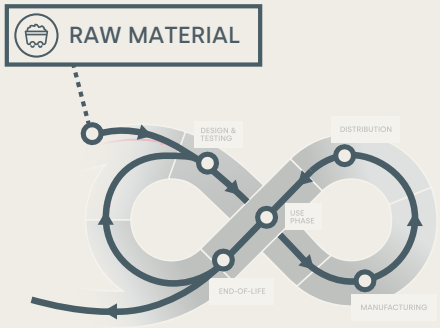
Learn more about the Shared Investment Mechanism here.

Impact Pathway 2:
Supply Chain - Responsible Sourcing

04.

04. Impact Pathway 2

Supply Chain — Responsible Sourcing:
Implement sustainable procurement practices and establish Environmental, Social, and Governance (ESG) responsibilities throughout the supply chain, including the promotion of transparency and traceability.



TARGET 8-4
Improve resource efficiency in consumption and production

TARGET 12-2
Sustainable management and use of natural resources

TARGET 12-6
Encourage companies to adopt sustainable practices and sustainability reporting

INDIRECT CONTRIBUTIONS

Progress Highlights 2021-2024

The percentage of TIP members with time-bound targets for responsible sourcing across all materials doubled to 80%.

The percentage of TIP members that embedded these into their contracts with suppliers increased from 50% to 70%.

Tires are composed of a complex mix of materials, including natural rubber, synthetic rubbers, fillers, thermoplastic polymers, and manufacturing aids, each contributing to tire performance. Ensuring each of these components is responsibly sourced is essential for creating a sustainable supply chain for tires. TIP members' responsible sourcing extends to materials used throughout the tire manufacturing process.

TIP members' commitment is to improve the tire industry's management of natural resources to ensure resource efficiency, thus contributing to SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production). Aligning with key industry regulations such as the EU Ecodesign for Sustainable Products Regulation (ESPR), reinforces TIP members' commitment to these SDG goals.

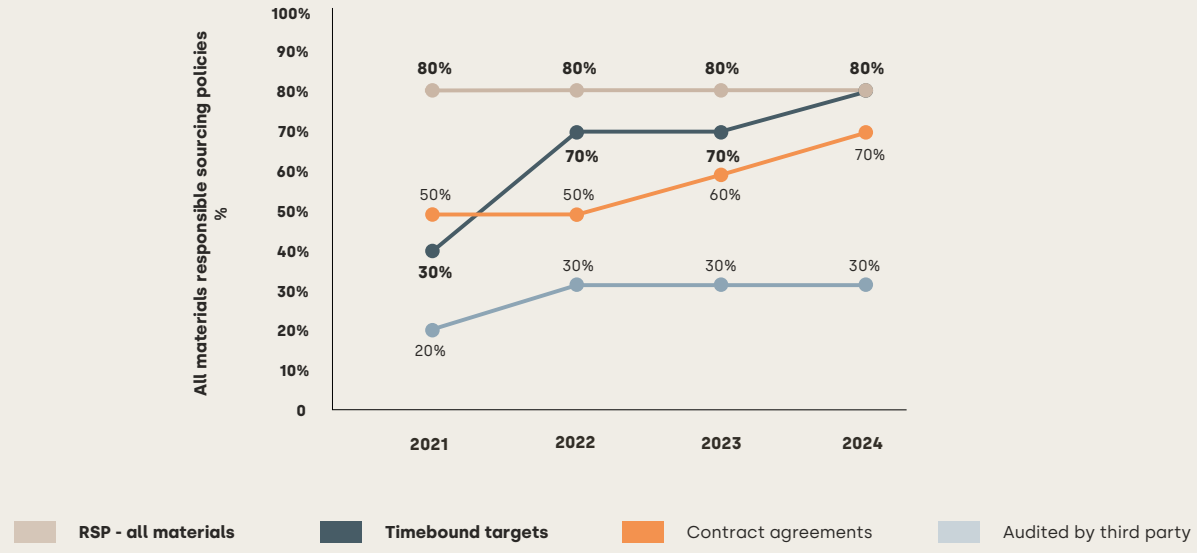
Members collaborate closely with their suppliers to meet evolving regulatory requirements.

Developing sustainable supply chains is often an involved journey for companies, which typically begins with:

1. **Understanding the landscape and defining a policy:** companies first assess their sourcing landscape and establish an internal policy to guide their approach, setting time-bound targets for measurable progress
2. **Engaging with suppliers:** companies collaborate with suppliers to achieve these targets, embedding them into supplier contracts
3. **Monitoring and auditing:** companies measure suppliers' progress on an ongoing basis and audit them to ensure that responsible sourcing conditions are fulfilled

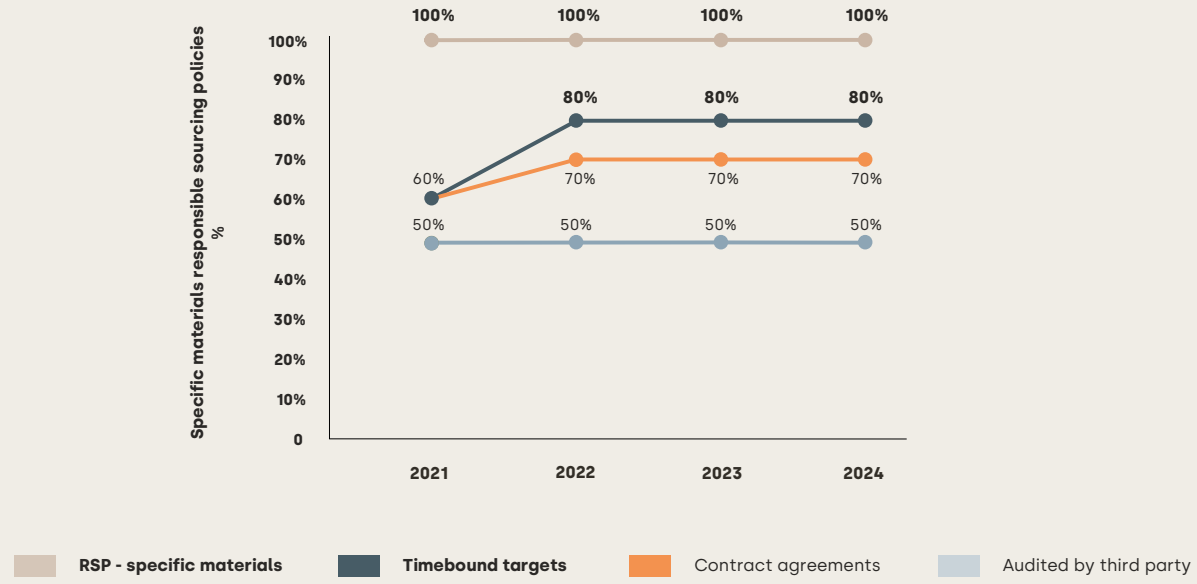
As of 2024, 80% of TIP members had defined a responsible sourcing policy and set time-bound targets, 70% of TIP members had integrated these targets into their supplier contracts, and 30% of members had undergone third-party audits to verify their progress (Figure 1).

Figure 1: TIP members' performance on responsible sourcing on all materials, 2021-2024



In implementing responsible sourcing policies for various materials, TIP members prioritize natural rubber because of its sizable impact on the environment and on the individuals involved in its supply chain. Since 2021, all members have had responsible sourcing policies for natural rubber (Figure 2).

Figure 2: TIP members' performance on responsible sourcing on specific materials, 2021-2024



Impact Pathway 3:
Operations - Manufacturing

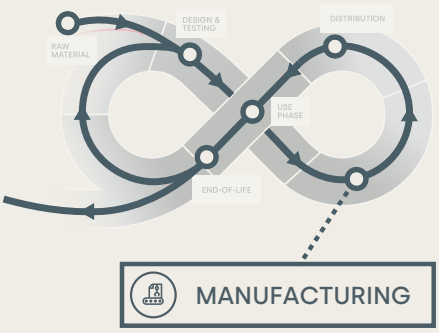
05.

05. Impact Pathway 3

Operations — Manufacturing:
Develop pathways to decarbonize operations, reduce emissions and ensure the sustainable use of natural resources.

Progress Highlights 2021-2024

- Energy intensity declined by 2.3%.
- The amount of renewable electricity (purchased or self-generated) more than doubled via a 121% increase.
- CO_2 intensity was slashed by a significant 26%.
- Water and waste intensity both came down by 9% and 3.8%, respectively.
- TIP members reduced their water withdrawals by 14%.
- An additional five TIP members have had their SBTs validated, a 167% increase.



TARGET 6-4
Increase water-use efficiency and ensure freshwater supplies

TARGET 9-4
Upgrade all industries and infrastructures for sustainability

TARGET 12-2
Sustainable management and use of natural resources

TARGET 12-5
Substantially reduce waste generation

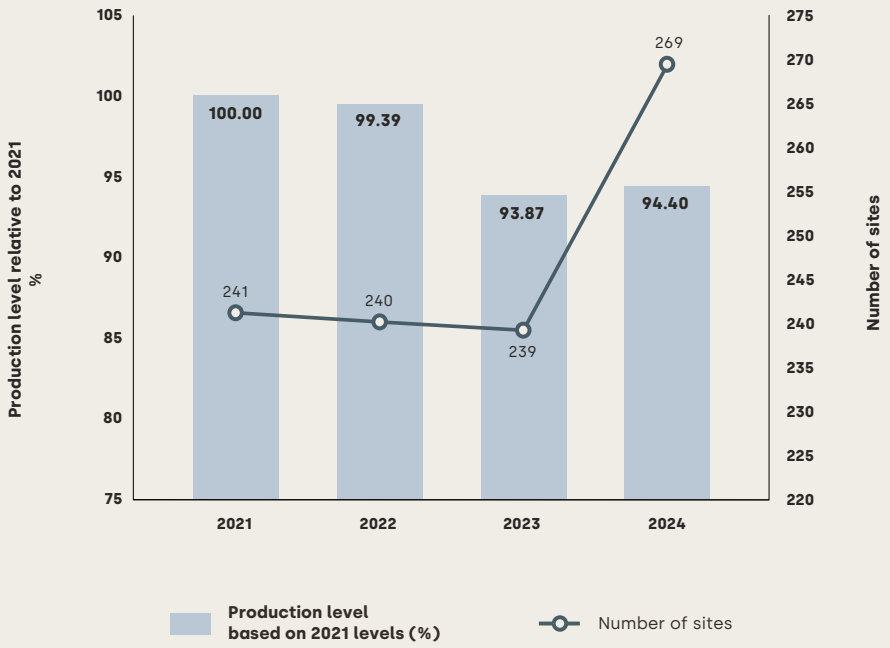
TARGET 13-1
Strengthen resilience and adaptive capacity to climate related disasters

INDIRECT CONTRIBUTIONS

5.1 Energy consumption, energy mix and electricity derived from renewable resources (KPIs 3 & 4)

The tire production process is energy intensive, involving multiple stages such as mixing, milling, building, and curing. By reducing manufacturing-related energy consumption, TIP members could both decrease their carbon footprint and enhance their operational efficiency. In recent times, TIP members have proactively prioritized investments in energy-saving measures and technological upgrades. In 2024, despite a slight increase of 0.57% in tire production (Figure 3) that correlated with an increase in the number of sites operated by TIP members, overall energy consumption dropped by 1.7%. Over 60% of members reported lower energy use without a significant change in production, in line with an overall decrease in energy intensity.

Figure 3: TIP members' historical cumulative production levels, 2021-2024



TIP members' energy mix remained relatively unchanged between 2023 and 2024; the most meaningful change was a decline in the percentage of non-renewable electricity in the total mix in favor of renewable energy (Figure 5). Since 2021, overall energy consumption has continued to gradually decrease, reaching 158.7 PJNCV in 2024, a significant achievement given the increase in production levels in 2024 (Figure 4).

Figure 4: TIP members' total energy consumption and energy intensity, 2021-2024

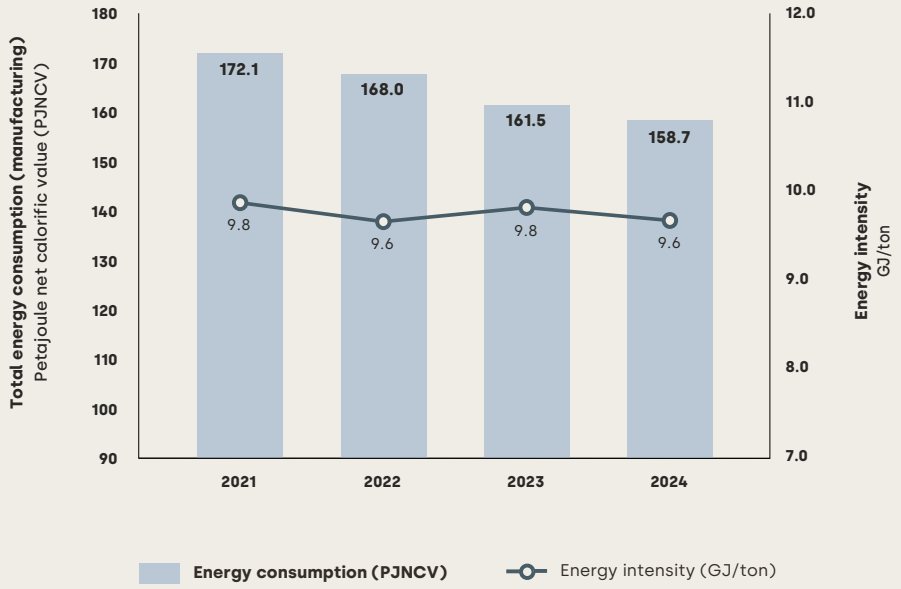
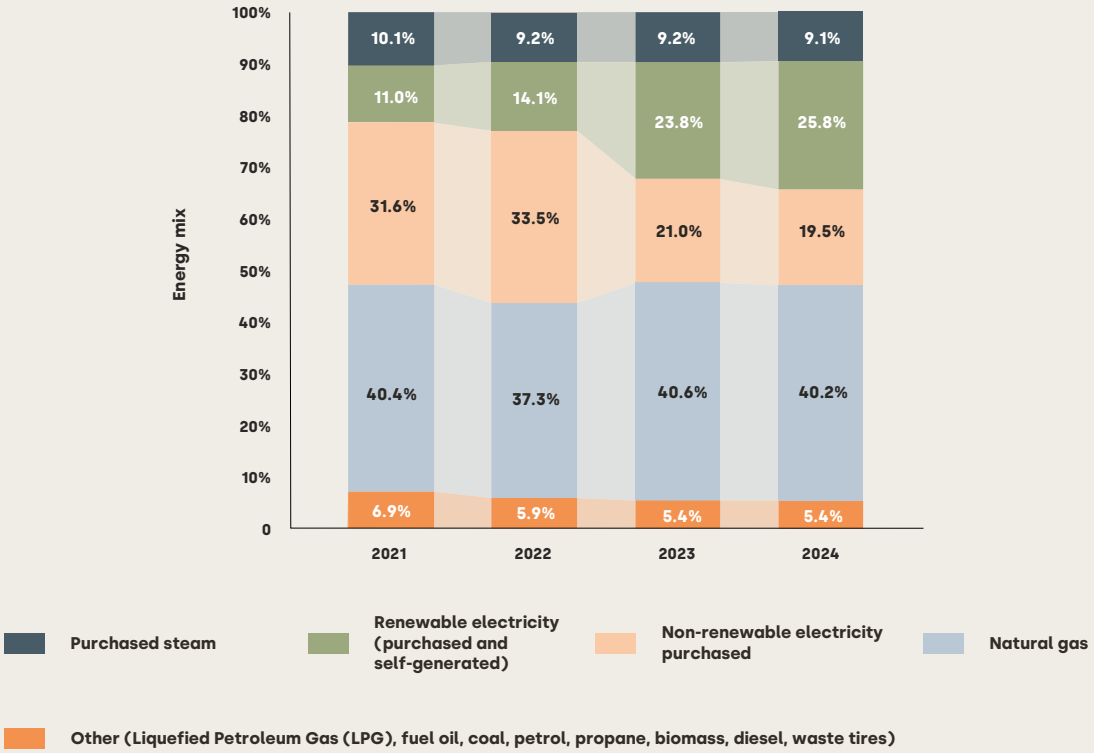
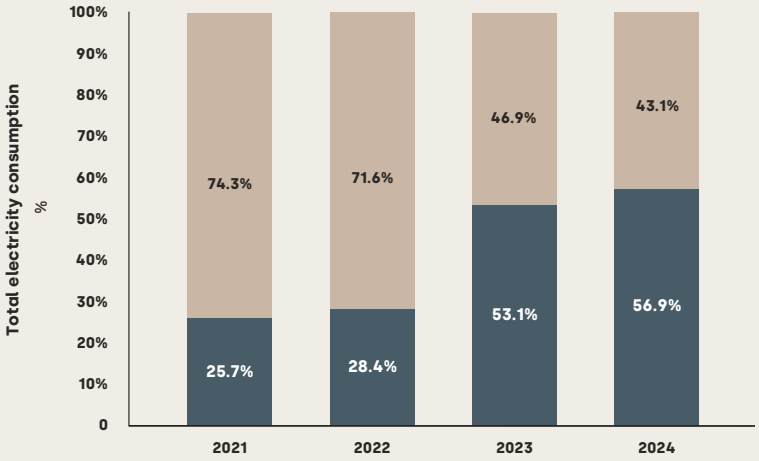


Figure 5: TIP members' energy mix, 2021-2024



Notably, in 2024, the total quantity of renewable electricity used by TIP members more than doubled compared to 2021 (Figure 6). Most of this renewable power (over 98%) was purchased, but the amount of renewable electricity self-generated by members also saw a 70% year-over-year increase.

Figure 6: TIP members' electricity consumption derived from renewable sources (GJ), 2021-2024



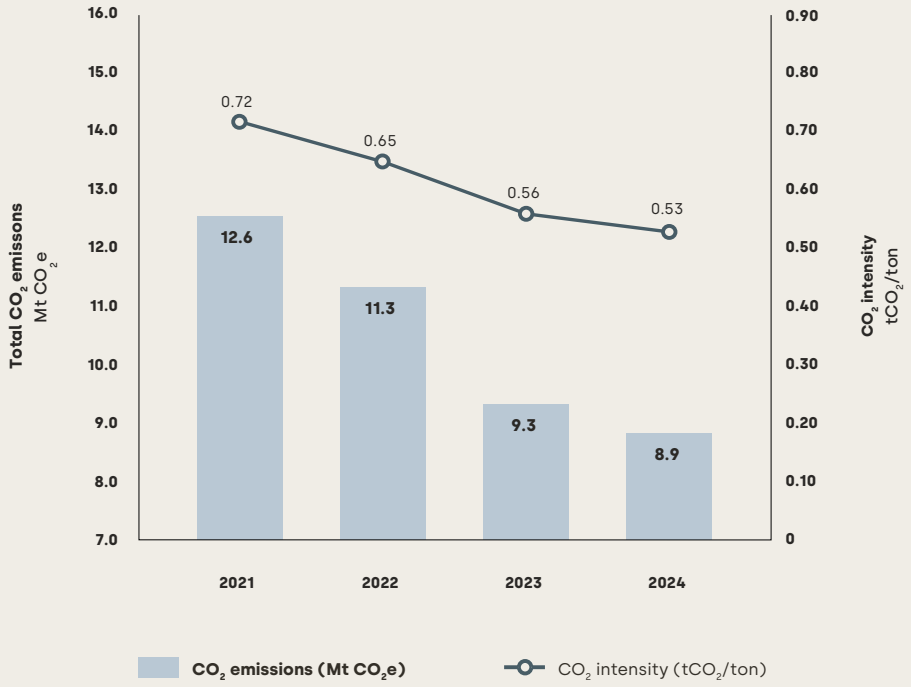
	2021	2022	2023	2024
Non-renewable electricity (GJ)	54,456,800	61,224,334	34,022,335	31,012,896
Renewable electricity (GJ)	18,694,621	24,512,292	38,135,564	40,193,137

These achievements directly contribute to progress on several SDGs, particularly SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

5.2 CO_2 emissions and decarbonization commitments (KPIs 5 & 6)

TIP members' CO_2 emissions, including Scope 1 (direct) and Scope 2 (indirect), have consistently mirrored the downward trend in energy consumption. Between 2021 and 2024, total CO_2 emissions fell by roughly 30% (Figure 7), reaching a low of 8.9 $MtCO_2e$.

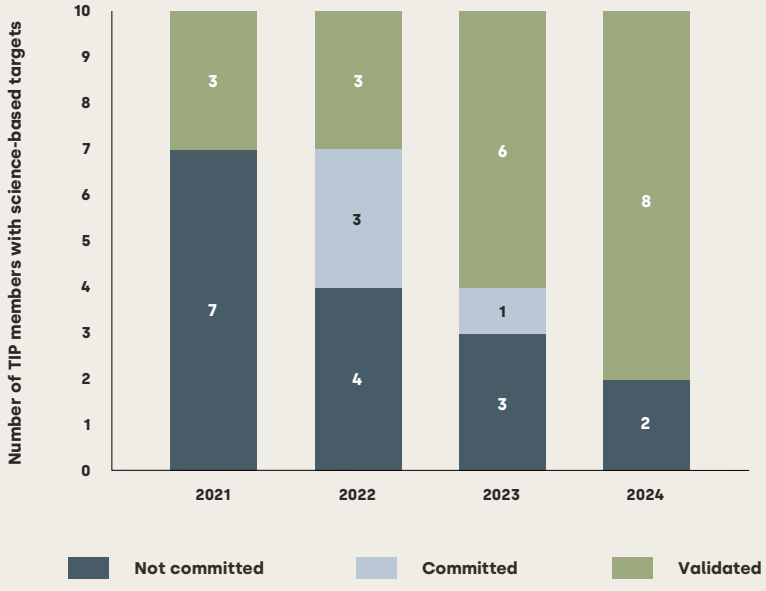
Figure 7: TIP members' total CO_2 emissions and CO_2 intensity, 2021-2024



In 2024, TIP members achieved a consolidated emissions intensity of 0.53 t CO_2/ton of output, the lowest since TIP started tracking this indicator in 2009. This steady reduction reflects widespread decarbonization efforts across TIP members' operations, energy efficiency upgrades, adoption of clean energy technologies, and process innovations.

In 2024, the percentage of TIP members with validated Science-Based Target Initiative (SBTi) targets reached 80%. Five additional members have had their greenhouse gas emission reduction targets validated by SBTi (Figure 8) compared to 2021.

Figure 8: TIP members with science-based targets, 2021-2024



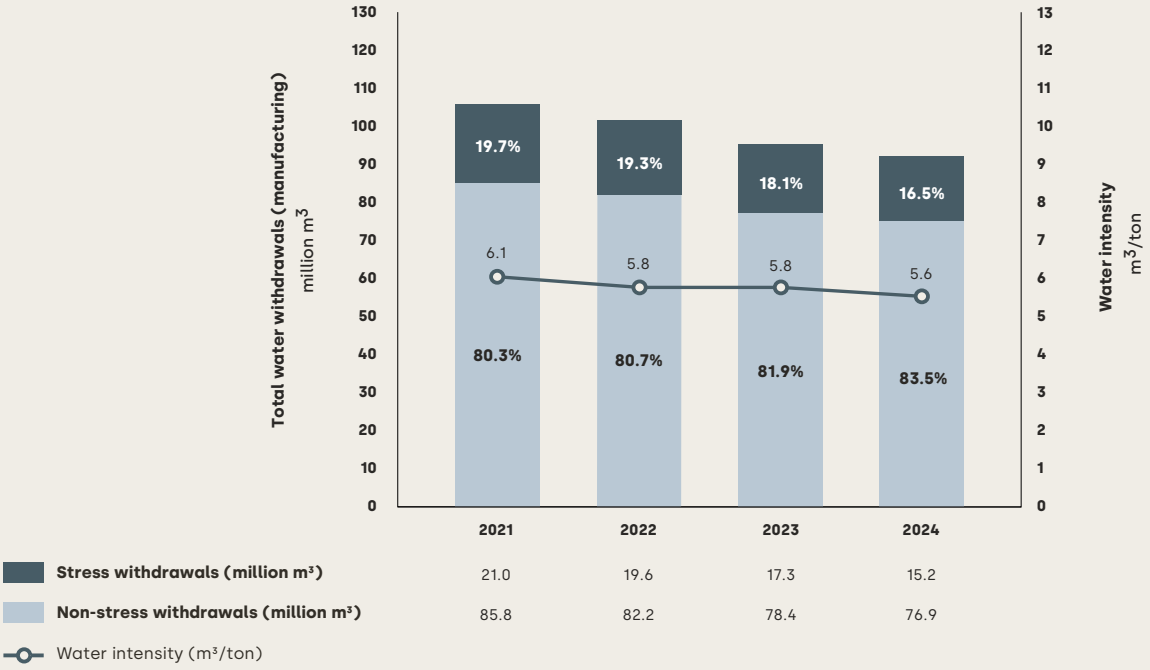
SBTi offers independent verification of the companies' greenhouse gas (GHG) reduction targets, confirming their alignment with the Paris Agreement. SBTi validation ensures that the tire industry members' climate ambitions are grounded in science.

5.3 Water withdrawal, waste disposal and elimination, and ISO 14001 compliance (KPIs 7, 8, 9 & 10)

Water is a crucial resource in tire manufacturing, and TIP members have consistently driven significant progress in its responsible management, reflecting their commitment to SDG 6 (Clean Water and Sanitation). Overall, water withdrawals decreased by 14% between 2021 and 2024. More significantly, the share of total water withdrawals from stressed areas declined from 19.7% in 2021 to 16.5% in 2024, consistent with broader efforts to reduce production intensity.

Water intensity decreased by 8.7% between 2021 and 2024, indicating more efficient water use per unit of production (Figure 9).

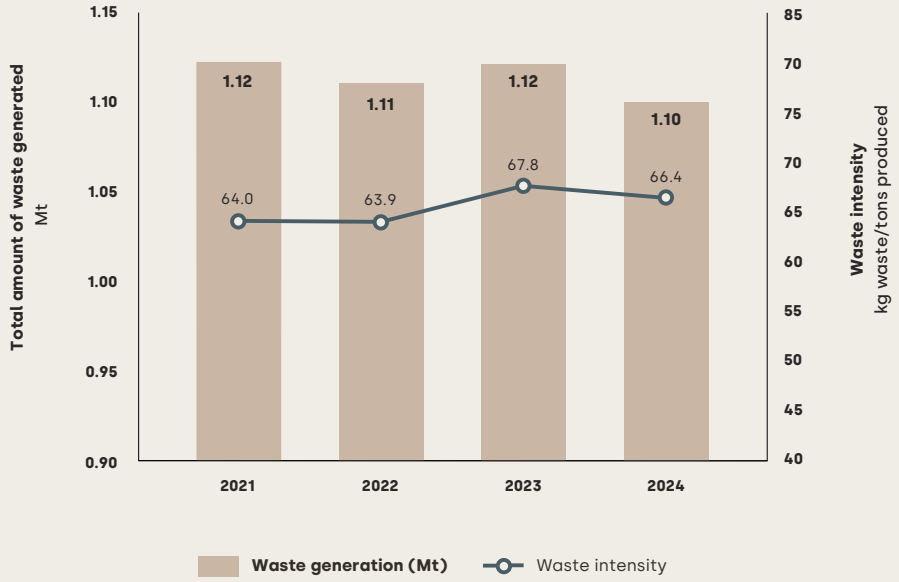
Figure 9: TIP members' water withdrawals from water-stressed* and non-water-stressed areas, 2021-2024



** One TIP member could only provide data on water withdrawals from water-stressed areas for 2021, hence reported values for 2022 may be lower than actual figures.*

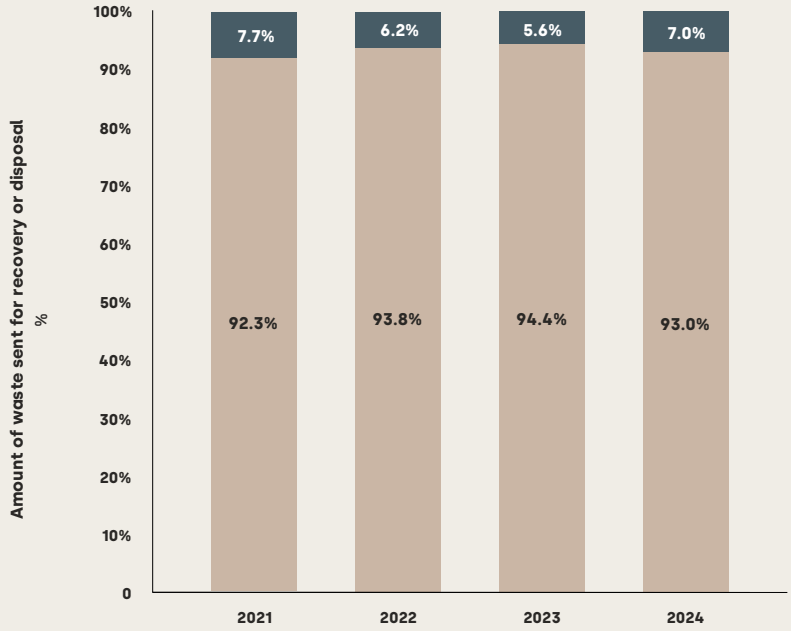
Waste generation quantities have remained relatively stable since 2021, with a 1.9% drop in 2024 versus 2021. Although the waste intensity dropped by 2.1% from 2023 to 2024, it has increased overall from 64.0 kg/ton of product in 2021 to 66.4 kg/ton in 2024 (Figure 10). This uptick is acknowledged by TIP members and will continue to be an area of focused action in 2025 and beyond. While it can be partially attributed to a 5.6% decline in production from 2021 to 2024, versus a smaller 1.4% drop in total waste generated, more effort by TIP members is required to reduce the overall quantities of waste generated.

Figure 10: TIP members' total waste generated and waste intensity, 2021-2024

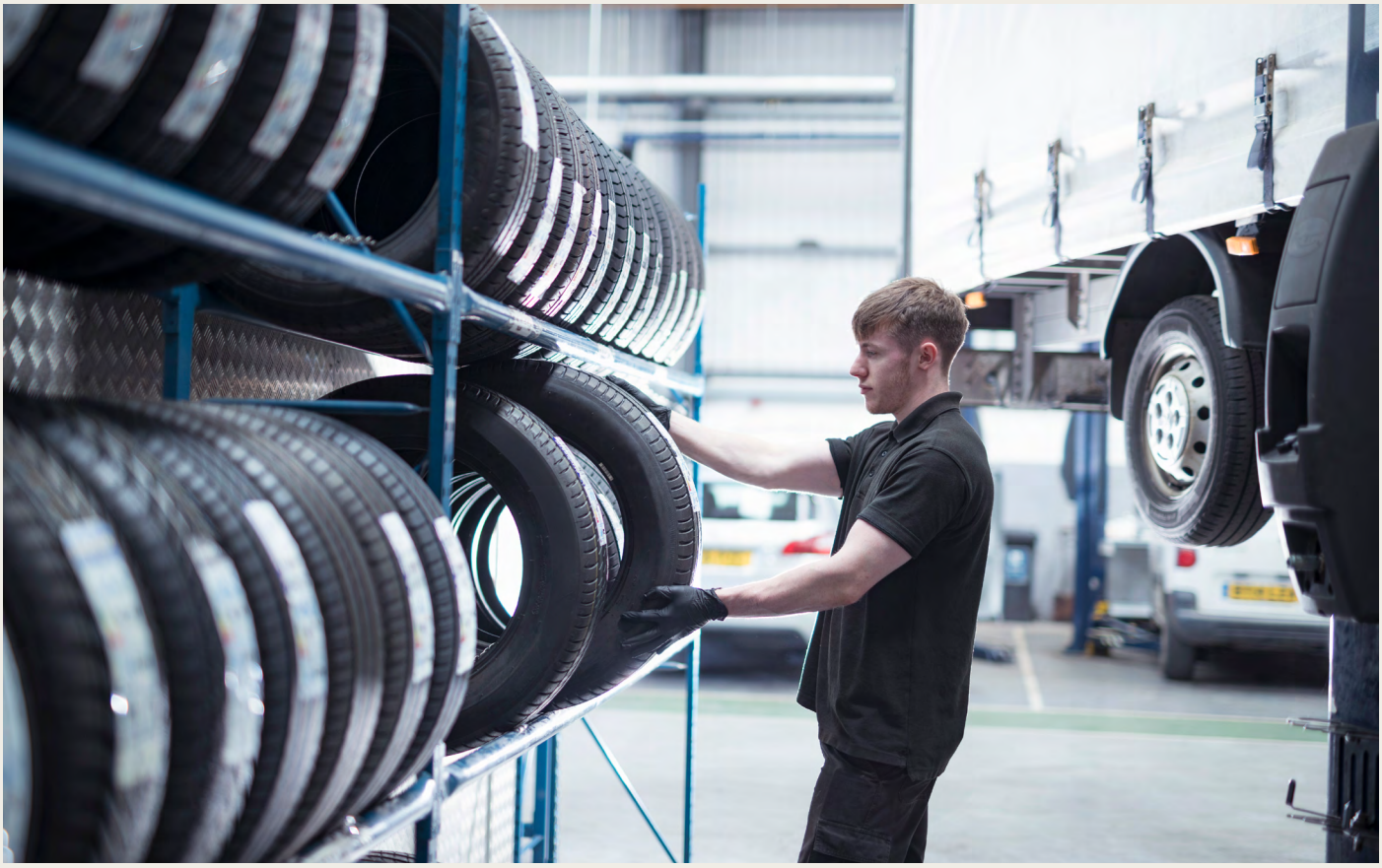


The percentage of waste sent to disposal was comparable in 2024 compared to the prior year — 7% or 76.8 million tons in 2024 versus 6% or 62.9 million tons in 2023. Although the percentage of waste sent to disposal remained low, the absolute mass increased by 22% year-over-year. This increase is largely attributed to the rise in the number of newly acquired sites, which are likely not yet equipped to ensure adequate levels of waste recovery. (Figure 11).

Figure 11: Breakdown of waste sent for disposal and recovery, 2021-2024

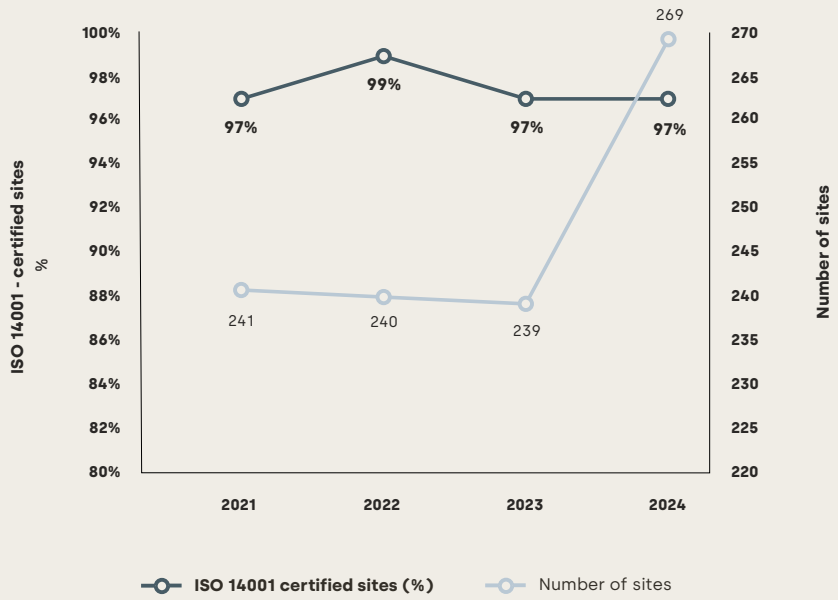


	2021	2022	2023	2024
Amount of waste sent for disposal (t)	86,187	68,796	62,945	76,828
Amount of waste sent for recovery (t)	1,035,714	1,045,750	1,053,288	1,023,461



ISO 14001 focuses on Environmental Management Systems and this KPI refers to the production sites and offices at TIP member companies, excluding research and development centers. As of 2024, the total number of sites operated by TIP members stood at 269, an increase of about 12% versus 2021 (241). This increase was driven by the acquisition of new sites by two TIP members. Despite this expansion, 97% (261 sites) of the total number of sites remain ISO 14001 certified, demonstrating a continued strong commitment to sustainable operations (Figure 12).

Figure 12: Percentage of TIP member sites that are ISO 14001-certified, 2021-2024

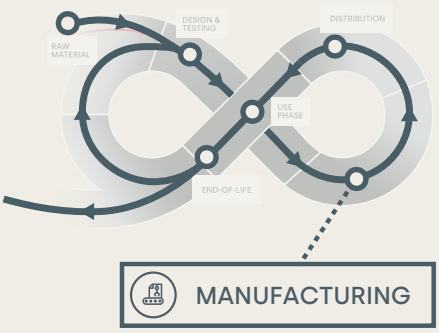


Impact Pathway 4:
Operations - Employees

06.

06. Impact Pathway 4

Operations — Employees:
Ensure safe and inclusive working environments and equal opportunities for all employees.



Progress Highlights 2021-2024

The proportion of sites with an externally audited Health & Safety management system increased from 56% to 59%.

9% increase in women among total employees.

19% increase in women on Boards of Directors.

TARGET 5-5
Ensure full participation in leadership and decision-making

TARGET 10-3
Ensure equal opportunities and end discrimination

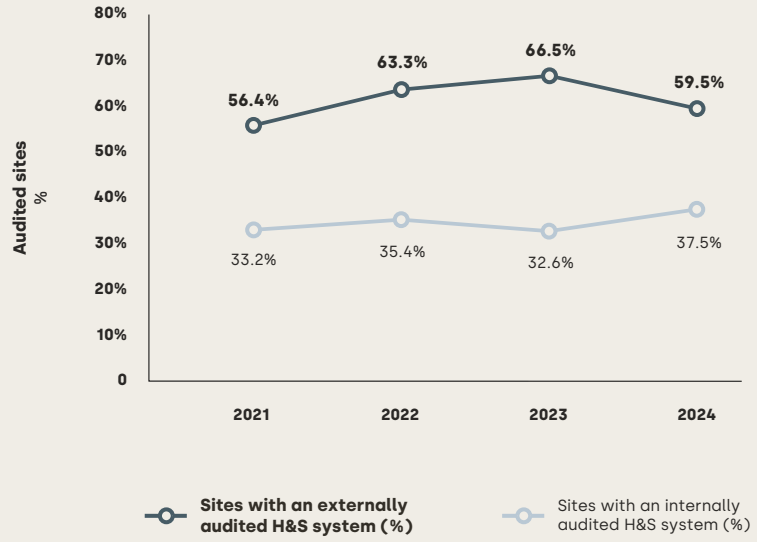
TARGET 10-4
Adopt fiscal and social policies that promote equality

TIP members uphold occupational health and safety practices to promote employee well-being and protect people from workplace risks, in support of SDG 5 (Gender Equality) and SDG 10 (Reduced Inequalities). They strive to ensure inclusive and fair participation among employees in a safe and healthy work environment.

6.1 Safe working environments (KPI 11)

To facilitate transparency and reporting, TIP members introduced auditing of H&S management systems at site level, which has been tracked through the number of H&S systems audited internally and externally. In 2021, 33% of the 241 sites were audited internally only and 56% underwent third-party audits (see Figure 13). The share of externally audited sites increased to 67% in 2023, a significant increase from 2021 levels. In 2024, this indicator fell from 67% to 59%, largely due to the acquisition of 30 new sites in 2023, most of which are yet to be audited by external third parties. Meanwhile, the share of sites with an internally audited H&S system rose from 33% in 2021 to 38% in 2024. Overall, in 2024, 97% of all sites were audited internally or externally, up by 8 percentage points compared to 2021.

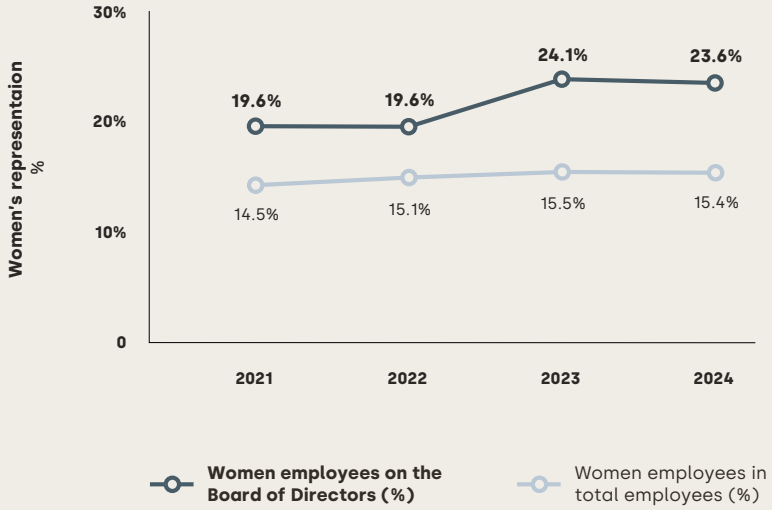
Figure 13: Percentage of sites with an externally and internally audited health and safety system, 2021-2024



6.2 Women's representation in TIP member companies (KPIs 12 & 13)

Promoting Diversity and Inclusion (D&I) in the workplace has been a core component of TIP members' business strategy. Over the years, progress has been made in terms of the share of total women employees, which had risen 11% by 2023 compared to 2021, as shown in Figure 14. Similarly, women's representation at the Board of Directors level rose 24% by 2023, compared to 2021 levels. Both KPIs remained flat in 2024.

Figure 14: Representation of women in the workforce and on Boards of Directors, 2021-2024



6.3 The percentage of TIP members with public commitments to diversity & inclusion (KPI 14)

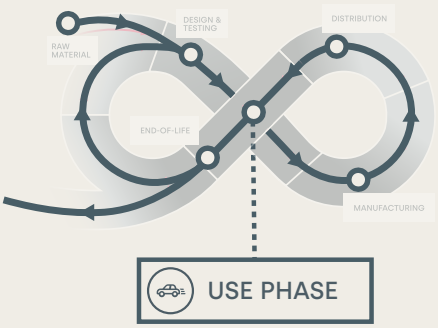
In 2019, all TIP members publicly committed to D&I in their external communication. Since then, these commitments have been further reinforced with actions and policies meant to strengthen inclusion, fairness, and equity in the workplace.

Impact Pathway 5:
Products & Services – Tire and Road Wear Particles

07.

07. Impact Pathway 5

Products and Services — Tire and Road Wear Particles: *Further leverage multi-stakeholder efforts to achieve evidence-based solutions that address Tire and Road Wear Particles (TRWP).*



Progress Highlights 2021-2024

The number of TIP-sponsored publications on TRWP increased by 75% to 28 (Annex 2).

Open Call for Projects launched at the end of 2024.

TARGET 12-4
Responsible management of chemicals and waste

TARGET 12-6
Encourage companies to adopt sustainable practices and sustainability reporting

INDIRECT CONTRIBUTIONS

The friction between tires and the road surface, critical to vehicle safety and performance, generates what are defined as Tire and Road Wear Particles (TRWP). TRWP are a mix of roughly half tire tread material and half road-pavement material. While the influence of tire design on wear is established, there previously was limited information on TRWP and their potential impacts. Since 2005, TIP has sponsored scientific research to fill these gaps, resulting in peer-reviewed publications on the attributes of tire wear matter and the formation and characteristics of TRWP. Despite progress, knowledge gaps remain, and these gaps continue to shape TIP's future research priorities. The 2021 SDG Roadmap reaffirmed TIP's commitment to advancing TRWP understanding and strengthen collaboration with key stakeholders, including the scientific community.

TIP's strategy to address TRWP is built upon three important concepts[2] :

- → Advancing scientific understanding
- → Identifying and highlighting best practices
- → Fostering collaboration and knowledge sharing

In 2024, four important publications were released, furthering the scientific understanding of TRWP (Figure 15).

The impact of TIP's research efforts is evident in the increasing recognition it receives within the scientific community. Since 2021, the number of citations of TIP's TRWP publications has gone up by 175%, a significant increase (Figure 16).

To further leverage the multi-stakeholder search for evidence-based solutions to address TRWP (Figure 16), TIP opened additional channels for collaboration with the scientific ecosystem, including scientific conferences and open calls for projects.

Figure 15: Annual and cumulative number of TIP-sponsored papers concerning TRWP published, 2021-2024

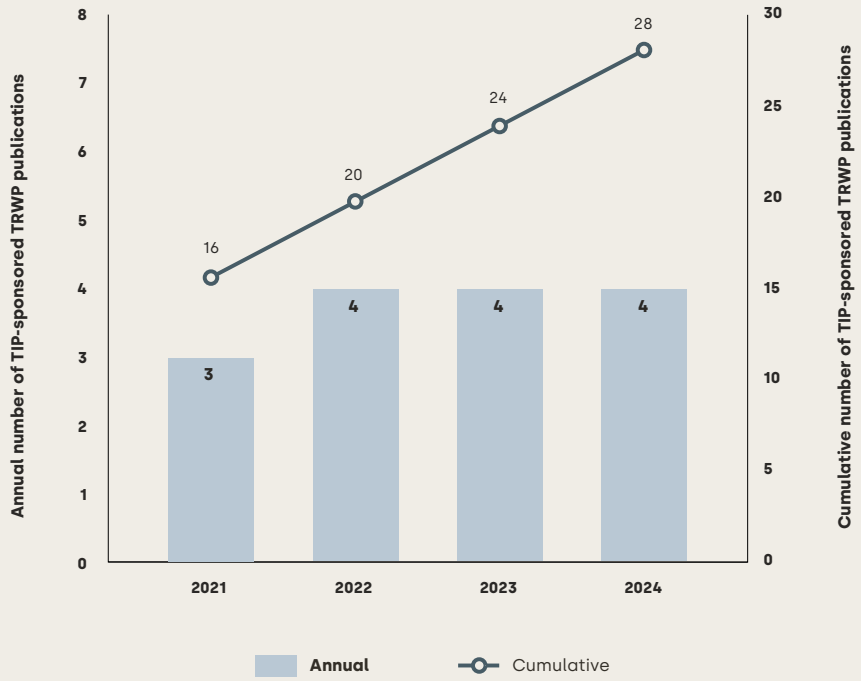
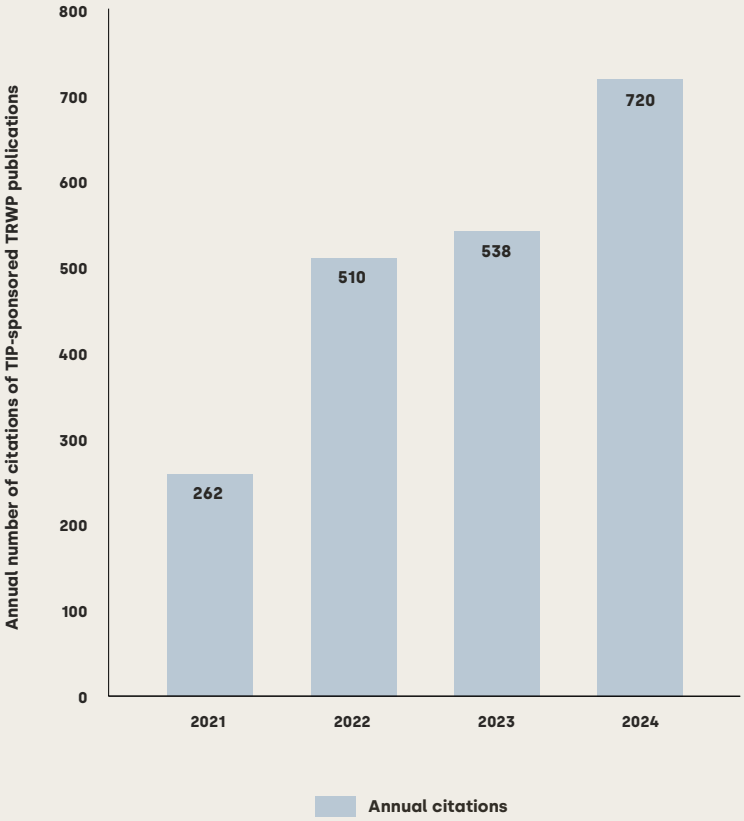


Figure 16: Annual number of citations of TIP-sponsored publications concerning TRWP, 2021-2024



Open Call for Projects (OCP)

This TIP initiative offers financial support for research projects that will actively contribute to advancing sustainability practices and environmental stewardship within the tire industry.

The OCP seeks to generate significant scientific advancements that are captured in published articles in peer-reviewed journals. Learn more about the OCP here.

Tire Emissions Research Conference

The inaugural Tire Emissions Research Conference took place on December 4-6, 2024. Hosted by TIP, in partnership with the Technical University of Munich, this conference brought together more than 170 participants from 22 different countries to discuss challenges and opportunities in reducing tire and road wear emissions. Key areas of focus included:

- → Tire and road emissions generation and characterization
- → Environmental distribution and fate of tire emissions
- → Behavior and impact of tire emissions on the environment
- → Design of alternatives
- → Effective civil engineering measures and environmental practices for mitigation of potential TRWP impacts

"The 2024 Tire Emissions Research Conference provided the opportunity for exciting, insightful scientific exchanges across disciplines. While progress has been made in exposure and hazard assessment of tire emissions in the environment, the complexity of the issue still creates challenges which are not yet overcome. Addressing challenges for instance in environmental chemistry, modelling, fate or ecotoxicology should help in the future to reduce knowledge gaps, produce key data to better address the uncertainties in the environmental risk assessment of particulate contaminants and leachates and develop cost-efficient mitigation actions."

— Prof. Dr.-Ing. Stephan Wagner & Dr. Benoit Ferrari

Co-chairs of the 2024 TIP Conference

Prof. Dr.-Ing. Stephan Wagner

Director of the Institute for Analytical Research, Vice-President for Research and Transfer at Hochschule Fresenius University of Applied Sciences

Dr. Benoit Ferrari

PhD, MSc, Director of the Swiss Centre for Applied Ecotoxicology (Ecotox Centre), Head of the sediment and soil ecotoxicology group

The second Tire Emissions Research Conference took place in September 2025 at the Massachusetts Institute of Technology in Boston, USA. To stay abreast of latest conference news, visit the conference website.

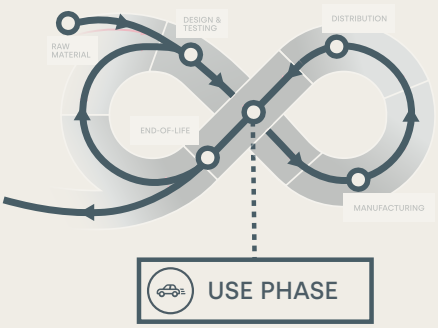
Impact Pathway 6:

Products & Services – Sustainable Mobility and Digital Solutions

08.

08. Impact Pathway 6

Products and Services — Sustainable Mobility and Digital Solutions: *Accelerate the sustainable mobility transition by raising awareness of the impact of user behavior, designing connected and intelligent tires and providing innovative digital solutions.*



TARGET 3-6
Reduce road injuries and deaths

TARGET 9-5
Enhance research and upgrade industrial technologies

TARGET 11-2
Affordable and sustainable transport systems

TARGET 12-2
Sustainable management and use of natural resources

TARGET 12-8
Promote universal understanding of sustainable lifestyles

For TIP members, innovation is essential. While safety remains the top priority, members are deeply committed to research and development to enhance tire performance without compromising safety and comfort by reducing weight, rolling resistance, and noise. The following efforts demonstrate the industry's advancements in achieving sustainable mobility and digital solutions, while supporting its transition to a circular economy, addressing resource scarcity, and sustainability throughout the tire lifecycle[3].

8.1 Intelligent and Connected (IC) tires

Intelligent and Connected (IC) tires represent a significant area of innovation for TIP members. These tires use sensors to monitor tread, pressure, and tire health, helping operators replace tires at the optimal time to extend the life of the tire. Digital platforms also analyze driving habits to reduce wear and improve fuel efficiency. By connecting vehicles, drivers, roads, and the environment, IC tires support several SDGs related to safety, innovation, mobility, and resource use — such as SDG 3, 9, 11, and 12.

8.2 Vendor and user awareness campaigns

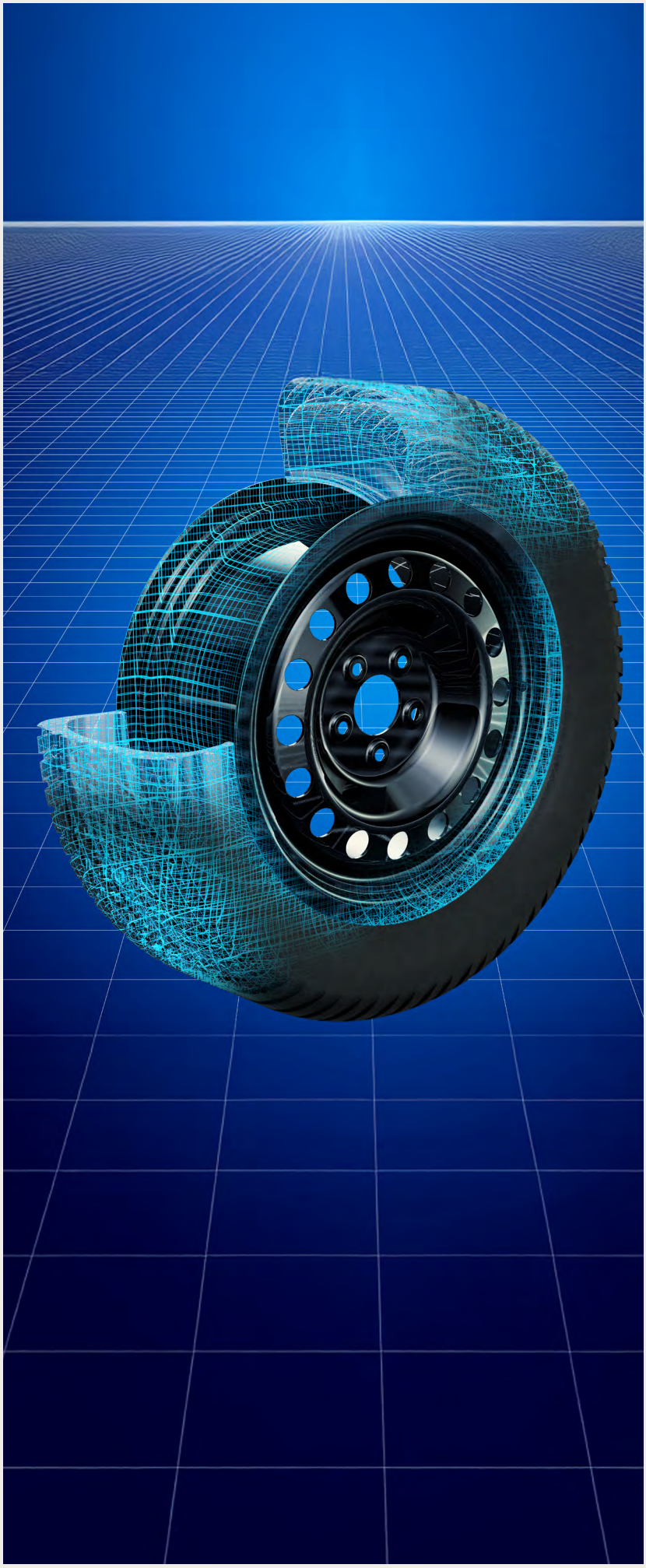
Recognizing the influence of driver behavior on tire sustainability and safety, awareness campaigns represent another key lever to improve road safety and reduce environmental life cycle impacts from tires. TIP members collaborate with vendors, users and TTAs, to fund and organize initiatives like the UK's Tire Safety Month and US National Tire Safety Week, contributing to SDG 3.6 (reduce road injuries and deaths) and the UN Decade of Action for Road Safety 2021-2030. TIP members also recognize the need for a global, standardized metric and are exploring potential KPIs to measure performance on this aspect.

8.3 Digital solutions and transformation

TIP members and the wider tire industry acknowledge the potential for artificial intelligence (AI) to advance its KPIs and support the 2030 Agenda. Although it is relatively early in the deployment in the tire sector, in the future AI may enhance design, support predictive maintenance, increase safety, improve resource efficiency, and consumer education. The potential also exists for AI to enable a deeper analysis of operational, environmental, and user data to reduce impacts, extend tire life, and optimize supply chains.

8.4 TIP commitment to research

TIP supports the SDGs through ongoing, science-based research on the environmental and social impacts of tires across their life cycle. Through collaboration, industry guidance, and best practices, TIP helps align tire industry practices with global sustainability goals, while promoting safe and efficient mobility. TIP's collaborative approach and investment in research contributes to SDG target 9.5 across the tire value chain.

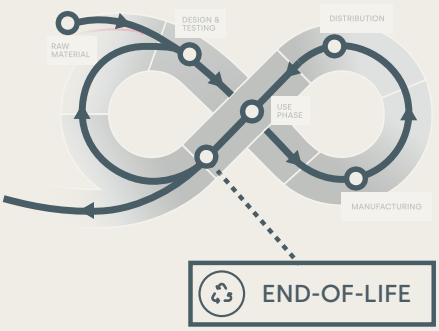


Impact Pathway 7:
Products & Services – Low-Carbon, Circular Solutions and End-of-Life Tires

09.

09. Impact Pathway 7

Products and Services — Low-Carbon, Circular Solutions and End-of-Life Tires: *Advance innovation in product, service and business model design to enhance low-carbon and circular solutions while ensuring sustainable management of end-of-life tires (ELT) around the world.*



TARGET 8-4
Improve resource efficiency in consumption and production

TARGET 12-2
Sustainable management and use of natural resources

TARGET 12-5
Substantially reduce waste generation

INDIRECT CONTRIBUTIONS

Progress Highlights 2021-2024

- Development of the ELT Management Hierarchy.
- Development of the ELT treatment processes and related material/energy flows.

TIP is committed to minimizing the environmental impact of tires throughout their entire lifecycle, from sourcing and manufacturing to their end-of-life management. Environmentally sound ELT management is critical to minimize environmental and social impacts. Additionally, legislation like extended producer responsibility (EPR) continues to gain traction globally, requiring manufacturers to be accountable for the collection, processing, and recycling of ELTs. It is, therefore, crucial that the actors in the tire value chain embrace circular economy principles, making valuable secondary raw materials available for reincorporation to conserve value and reduce waste.

Despite some progress in the industry, manufacturers are still facing challenges in accelerating sustainable ELT management. Key among these are:

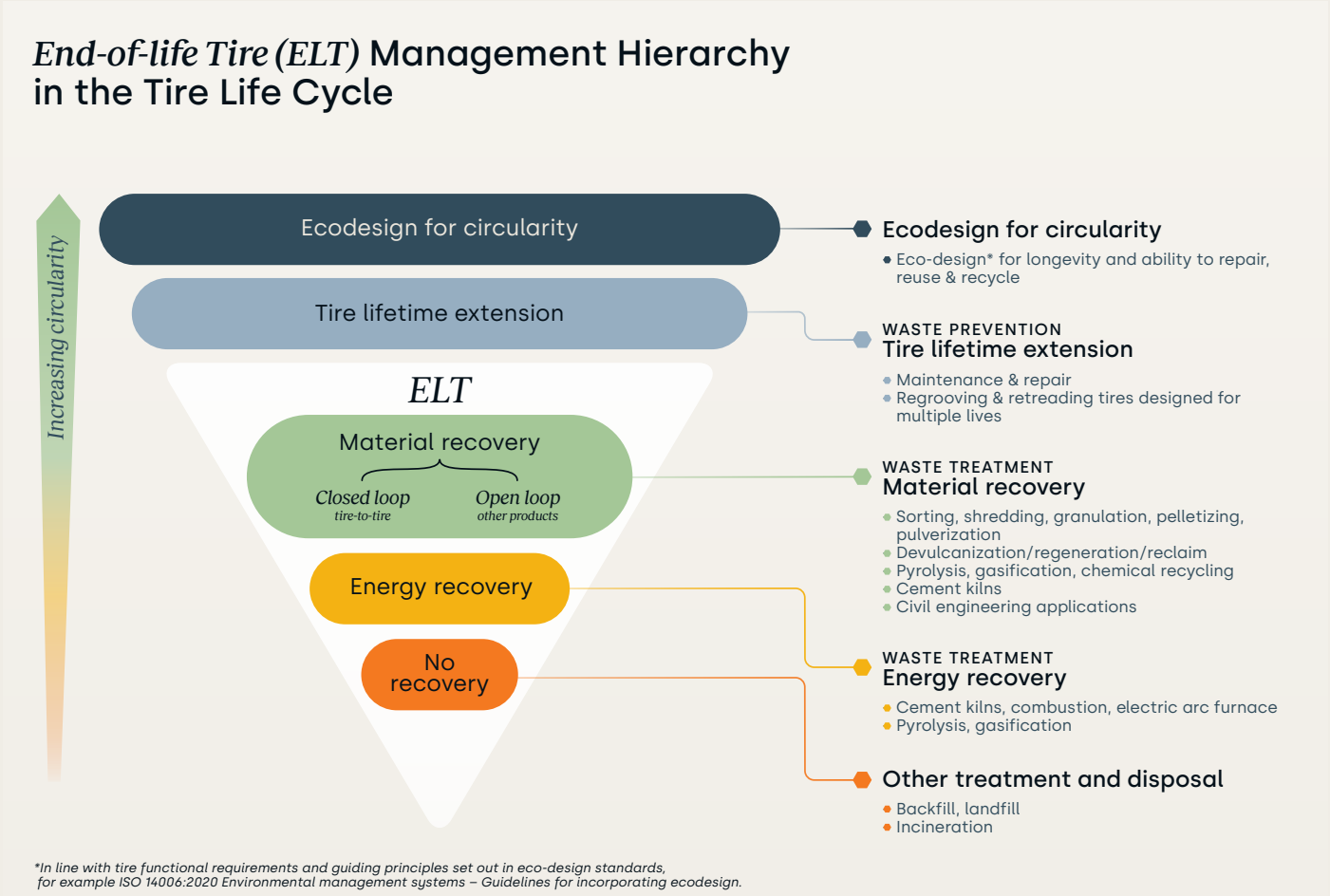
1. Knowledge and data gaps pertaining to ELT management systems and the situation on the collection and treatment of ELT
2. Legislation that does not reflect the latest situation in the ELT market
3. Lack of global and universally accepted standards

To address these challenges, TIP is committed to collaborating with TTAs and other stakeholders to:

1. Build capabilities and awareness of sustainable ELT management
2. Define and fill ELT knowledge gaps with scientific information on the environmental, economic, and social impacts of ELT, ELT treatment processes, and ELT applications
3. Create sustainable ELT management standards, methods, and data
4. Drive the policy and advocacy agenda on sustainable ELT management

To support the creation of robust ELT standards and methods, TIP has developed the "**ELT Management Hierarchy in the Tire Life Cycle**" and "**ELT Treatment Processes and Related Material and Energy Flows.**" The ELT Management Hierarchy (Figure 17) serves as a critical tool for policy makers and businesses to leverage circular economy principles and recovery routes to increase the circular flow of materials from ELTs.

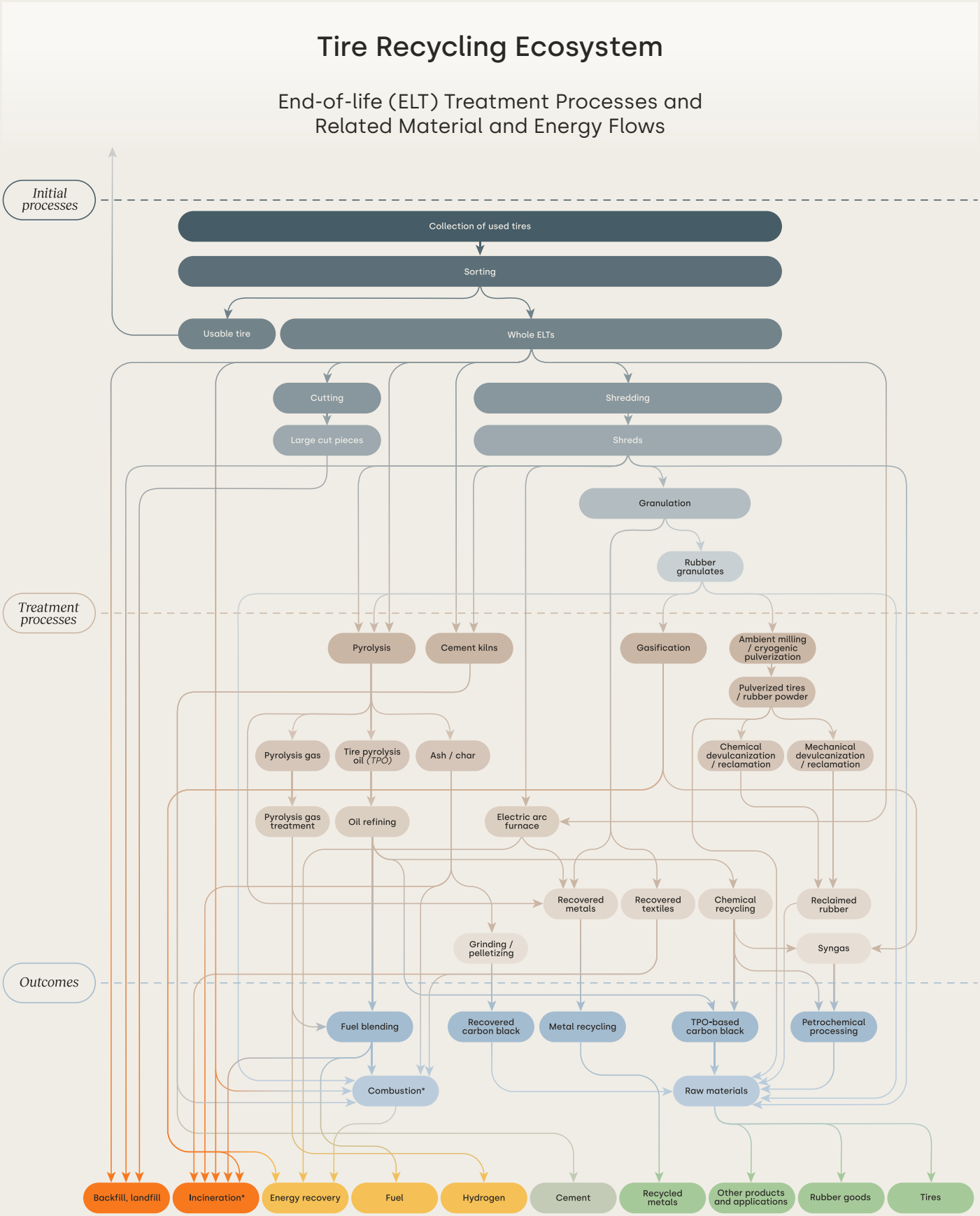
Figure 17: End-of-life (ELT) Management Hierarchy in the Tire Life Cycle



**In line with tire functional requirements and guiding principles set out in eco-design standards, for example ISO 14006:2020 Environmental management systems – Guidelines for incorporating ecodesign.*

Further details on ELT treatment processes and associated material and energy flows are provided in Figure 18.

Figure 18: Tire Recycling Ecosystem—End-of-life (ELT) Treatment Processes and Related Material and Energy Flows



Conclusions

10.

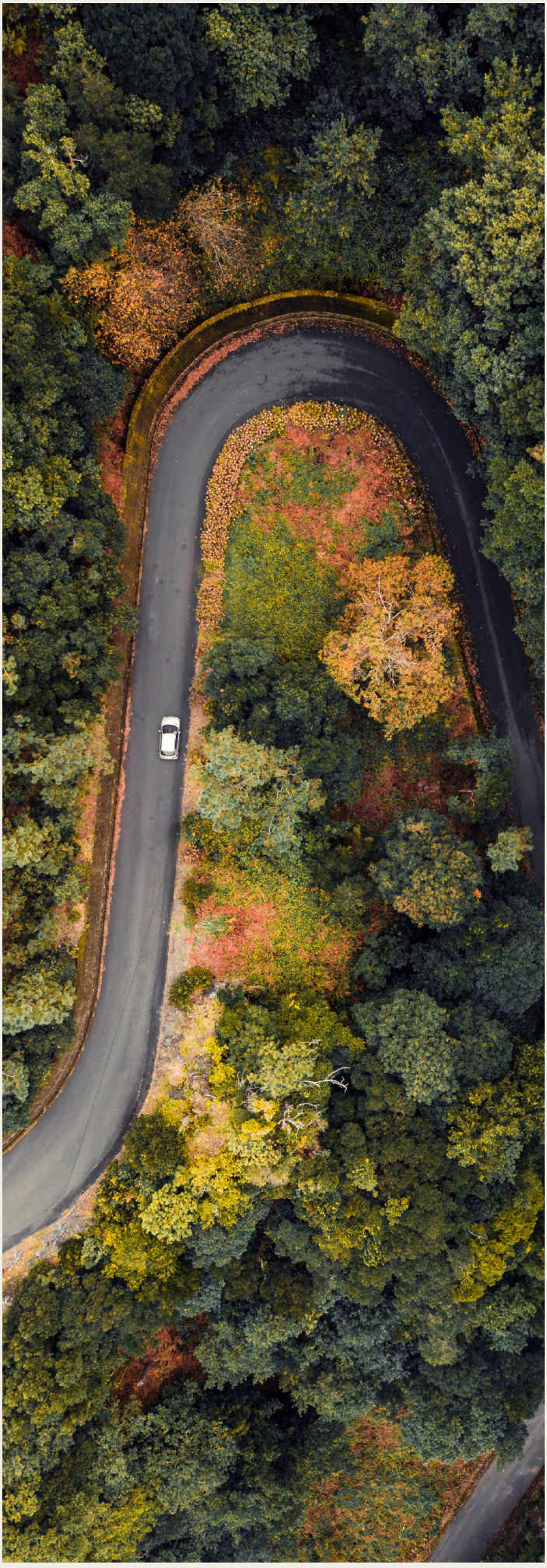
Sustainability Driven: TIP's Progress Towards SDGs (2021-2024 KPIs)

10. Conclusions

This SDG and KPI Progress Report highlights the measurable progress TIP members have made toward sustainable development. The period 2021-2024 was characterized by a marked improvement across many sustainability aspects and impacts. With regards to responsible sourcing, 80% of TIP members now have time-bound targets, double the number in 2021. Tire production has become more efficient across all TIP members, with significant reductions in energy intensity and water withdrawals. Meanwhile, the steep uptake of renewable energy, the use of which more than doubled between 2021 and 2024, combined with energy efficiency gains, has led to unprecedented cuts in greenhouse gas emissions. Additionally, TIP members' scientific impact has continued to grow, with citations of TIP-sponsored TRWP research more than doubling.

These achievements reflect TIP's commitment to transparency, innovation, and continuous improvement across the tire lifecycle. In 2025, TIP marks its 20-year anniversary of global leadership in advancing sustainability in the tire sector. As it enters its third decade, TIP remains committed to working together with key stakeholders to advance the tire sector's contribution to sustainable development through science-based research, transparent KPI reporting, and collaborative action.

TIP is proud to present this progress report not as a final word, but as an evolving, iterative commitment to continuous improvement, accountability, engagement, and long-term value creation within the tire sector, progressing towards delivery of the SDG Roadmap.



11. Annex

Annex 1 — How members are contributing to SDGs

While collective action across TIP members is important to advancing SDGs, the individual efforts of each member are fundamental to achieving the 2030 Agenda. The links below provide details regarding each TIP member's specific SDG-related activities.

TIP Members	Links
Bridgestone	**https://www.bridgestone.com/ir/library/integrated_report/**
Continental	**https://www.continental-tires.com/about/sustainability/**
Goodyear	**https://corporate.goodyear.com/us/en.html#**
Hankook	**https://www.hankooktire.com/global/en/esg/hankook-tire-esg/esg-overview.html**
Kumho Tire	**https://www.kumhotire.com/en/ESG/Overview/Initiative/**
Michelin	**https://www.michelin.com/en/sustainability/company**
Pirelli	**https://corporate.pirelli.com/corporate/en-ww/sustainability/sustainability**
Sumitomo	**https://www.srigroup.co.jp/english/sustainability/**
Toyo Tires	**https://www.toyotires-global.com/csr/**
Yokohama	**https://www.y-yokohama.com/global/sustainability/**

Annex 2 — Key TRWP publications

"**Characterization of individual tire and road wear particles in environmental road dust, tunnel dust, and sediment**" Michael Kovochich et al (2021).

"**Chemical mapping of tire particles for single particle analysis**" Michael Kovochich et al (2021).

"**Aging of tire and road wear particles in terrestrial and freshwater environments — a review on processes, testing, analysis and impact**" Stephan Wagner et al (2022).

"**Bioaccessibility of organic compounds associated with tire particles using a fish in vitro digestive model: solubilization kinetics and effects of food co-ingestion**" Thibault Masset (2022).

"**Pyrolysis-gas chromatography-mass spectrometry (Py-GC-MS). Quantification of tire and road wear particles (TRWP) in environmental matrices: assessing the importance of microstructure in instrument calibration protocols**" Julie Miller et al (2022).

"**Evaluation of three pyrolyzer technologies for quantitative pyrolysis-gas chromatography-mass spectrometry (Py-GC-MS) of tire tread polymer in an artificial sediment matrix**" Julie Miller et al (2022).

"**Accelerated aging of tire and road wear particles by elevated temperature, artificial sunlight and mechanical stress — a laboratory study on particle properties, extractables and leachables**" Steffen Weyrauch et al (2023).

"**Characterization of tire and road wear particles in urban river samples**" Michael Kovochich et al (2023).

"**Refinement of a microfurnace pyrolysis-GC–MS method for quantification of tire and road wear particles (TRWP) in sediment and solid matrices**" Sharlee More et al (2023).

"**Abundance and distribution of tire and road wear particles in the Seine river, France**" Timothy R. Barber et al (2024).

"**The chemical composition and sources of road dust, and of tire and road wear particles–A review**" Stephan Wagner et al (2024).

"**Estrogenic, genotoxic, and antibacterial effects of chemicals from cryogenically milled tire tread**" Alan Bergmann et al (2024).

"**Method development and analysis of nanoparticle size fraction from tire-wear emissions**" Molly Haugen, Adam Boies et al (2024).

"**ISO 22638:2024 - Rubber — Generation and collection of tyre and road wear particles (TRWP) — Road simulator laboratory method**" (2024).

"**ISO/DIS 21396 - Rubber — Determination of the mass concentration of tyre and road wear particles (TRWP) in soil and sediment — Pyrolysis-gas chromatography/mass spectrometry (GC/MS) method**" (Draft Standard).

12. Appendix

Methodological note

dss+ collated and analyzed the 2024 data presented in this report on behalf of TIP. The reporting scope includes all the sites under TIP members' operational control — 269 sites in 2024. dss+ did not perform any restatement of historical data in cases where companies closed sites, following the TIP Common Reporting Methodology.

We consolidated all the data for the entities under operational control, regardless of the financial consolidation rate. The reporting scope includes the following sites: tire manufacturing sites and all related onsite activities (canteen, R&D, mixing, bladder production, reused tire processing, motorsport tire production facilities, etc.), as well as standalone sites with mixing activities and those dedicated solely to motorsport tire production, which were newly added this year. We exclude other stand-alone sites (bladder production, steel cord, textile facilities, retread tire processing, HQ, offices, etc.). We also include offices in scope for the waste indicator.

We collected data on an individual-company basis, which dss+ later aggregated. dss+ and TIP members carried out a series of data quality checks to ensure quality and consistency with previous reporting years. We amended historical data only if a member identified an error a posteriori. We used the aggregated data to produce the figures and tables included in this report. Due to The Goodyear Tire & Rubber Company's June 2021 acquisition of Cooper Tire, the consolidated results in this report for the historical period 2019-2021 are not always consistent with what we reported in the previous version of this report. This is due to updated historical data, following a data validation process as part of the integration of the two members.

The qualitative information reported is not exhaustive, and the implementation of measures can vary both among and within companies.

Indicator definitions

The indicators historically reported in this report are based on the TIP Common Methodology, a reporting document that defines the indicators, scope and calculation methodology. All TIP members defined, evaluated and agreed on the new indicators reported for the first time in this report. We provide a summary of the indicators used in this report below.

Production is calculated as the weight of intended products to be sold to end-users as an output of the production lines, as well as the weight of new materials integrated in retread tires if this activity is in scope for the tire manufacturing plant.

Participation in Global Platform for Sustainable Natural Rubber (GPSNR): The percentage of TIP members that submit the mandatory policy reporting to the GPSNR for the corresponding reporting year.

Responsible sourcing policies: This key performance indicator (KPI) complements the indicator on GPSNR by tracking TIP member approaches to responsibly sourcing all materials, not just natural rubber. The KPI tracks responsible sourcing policies (RSPs) at multiple levels by assessing which members have policies and how they are using and enforcing these policies. This indicator tracks both the RSPs covering all materials sourced and policies covering a specific material.

Energy consumption: The energy consumption from different sources (e.g., electricity, gas, renewable energies) is consolidated in net calorific value (NCV) and measured in gigajoules (GJ). The electricity and steam sold to external third parties are deducted. Fuel consumption related to off-site transportation (employees, products) is excluded. Contractual arrangements for the purchase of renewable electricity such as Energy Attribute Certificates and Power Purchase Agreements are counted under "renewable electricity."

Energy intensity is weighted by production and is calculated by dividing the total energy consumed (in GJ) by the total production (in tons) in the same year.

Electricity derived from renewable energy is the electricity consumed using renewable sources, either self-generated or purchased (accompanied by energy attribute certificates or similar instruments), out of the total electricity consumed by TIP members. Only electricity consumption related to the tire manufacturing process and other facilities on the production sites is included in the scope.

Sources of emissions factors: Scope 1 emissions factors: 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines for stationary combustion in the manufacturing industry. Scope 2 emissions factors associated with electricity purchases: International Energy Agency (IEA) Emissions Factors (2022). Data regarding electricity consumption was collected using the location-based method. This approach reflects the average emissions intensity of the grid, using a grid-average emissions factor.

CO_2 emissions are calculated by multiplying each energy source by its corresponding emissions

factors (2006 IPCC guidelines for scope 1, IEA CO_2 emissions factors for scope 2). For residual emissions (i.e., emissions that remain after renewable certificates and contracts have been removed from the calculation), national grid average emissions factors have been used as residual mix factors.

CO_2 intensity is weighed by production, which is calculated by dividing the total CO_2 emitted (in tons of CO_2 equivalent) by the total production (tons) during the same year.

Science-based targets (SBTs): This indicator calculates the percentage of TIP members who have — i) A validated science-based target for reducing their scope 1, 2 and 3 emissions that is consistent with 2 degrees of warming or less (well below 2 degrees or 1.5 degrees), or ii) have committed to developing a target by submitting a commitment letter to the Science Based Targets initiative (SBTi) between 1 January and 31 December of the reporting year. As per SBTi Recommendations, SBTs should cover all scope 1 and 2 emissions, and scope 3 emissions if the company's relevant scope 3 emissions are 40% or more of total scope 1, 2 and 3 emissions.

Water withdrawals represent the net amount of water entering the sites and withdrawn from any external source (pumping from natural resources, public networks, recycled water from external companies or from desalinization plants, etc.). All external sources of water withdrawals used for industrial, cooling and domestic use are taken into consideration, including the amount of water sold to off-site third parties or consumed by third-party companies onsite.

Water withdrawals from water-stressed areas: Total amount of water withdrawals at manufacturing plant level from areas with extremely high and high levels of water stress, as defined in the World Resources Institute (WRI) Aqueduct Water Risk Atlas, between 1 January and 31 December of the reporting year. Water withdrawals from areas with medium, low-medium (10-20%) and low (<10%) water stress are excluded.

Water intensity is weighted by production and is calculated by dividing the total water withdrawals by the total production (in tons) in the same year.

ISO 14001: The certification rate is calculated by dividing the total number of sites with ISO 14001 certification by the total number of sites. A site is recognized as being ISO 14001-certified during a given calendar year only if an external certificate is valid on 31 December of that year.

Waste: Waste is defined as all material generated unintentionally during production not resulting in a finished product onsite and legally considered as waste. Waste generated onsite by third parties (working within the physical perimeter of the facilities but not operated by a TIP company) is included in scope for this indicator. We consider the following as waste for the purposes of this report: office waste, waste electrical and electronic equipment (WEEE) from production sites and offices, sludges, defect tires never going back into the production chain, food waste resulting from canteens or restaurants on site, and hazardous wastewater removed by a third party.

Waste intensity is weighted by production and is calculated by dividing the total amount of waste generated (in metric tons) by the total production (tons) in the same year.

Health & safety (H&S) management system: Percentage of manufacturing sites covered by a health and safety management system (such as ISO 45001), that an external party has audited or certified, out of the total number of manufacturing sites, between 1 January and 31 December of the reporting year. It includes only manufacturing sites under the operational control of TIP members and only sites that have been successfully audited and verified to meet the standard in a given year. This indicator also discloses the percentage of TIP members who have internal auditing processes for H&S management systems.

Women on Boards of Directors: Percentage of women employees on Boards of Directors as of 31 December of the reporting year. It considers only employees as per the Global Reporting Initiative (GRI) 405 definition.

Women in the total workforce: Percentage of women employees in the total workforce (at group level) as of 31 December of the reporting year. It considers only employees as per GRI 405 definition. Non-employee workers (e.g., individual contractors) who are part of the company's workforce are excluded.

Diversity & Inclusion (D&I): Percentage of TIP members with a public commitment to D&I over total number of TIP members during the reporting year 1 January to 31 December. The D&I commitment should include a clear statement of the company's values regarding diversity and be clearly visible on the company's website and in its annual report. It should also recognize a range of diversity and inclusion needs, rather than focusing on just one area.

Peer-reviewed research output on Tire and Road Wear Particles (TRWP): This indicator tracks — i) peer-reviewed literature output sponsored by TIP published in qualifying journals, examining topics related to TRWP and materials and chemicals related to TRWP and nanomaterials, and ii) number of citations of articles sponsored by TIP, in peer-reviewed journals.

Acronyms

AI	Artificial Intelligence
D&I	Diversity and Inclusion
ELT	End-of-Life Tire
EPR	Extended Producer Responsibility
EUDR	EU Deforestation-Free Product Regulation
ESG	Environmental, Social, and Governance
GPSNR	Global Platform for Sustainable Natural Rubber
GRI	Global Reporting Initiative
H&S	Health & Safety
ISO	International Organization for Standardization
KPI	Key Performance Indicator
NCV	Net Calorific Value
OCP	Open Call for Projects
PCR	Product Category Rules
SBT/SBTi	Science-Based Targets/Science-Based Targets initiative
SDG	Sustainable Development Goal
SIM	Shared Investment Mechanism
TIP	Tire Industry Project
TRWP	Tire and Road Wear Particles
TTA	Tire Trade Association
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

Endnotes

1 World on Track to Achieve Only 17 Per Cent of 2030 Agenda Targets **https://press.un.org/en/2024/gaef3604.doc.htm**

2 Tire Industry Project Commitment to Addressing Tire and Road Wear Particles **https://tireindustryproject.org/news/tire-industry-project-commitment-to-addressing-tire-and-road-wear-particles/**

3 Roadmap New Circular Economy Action Plan: ETRMA contribution **https://www.etrma.org/library/roadmap-new-circular-economy-action-plan-etrma-contribution/**

Acknowledgements

Disclaimer

This publication has been developed in the name of TIP. Like other TIP publications, it is the result of collaborative efforts by representatives from TIP member companies and external experts. TIP member companies reviewed drafts, thereby ensuring that the document broadly represents the perspective of WBCSD TIP membership. Input and feedback from stakeholders were incorporated in a balanced way. This does not mean, however, that every member company or stakeholder agrees with every word. The report has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, legal or other professional advice.

About TIP

Formed in 2005, TIP is a voluntary CEO-driven initiative with a mission to anticipate, understand and address global environmental, social and governance issues relevant to the tire industry and its value chain. TIP acts by commissioning independent research of the highest standards, collaborating on sectoral solutions and engaging with external stakeholders. TIP currently brings together 10 leading tire companies that represent more than 60% of the world's tire manufacturing capacity.

TIP operates under the umbrella of the World Business Council for Sustainable Development (WBCSD).

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About WBCSD

The World Business Council for Sustainable Development (WBCSD) is a global community of over 225 of the world's leading businesses driving systems transformation for a better world in which 9+ billion people can live well, within planetary boundaries, by mid-century. Together, we transform the systems we work in to limit the impact of the climate crisis, restore nature and tackle inequality. We accelerate value chain transformation across key sectors and reshape the financial system to reward sustainable leadership and action through a lower cost of capital. Through the exchange of best practices, improving performance, accessing education, forming partnerships, and shaping the policy agenda, we drive progress in businesses and sharpen the accountability of their performance.

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