



# Material issues relating to value creation

These material issues illustrate the unique value that the Toyo Tire Group offers in its dedicated mission to society and the value that links directly to the Group’s purpose. We believe that the value we create and deliver through our business activities must contribute to the building of a society of sustainable mobility.

Material issue

## 01 Help create a society of sustainable mobility



Material issue

## 02 Support the enjoyment of mobility for all



- Environmental contribution (CO<sub>2</sub> emissions reduction): Reducing tire rolling resistance, improving EV compatibility, saving resources
- Safety: Maintenance-free products, diagnosis of tire wear
- Commercializing airless tires
- Ultimate enjoyment of driving and sophisticated features

### Basic policy

We know that the sustainable future for tire and automotive parts manufacturers will only be ensured once a society of sustainable mobility has been created. That’s why we are contributing to help establish a society of sustainable mobility that boasts fewer environmental impact, fewer traffic accidents and efficient transportation. In addition to providing the necessary elements for promoting sustainability, we believe that using our unique products and services to satisfy the various features that people expect from superior mobility life will create added value designed to support a diverse mobile society, so that is what we intend to do.

Message from Vice President,  
R&D Headquarters

### Creating value from technology

Satoru Moriya  
Director, Corporate Officer

The automotive industry is undergoing huge change, with the increasingly rapid advancement of all technological innovations for next-generation mobility solutions. In such an era, maintaining a high degree of safety awareness is the most important thing for us as engineers involved in the development of future tires. The Toyo Tire Group is always encouraging people to engage in technological development with the understanding that a vehicle’s tires are the only things that are in direct contact with the road surface, and as such, they support the vehicle body, and protect the lives of all its passengers.

Our ultimate quest is to create tires that are truly loved, trusted and supported by customers. Engineers sometimes get distracted by the idea that their thoughts and ideas are backed by technological theories and data, but the most important thing is to heed the opinions of the market and strive to achieve the performance that our customers require. Toyo Tire Corporation is not overly large compared to some of its global competitors. I believe the fact that we are able to promote close daily communication between production, sales, R&D, corporate and other functions reinforces our corporate strength.

For instance, here in the R&D function, we receive information on market needs from the market frontline via the sales function, which enables us to recognize customers’ perspective in a timely and detailed manner and develop differentiated products. Thanks to this inter-functional collaboration, we are able to create new product categories by

swiftly launching products with sophisticated design features that other companies don’t possess, while also pursuing a high level of basic performance.

Meanwhile, environmental and social demands regarding decarbonization, resource recycling and other issues are growing stronger every year. We are entering a new challenging stage of achieving mutually opposing properties, which involves further reducing rolling resistance, developing sustainable raw materials that guarantee the same performance as existing materials, and intertwining that with elegant design features. Rising to these challenges will help generate the value that we want to deliver to society over the medium- to long-term, and we in the R&D function are determined to channel our efforts into doing just that.

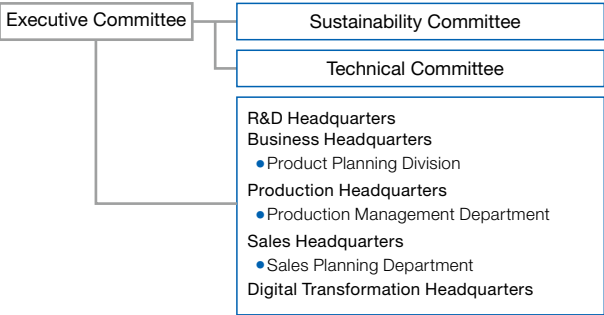
AI, with its various uses, has become indispensable in the technology development field. Deep learning generates answers with overwhelming speed and accuracy, so, in future, it will be possible to carry out the whole process from tire development through evaluation by creating a tire model in a driving simulator and inputting characteristic value. Certainly, we will be able to do more things at the touch of a button, but it is important to be able to design technologies and products with a correct understanding of the underlying principles and facts. I don’t want our engineers to rely too heavily on AI-derived results. Instead, I want them to be able to explain the principles upon which their designs are based, and what great features make a great tire. We will also enhance training programs to nurture next-generation engineers who can use AI to expand their thinking skills and abilities.



Action promotion system (April 2023)

Spearheaded by our R&D Headquarters, we are working together with product planning, production management, sales planning and digital transformation (DX) functions and promoting sustainability-related activities based on various themes that correlate with the aims of our medium-term business plan.

The Technical Committee oversees the overall implementation of those activities and reports progress to the Sustainability Committee.



Technology-driven business strategy

Reducing the environmental impact of mobility

Reducing the CO<sub>2</sub> emissions of vehicles is a challenging issue that needs to be addressed across the supply chain. At Toyo Tire Corporation, our goal is to help reduce greenhouse gas (GHG) emissions per tire by 20% by 2030 compared to 2019 levels.

To cut CO<sub>2</sub> emissions of vehicles caused by running tires, we set the reduction of tire rolling resistance as a top priority and included improving the fuel efficiency grading of tires as a development requirement for product model changes.

Materials development is one of the approaches we use to improve fuel efficiency. We are constantly updating Nano Balance Technology, our proprietary platform technology for rubber materials, to facilitate more accurate predictions regarding specific material properties and optimize material structure, and we are now promoting the use of this technology in practical development. For instance, Comfort IIs, the new products in our PROXES global flagship tire brand series launched in Japan in 2023, uses a new naturally derived silica dispersing agent to reduce rolling resistance by 28% compared to PROXES C1S, the existing model, and to optimize wet-grip

performance and wear resistance.

We are committed to creating environmental value through the implementation of our business strategies, and by systematically and consistently improving the fuel-efficiency performance of our product lineup by coordinating the activities of our product planning and technical development teams.

\* ● Tested at: Toyo Tire Corporation, using the indoor drum rolling resistance testing machine  
● Tire size: PROXES Comfort IIs 215/55R17 94V and PROXES C1S 215/55R17 98W  
● Rim size: 17 x 7.0J ● Inflation pressure: 210 kPa ● Load force: 5.26 kN  
● Speed: 80 km/h  
\* Detailed data of this test was submitted to Tire Fair Trade Council.  
\* Different results may be obtained in tests conducted under the same condition.



Unique EV approach offers ultimate enjoyment of driving

Toyo Tire Corporation's unique strategy is to develop technologies and commercialize products in pursuit of design features and the ultimate enjoyment of driving while also satisfying high levels of environmental and safety considerations.

We participate in international races such as the Dakar Rally and the Baja 1000, which are said to be the toughest off-road races in the world. The knowledge and experience we gained from these races have fueled our product development, resulting in superior basic performance and aggressive pattern designs. Our efforts have been well received especially in the North American market, where heavy-duty SUVs have been gaining ground.

The spread of EVs is expected to both accelerate and further diversify as it makes its way to the North American market in the future. We will capture the EV market trends and work on our unique strategy to develop and enhance differentiated products that make the most of our strengths.



Vehicle equipped with Open Country M/T-R off-road racing tires

Developing solutions services

The use of IT and data is becoming increasingly embedded in the automotive industry. Going forward, this development will not be limited to manufacturing, with the very creation and utilization of data also becoming more important for improving business value. We are developing sensing technology that collects various information from tires, which are the only components of a vehicle to actually come into contact with the road surface, and promoting the idea of creating new added value by using tires as information acquisition devices.

The sensing technology calculates and processes various information detected by sensors attached to tires to derive the maximum level of tire performance. This enables us to understand and visualize the tire performance required for the road surface conditions under which the tire is currently being driven, and check whether the tire is demonstrating its due tire force\*<sup>1</sup> when driving. Right now, we are conducting trials on public roads and circuits and moving forward with development to help achieve the required level of autonomous driving safety.

The Technology Development Division and the DX Promotion Division are collaborating on an application that can diagnose tire wear based on information about the usage status of truck and bus tires. The teams are conducting trials by asking customers to try out the app so they can improve the accuracy of their predictions and expand the range of

functions to facilitate the remote confirmation of air pressure and wear prediction results. This technology enables us to help improve the safety of drivers and passengers by encouraging customers to appropriately rotate their tires based on the wear predictions. We also expect it will have environmental benefits by extending tire life and increasing the possibility of reuse as retread tires.\*<sup>2</sup>

\*<sup>1</sup> Tire force is a term assigned by Toyo Tire Corporation that refers to actual tire performance as estimated from information input from the tire, such as air pressure, temperature, road surface distinction, load, wear and any detected anomalies.

\*<sup>2</sup> A worn tire that is reused by replacing the rubber in the part of the tire that comes into contact with the road surface.



The app screen visualizes tire force during driving

Maintenance-free airless tires

Our “noair” airless concept tire is designed to facilitate maintenance-free, no-spare solutions that satisfy the needs of the next-generation mobility society in which people opt for self-service gas stations, home charging of electric vehicles and more prevalent car sharing. In 2017, noair became the first tire in the industry to demonstrate a level of performance that enabled it to be installed and driven on a passenger vehicle by achieving a level of durability and maneuverability that is close to that of pneumatic tires. We installed the noair tires on golf carts and conducted test drive events in 2022 as part of our efforts to facilitate their practical use. We are paying close attention to the formulation of laws and regulations regarding airless tires as we consider installing them on futuristic mobility vehicles and using them in recycling operations.



Golf cart using “noair” tires

Message from Vice President,  
Production Headquarters

What inspires our manufacturing

Yuji Miyazaki

Corporate Officer

Technology is advancing and the equipment used in manufacturing is becoming more sophisticated. However, I believe that manufacturing is a people-centric activity. The tires and automotive parts that the Toyo Tire Group handle are created through a number of processes that start with the kneading of rubber. Many employees play their part in each process and work closely together. Our Group has production bases in six countries around the world. Employees working in our new plant in Serbia are extremely enthusiastic to be working for a Japanese manufacturer, and I always think many of the employees at our plant in Malaysia display a level of energy that reflects their nation's growth. We have chosen to bring people with diverse ideas and different backgrounds together with a shared sense of purpose to invigorate our company and serve as a new source of growth. I feel very strongly that a company should serve as a bedrock that supports individual lives and that it must pursue sustainable development.

The production function has two main roles. One is to help create a prosperous society through our products. This forms the central axis for all that we do. We deliver products that our customers can feel comfortable and safe using because we conduct our work correctly and in accordance with standards that we have cultivated over many years. I am keen to foster a constant feeling of proximity to the customer even in the production function. We do that by guiding customers on factory visits arranged by the sales function in a proactive and

sincere manner, incorporating customer requests passed on by the sales function at the development stage, and making the most of any opportunities generated through inter-functional cooperation.

Our second role is to ensure we successfully co-exist with local communities and generate mutual prosperity. Companies that make products using the rich resources, environment, and labor of local communities have a duty to contribute to regional development. Each one of our plants works with local residents to address local environmental and social issues, and I believe the sense of belonging gained from participating in local society helps boost employee motivation and pride in their work.

The automobile is at a crossroads as its driving force shifts from the internal combustion engine to the electric motors. Our manufacturing sites are also dealing with various changes in terms of materials, manufacturing methods, required product performance and other factors. We currently apply results-focused digital transformation in the manufacturing process, but we will expand its use going forward to consider underlying elements by, for instance, analyzing and utilizing various digital data on the operational status of equipment to achieve highly efficient and high-quality manufacturing. We intend to create concrete solutions based on the answers derived from research conducted in the R&D function, because we believe that no one can give better shape to those ideas than we can. To that aim, I want to create even stronger and closer cooperation among equipment, manufacturing technology and other functions.

Launching the Serbia Factory

Initiatives designed to realize a decarbonized society are now visible across the automotive supply chain. Each of the Toyo Tire Group's production sites is playing its own part in this trend by improving the energy efficiency of manufacturing processes and expanding the use of electricity derived from renewable sources. Each production site is also working closely with the R&D function to upgrade the fuel efficiency of our products, address EV needs, and to make the necessary adjustments to production processes and equipment required to facilitate the use of sustainable raw materials.

The Serbia Factory, the Group's first production base in Europe, began operations in July 2022. The plant will serve as an export base for the buoyant North American market. It will also produce competitive tires that incorporate insight gained from the European market with its high requirements on environmental performance and other factors. The plant is expected to have a system up and running by the end of 2023

to manufacture approximately five million passenger vehicle-equivalent tires a year. The plant will also strive to reduce CO<sub>2</sub> emissions through the active use of renewable energy generated in-house by one of the country's largest photovoltaic power generation systems. This should also help advance Serbia's economic growth and progress on decarbonization. (see p46: Expanding the use of clean energy)



Message from Vice President,  
Sales Headquarters

Creating value together with customers

Tatsuo Mitsuhashi

Director, Corporate Officer

I believe that the role of the sales function is to understand customer needs, communicate those needs internally in an appropriate manner, and encourage other departments to take action to address those needs. Toyo Tire Corporation does not sell tires through directly managed outlets, so our closest customers are our dealers. We have to understand the actual needs surrounding the products that our dealers want to deliver to final users, namely consumers. We also need to develop the marketing ability to unearth the latent needs of individual dealers regarding the added value they want us to provide in terms of available approaches, proposals and services. Different markets display different characteristics and a diverse range of different needs. I believe that our strength stems from our ability to precisely marry the things that customers are looking for with the areas that we should be addressing as a company.

The mission of the sales function is to ensure the tandem pursuit of strategies on sales and distribution channels. To achieve that, it is vital to accurately understand our position in the industry and our strengths and weaknesses, and I am always looking to raise awareness of these elements within the function. To date, the Group has built its own strong customer base through on-point marketing in the North American market, the provision of technology-driven differentiated products, and the sales activities that dovetail with customer demands. In 2018, we explored the structural changes in the market and moved forward with a bold

reorganization of our customer base to meet customer expectations and enhance our presence. This move generated subsequent growth for our company that outstripped the market average.

In other markets, we are also working to change the way we sell our products, including our distribution network. We cannot leverage our superior strengths in the same way and with the same speed as our larger competitors, so we need to be the first to instigate change. We recognize there is room to further reform our methods and strengthen our customer base in markets outside of North America.

Our strength when executing these sales strategies lies in our unique and flexible cooperation between functions and our ability to adapt with agility to information from the market frontline. One of the great things about our company is its ability to nurture an understanding of the kind of business opportunities that are out there, and where, as well as how to respond to those opportunities, not only in the production, sales and R&D functions, but across the whole company. I want to continue to promote and protect our mission to deepen understanding of our differentiated products, strengthen our sales capabilities and deliver products that are tailored to local needs.

Regional and sales strategies

In the important priority market of North America, the Toyo Tire Group is developing a strategy to provide unique products that only it can supply, such as its wide light truck tires that have an overwhelming brand presence, through a sales network that is built upon solid relationships with local dealers. Going forward, we will continue to unearth potential demand and acquire new users through thorough user-focused sales and marketing activities. We will stay abreast of the shift toward EVs, while closely monitoring demand for off-road EV tires where our company excels. We are working together with the technical and sales divisions to prepare tires that dovetail with the latest vehicle development and sales trends.

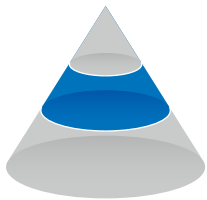
In Europe, following the launch of our plant in Serbia, we are promoting local production of products that were previously supplied from Japan and Malaysia, for local consumption. We are also using high-performance products perfected at our European R&D Center to strengthen our customer base and

shifting our focus from unit sales volumes to increasing the proportion of priority products to total sales.

In Japan, we are focusing on expanding sales in SUV and other growing categories. We are launching priority products that include our renowned sophisticated features as well as products that offer high performance in terms of low tire noise and wear resistance. We are also drastically reforming our sales systems.

In Asia, we consolidated the production in Malaysia in 2021, and are moving on to promoting the switch to the TOYO TIRES branded products and expanding sales of high value-added products.





# Material issues that underpin value creation

These material issues are recognized as an important foundation that supports the creation of unique value. Our focus is to continue to create value that delights our customers and society at large through the offering of unique products and services. To do that, we need to constantly strengthen the foundation for propelling and promoting the value creation and achieving sustainable development for the Toyo Tire Group.

Material issue

## 03 Support diverse talent with motivating challenges and job satisfaction



- Demonstrating ability and fostering motivation (developing talent)
- Securing diverse human resources (promoting diversity)
- Creating healthy working environments (reforming working styles)

Material issue

## 04 Continue innovating next-generation mobility technology



- Enhancing the development of materials and platform technologies for our products for a society of next-generation mobility
- Creating recycling technologies for products and raw materials
- Innovating low-impact alternatives to substances of concern

### Human resource base

#### Our policy

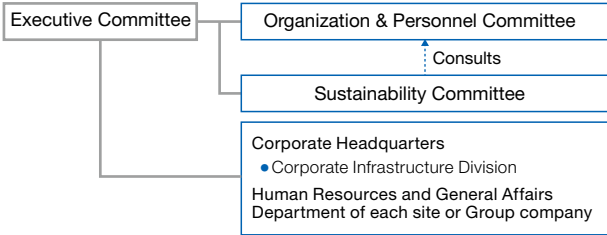
As part of our efforts to build a management foundation to support sustainable growth, we stipulated the development of a framework in the Medium-term '21 Plan that would enable diverse human resources to work together organically and play an active role based on enthusiastic job satisfaction, as well as a training system that upholds individuality, quality and ability.

We are actively developing a foundation that dovetails with these goals by enabling diverse talent to grow and play an active role, regardless of their nationality, gender, age, job experience, career aspirations or other factors. At the same time, we seek to achieve the best mix of talent through fair and unbiased recruitment and appointment that focus on ability, aptitude and achievements, and the swift promotion of the right person to the right job. In recent years, we have systematically advanced the appointment of women to management positions. Having achieved our goal to double the ratio of female assistant managers, which is a managerial candidate position, over the five years from 2016 to 2020 (2.03% to 4.65%), we have now set a goal to increase the ratio of women promoted from assistant manager to manager level or above compared to the ratio of men over the five years from 2021 to 2025 (from 70% in 2020 to between 80 and 120%).

In terms of human capital investment, we intend to invest resources over the medium- to long-term in systems that are vital for developing human resources, promoting diversity and creating healthy working environments (reforming work styles). These initiatives include the building of systems to promote the systematic development of business managers and professional talent for each function; the creation of office environments and human resources systems that diverse people are comfortable with; and the introduction of work styles and tools that help improve employee performance and communication.

#### Action promotion system (April 2023)

The Organization & Personnel Committee discusses and determines policies and important measures for strengthening the Group's human resource base, and the Corporate Headquarters is directly responsible for supervising the execution of these policies. The areas of activity relating to human resources that are entrusted to the Sustainability Committee are also based on these policies, and the committee will consult with the Organization & Personnel Committee when necessary.



#### Demonstrating ability and fostering motivation (developing talent)

In 2021, we reviewed our human resources system and significantly revised the evaluation and remuneration system and training system for the first time in 11 years. The new system clarifies what the Group expects of each role at each level and conducts evaluations based on these expectations to inspire employees to achieve results and grow. These practices are now being rigorously implemented. We also established a job evaluation system that responds flexibly to diverse job and career preferences, whether in specified or general employment, and raised the level of manager remuneration. We confirm the actual execution of these measures and systems through regular surveys and check whether they are having the desired effect. In

April 2023, we also partially revised the personnel system for non-career-track levels, including production bases.

In addition, we introduced a new training system in 2022 to promote the diversification of human resources. Specific measures covered the addition and reorganization of training at each level (the expected roles established under the new personnel system, our Philosophy and areas in which core employees should have a rudimentary knowledge, such as digital transformation and ESG issues), and the updating of selective training.

The training of general managers and division general managers seeks to encourage participants to strengthen their management skills through self-development and improve their leadership skills to help solve medium- to long-term issues. We also educate future management candidates to play an active role on the global stage through selective training for mid-level employees.

#### FY2022 training (Toyo Tire Corporation)

Training		Training hours	No. of participants
By level	New recruits	96	31
	First-year follow-up training	18	35
	Second-year brush-up training	18	33
	New assistant managers	24	35
	New managers	24	28
	New general managers/representatives	24	16
	New section leaders/assistant supervisors	8	17
	New assistant managers	8	10
	Evaluator (primary evaluator or above)	4.5	71
Selective training I		20	5
Selective training II		48	5



Domain II Foundation for value creation

Securing diverse human resources (promoting diversity)

The Toyo Tire Group is committed to ensuring fair employment practices and treatment of employees, and to creating workplaces where diverse team members can flourish regardless of nationality, gender or other characteristics.

When it comes to the recruitment of human resources, we strive to secure a diverse range of talent across the world, by recruiting both new graduates and mid-career candidates, rehiring retirees and employing people with disabilities. We do not set recruitment targets for women or candidates of foreign nationality when hiring new graduates and we follow a fair and unbiased evaluation and recruitment policy for all talent.

We conduct career-building interviews with every employee and formulate human resource development plans in order to promote the active careers of all employees. The Group uses a uniform remuneration system for both men and women and provides equal reward to people doing the same job with the same qualifications. However, our analysis suggests that the difference in the ratio of male and female managers is resulting in the difference between total remuneration of men and women. Going forward, we will more actively promote women to managerial positions, and this will contribute to resolving such pay gap.

We are enhancing our theme-based training sessions, such as LGBT, empowering women, harassment, as well as e-learning programs on diversity and inclusion, to encourage a deeper understanding of diversity from different perspectives. We also plan to hold training sessions on unconscious bias to help build a culture that encourages employees to demonstrate their individuality and fuels innovation.

Employee diversity  
(Toyo Tire Corporation, full-time employees)

Total	3,674 (-0.5% y/y)	
By age	Under 30	18.4%
	30-50	60.6%
	Over 50	21.0%
By gender*1	Male	93.1% (-0.2 pts y/y)
	Female	6.9% (+0.2 pts y/y)
People with disabilities	82	
Employees from countries other than Japan*2	14	
Total management personnel	859	
Management by gender*1	Male	94.3% (-0.1 pt y/y)
	Female	5.7% (+0.1 pt y/y)
Employees from countries other than Japan*2 in management	0.7% (-0.4 pts y/y)	

\*1 Data by gender: Refers to data based on the sex assigned at birth. We do not have quantitative data on gender identity because it is difficult to obtain, but we aim to create workplaces where all employees can take an equal active part.

\*2 Data on employees from countries other than Japan: Refers to data on foreign nationals as defined in the Nationality Act of Japan.

Creating healthy working environments (reforming working styles)

To create environments where diverse talent can flourish, we are making changes to working styles that improve work-life balance.

Since 2020, we have pursued particular measures to prevent long working hours. These include requiring all departments to take stock of their business administration and improve efficiency to create an organizational structure that doesn't require overtime, and encouraging the appropriate use of various paid leave systems. Overtime levels have decreased across the Toyo Tire Corporation compared to 2019 levels.

We also make it easier for employees to fulfill their childcare or nursing care responsibilities by establishing a leave system that enables employees to devote themselves to raising children under two years of age and caring for family members (a maximum of one year's leave for employees with immediate or second-degree family members requiring care), and creating systems and work environments that make it easier for men to take childcare leave. We have also introduced a system where annual paid leave that has expired after two years can be reinstated and used for reasons such as injury or illness, childcare or nursing care, volunteering, or hospital visits or hospitalization for pregnancy or infertility treatments.

We have achieved the targets set out in the action plan formulated based on Japan's Act on Advancement of Measures to Support Raising Next-Generation Children, and have received "Kurumin certification" from Japan's Minister of Health, Labour and Welfare in 2020 for satisfying certain requirements.

Meanwhile, we have reviewed our internal dress code to take into account diverse values and lifestyles and we have used the post-COVID era as an opportunity to change practices and create workplaces that enhance output through office reforms.

Employee opinion survey

We started conducting employee opinion surveys in 2021 to obtain a snapshot of our organizational culture, and are committed to conducting subsequent surveys once every two years in principle. Action plans for dealing with any issues identified by the survey results are independently and autonomously formulated and implemented by each headquarters based on the Toyo Tire Corporation's overall policy. Getting each headquarters to develop specific measures to address their own strengths and weaknesses will help generate improvements and resolve problem areas. As the secretariat, the Human Resources Department regularly monitors the progress of any measures taken, strives to steadily improve organizational culture through PDCA cycles, and reports to the Organization & Personnel Committee.

Platform technologies

Our policy

The Toyo Tire Group believes that the value we provide through our products and services must support the evolution of mobility required for a new age. We will continue to challenge technological innovation to help build a society that exists in harmony with the environment and supports safe driving.

Action promotion system (April 2023)

R&D Headquarters is responsible for promoting initiatives in this area. The Technical Committee oversees all initiatives and reports progress to the Sustainability Committee.

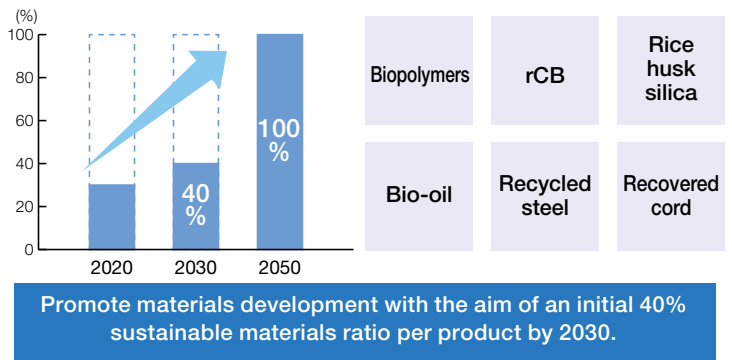
Expand the use of recycled and renewable raw materials

As a global manufacturer, we believe it is our mission to help promote the transition from a society that consumes resources to a society that circulates resources.

We conduct materials research and development with the aim of increasing the ratio of sustainable raw materials\* used in our products to 40% by 2030 and 100% by 2050.

For example, by 2025, the Group plans to gradually introduce products made from recycled raw materials, such as recycled rubber made from used tires and recovered carbon black (rCB), as well as products made from highly wear-resistant materials. Furthermore, we are developing technologies to reduce the amount of petroleum-derived raw materials used, which have a large impact on climate change, and increase the use of naturally derived raw materials, such as biopolymers, which exert less impact.

Sustainable technology development: Initiatives and targets

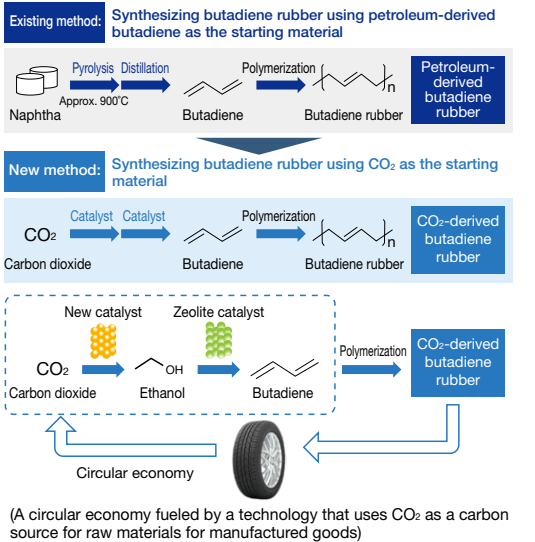


\*Toyo Tire Corporation defines sustainable raw materials as recycled raw materials and renewable raw materials.

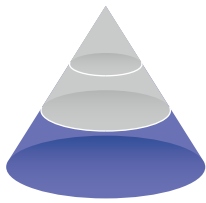
TOPIC

Successful synthesis of butadiene rubber from CO<sub>2</sub>

Joint research conducted by Toyo Tire Corporation and the University of Toyama has resulted in the development of a catalyst that converts carbon dioxide into butadiene at a high yield rate, and the successful synthesis of butadiene rubber, which is a main raw material for tires. The proportions of raw materials used in tires vary depending on the category of tire. Broadly speaking, natural rubber accounts for approximately 60% and synthetic rubber 40%, of which petroleum-derived diene rubber constitutes roughly 30%. Paving the way to naturally synthesize butadiene from carbon dioxide is expected to help minimize carbon dioxide emissions during the production process compared to existing petroleum-derived raw materials. Moving forward, we intend to proceed with the process development for mass production and aim to put it into practical use by the end of the decade.







# Material issues relating to risk management

There are various social responsibilities that we must fulfill as a company and that form the premise of our business management. These material issues epitomize the solid foundation required to ensure a sound and healthy environment and enable us to create our own unique value.

Material issue

## 05 Pursue decarbonization in all corporate activities



- Responding to climate change risks and opportunities (TCFD)
- Reducing greenhouse gas emissions
- Increasing use of clean energy

Material issue

## 06 Promote supply chain sustainability



- Procuring sustainable natural rubber
- Implementing supplier management and responding to conflict minerals risks
- Promoting efficient logistics

Material issue

## 07 Ensure the fundamentals of manufacturing: quality and safety



- Improving quality and increasing customer satisfaction
- Promoting improved awareness of tire safety

### Decarbonization

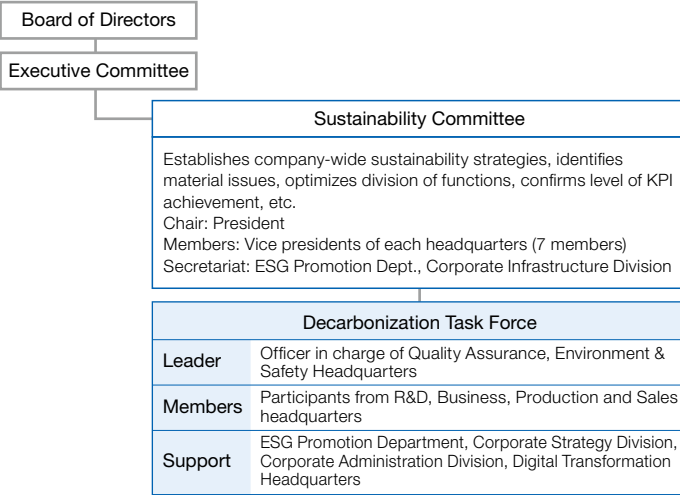
#### Our policy

The impact of climate change is becoming increasingly severe and society's demands regarding mobility are increasing all the time. The mobility business lies at the very heart of the Toyo Tire Group operation and, as such, we recognize that addressing climate change is the most important issue, and one which has the power to greatly influence our growth. For that reason, we are committed to reducing greenhouse gas (GHG) emissions and expanding the use of clean energy in order to achieve the long-term goals set forth in the Paris Agreement. We also support the TCFD recommendations and strive to disclose information based on the TCFD framework in order to stimulate dialogue, engage stakeholders and promote climate change initiatives.

#### Action promotion system (April 2023)

The Toyo Tire Sustainability Committee is chaired by the president and meets four times a year. The committee reports, deliberates and makes decisions on how to respond to climate-related and other sustainability issues, and what progress is being made. The Decarbonization Task Force, which sits under the Sustainability Committee, discusses climate-related activity plans, targets and KPIs, and the Sustainability Committee regularly confirms and monitors the status of those activities.

Any climate-related matters that have been debated and approved in the Sustainability Committee are then reported to or debated in the Executive Committee and reflected in the formulation or review of our annual and medium-term business plans. The developments are reported to the Board of Directors in a timely and appropriate fashion.



#### Climate change risks and opportunities

We conducted scenario analysis to ascertain the impact of climate change on the Group's business activities.

#### Scenario analysis process



#### 1. Select scenarios to use and understand the outlook of each scenario

We assessed the impact of risks and opportunities in a baseline scenario (3-4°C scenario) and a transition scenario (1.5°C scenario).

Baseline scenario	Transition scenario
<b>(Scenario outlook)</b> <ul style="list-style-type: none"><li>• No new political policies or stronger regulations other than what is currently envisioned</li><li>• GHG emissions increase in some areas following economic growth</li><li>• Extreme heat, heavy rainfall and other natural disasters intensify as temperatures rise</li></ul>	<b>(Scenario outlook)</b> <ul style="list-style-type: none"><li>• New policies and stronger regulations are enacted to curb climate change</li><li>• Global GHG emissions decline to net zero by 2050</li><li>• Climate change causes sea level rises and changes in weather patterns, but they remain below those in the baseline scenario</li></ul>
<b>(Main scenarios referenced)</b> <ul style="list-style-type: none"><li>• IEA Stated Policies Scenario (STEPS)</li><li>• IPCC SSP5-8.5</li></ul>	<b>(Main scenarios referenced)</b> <ul style="list-style-type: none"><li>• IEA Sustainable Development Scenario (SDS)</li><li>• IEA Net Zero Emission Scenario by 2050 case (NZE)</li><li>• IPCC SSP1-2.6</li></ul>



2. Investigate risks and opportunities, and 3. Assess significance

We identified climate-related risks and opportunities for each scenario and evaluated the significance of risks and opportunities based on the probability of certain events occurring that could prove to be pertinent factors in each risk and opportunity and the degree of impact on the expected costs and other factors in our business.

Highly significant risks

Scenario	Type	Climate-related events	Impact on business	Main financial impact	Significance
Baseline	Chronic	Changes in climate patterns	<ul style="list-style-type: none"><li>• Migration of natural rubber tree crop zone, decline in quality</li><li>• Energy supply system instability</li><li>• Increased demand for crude oil, natural gas, etc.</li></ul>	<ul style="list-style-type: none"><li>• Increased raw material prices (natural rubber)</li><li>• Increased R&amp;D costs (alternative raw materials)</li><li>• Decreased sales, worsened profits (decreased tire production)</li></ul>	Medium to high
		Temperature rises	<ul style="list-style-type: none"><li>• Deterioration of roads</li><li>• Reduced areas of snowfall</li></ul>	<ul style="list-style-type: none"><li>• Increased R&amp;D costs (heat-resistant tires)</li><li>• Decreased sales (winter tires)</li></ul>	Medium to high
		Sea level rises	<ul style="list-style-type: none"><li>• Reduced natural rubber harvests</li><li>• Compromised ports and warehouses</li></ul>	<ul style="list-style-type: none"><li>• Increased raw material prices (natural rubber)</li><li>• Decreased sales (reduced or suspended tire production)</li><li>• Inventory/product damage (flood damage)</li></ul>	Medium to high
	Acute	Increase in extreme weather	<ul style="list-style-type: none"><li>• Compromised infrastructure networks</li></ul>	<ul style="list-style-type: none"><li>• Decreased sales and profits (overall business slowdown)</li></ul>	Medium to high
		Frequent and severe heavy rainfall	<ul style="list-style-type: none"><li>• Transport network disruption, loss of commuting options</li><li>• Flooding of natural rubber plantations</li></ul>	<ul style="list-style-type: none"><li>• Decreased sales, worsened profits (revision of production plans)</li><li>• Increased raw material prices (natural rubber)</li></ul>	Medium to high
		Increase and intensification of tropical cyclones	<ul style="list-style-type: none"><li>• Marine transport delays, accidents</li></ul>	<ul style="list-style-type: none"><li>• Increased transport costs</li><li>• Inventory/product damage</li></ul>	Medium to high
Transition	Policy	Introduction of carbon pricing	<ul style="list-style-type: none"><li>• Increased service prices as costs are passed on</li><li>• Introduction of carbon border tax</li><li>• Introduction of environmental taxes to auto-related exports</li></ul>	<ul style="list-style-type: none"><li>• Increased distribution costs</li><li>• Increased costs of R&amp;D and equipment investment (shift to low-carbon products)</li><li>• Worsened profits (tariffs)</li><li>• Increased costs for purchasing carbon credits</li></ul>	Medium to high
	Market/reputation	Increased raw material costs	<ul style="list-style-type: none"><li>• Fewer rubber plantations due to poor profitability</li></ul>	<ul style="list-style-type: none"><li>• Increased raw material prices due to decreased natural rubber production</li></ul>	Medium to high

Highly significant opportunities

Scenario	Type	Changes in economy and society	Impact on business	Main financial impact	Significance
Transition	Market	Greater eco-conscious behavior by stakeholders	<ul style="list-style-type: none"><li>• Acquisition of new business partners through focus on the environment</li><li>• Increased added value of eco-conscious products</li></ul>	<ul style="list-style-type: none"><li>• Increased sales and profits (acquisition of new business partners, increased added value)</li></ul>	High
		Expansion of low-carbon product market	<ul style="list-style-type: none"><li>• Greater demand for products to go low carbon</li></ul>	<ul style="list-style-type: none"><li>• Increased sales and profits (increased added value)</li></ul>	High
	Products/services	Increased environmental awareness in customers	<ul style="list-style-type: none"><li>• Development and sales of products with low environmental impact</li></ul>	<ul style="list-style-type: none"><li>• Increased sales and profits (increased share, increased added value)</li></ul>	High
		Growth of EVs/next-generation vehicles	<ul style="list-style-type: none"><li>• Greater demand for EV tires, early-stage development and sales</li></ul>	<ul style="list-style-type: none"><li>• Increased sales and profits (increased added value)</li></ul>	Medium to high
	Energy	Skyrocketing coal and oil prices	<ul style="list-style-type: none"><li>• Expansion of EV market</li></ul>	<ul style="list-style-type: none"><li>• Increased sales and profits (sales of EV tires)</li></ul>	High

Metrics and targets

Metrics

- Greenhouse gas (GHG) emissions (Scope 1, 2, 3)
- GHG emissions intensity
- Internal carbon pricing

Targets

- GHG emissions reduction targets

\*Decided by the Sustainability Committee in November 2021 and approved by the Executive Committee in December 2021  
\*Announced on February 15, 2022

Scope 1 & 2	GHG emissions: Reduce GHG emission by 46% by 2030 compared to 2019 and aim to achieve carbon neutrality by 2050.
Scope 3	GHG emission per unit: We aim to help reduce GHG emissions per tire in 2030 by 20% compared to 2019.

Scope 1 & 2 initiatives

The amount of energy consumed increases in line with increases in production volume. However, as a means of addressing Scope 1 and 2 emissions, we are seeking to reduce energy consumption at our production bases by repairing process pipelines and introducing highly efficient equipment to improve energy efficiency, and also by encouraging automation and improving the usage of air-conditioning and lighting. In addition, we are switching to fuels that emit lower greenhouse gases.

Using heat recovered from atmospheric vapor

In August 2022, we introduced a steam ejector in our Sendai Plant that reuse steam utilized in vulcanization processes for hardening rubber. Used steam that would have been released into the atmosphere is now collected and blended with fresh high-pressure steam to create medium-pressure steam. Roughly 60% of the collected used steam can be reused, which reduces the amount of natural gas required to fuel the steam-generating boiler. This is expected to reduce the volume of CO<sub>2</sub> emitted from the plant each year by 550 tons.

Expanding the use of clean energy

The Toyo Tire Group is pressing ahead with its efforts to convert electricity used at production bases to that from renewable energy sources. In 2022, we converted 100% of the electricity purchased at our Sendai Plant to that from renewables. By the end of 2023, we plan to convert 100% of the electricity purchased at the Kuwana Plant and our tire plant in the United States to renewable electricity. After that, we will gradually expand the use of renewable electricity at our production bases in and outside Japan as well as at our Japanese administration and technical bases. The aim is to increase our global ratio of renewable electricity to 50% or higher by the end of 2023, and 90% or higher by 2030.

We are also introducing photovoltaic (PV) power generation systems for in-house consumption. The largest PV power generation system in Serbia (power generation capacity: 8.4 MW) was installed on the premises of our Serbia Factory, which launched operations in 2022. The system's annual generation of 10.15 GWh of electricity is helping reduce CO<sub>2</sub> emission by 7,100 tons a year.

Going forward, we will consider introducing PV power generation systems at other sites both in and outside Japan to help reduce CO<sub>2</sub> emissions from in-house power consumption.



PV power generating system at our Serbia Factory

Scope 3 initiatives

A calculation of GHG emissions throughout the Group's value chain based on the Japan Automobile Tyre Manufacturers Association's Tyre LCCO<sub>2</sub> Calculation Guidelines Ver. 3.0.1 revealed that emissions from product use phase in Scope 3 account for at least 80% of overall GHG emitted. Our technical division, with the help of the Product Planning Division, is working to develop fuel-efficient tires and other technologies to help reduce the CO<sub>2</sub> emitted by vehicles. According to the guidelines, fuel-efficient tires can reduce GHG emissions during use (during vehicle driving) by 95.4 kg CO<sub>2</sub>e per tire for passenger car radial (PCR) and 879.0 kg CO<sub>2</sub>e per tire for truck and bus radial (TBR) compared to standard tires. Over the medium to long term, the Group plans to upgrade fuel-efficiency performance each time it changes a tire model. (see p.35: Reducing the environmental impact of mobility)

Meanwhile, in the area of downstream transportation, we are encouraging a modal shift in Japanese trunk line transportation and promoting direct shipments of tires. These efforts helped reduce GHG emissions per tire weight by 9% in 2022 compared to 2019 levels.



Supply chain

Our policy

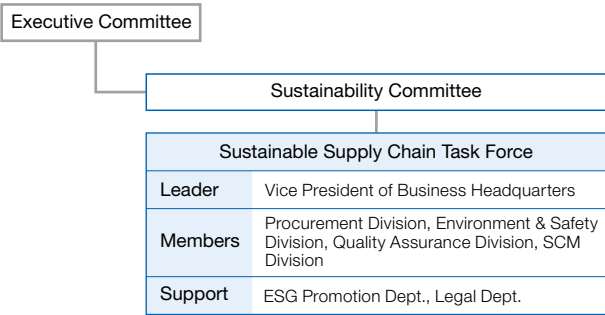
The Toyo Tire Group has established the Toyo Tire Group Basic Purchasing Policies and seeks to secure appropriate product quality and price through fair transactions.

We also formulated the Toyo Tire Group CSR Procurement Guidelines and the Sustainable Natural Rubber Procurement Policy. We work with our suppliers to further promote sustainable procurement that aims to mitigate, prevent and minimize the negative impact of our corporate activities on the environment and society and to improve our corporate value and competitiveness.

We also support sustainable logistics by improving the productivity and efficiency of truck transportation and ensuring safe cargo handling operations.

Action promotion system (April 2023)

We established the Supply Chain Task Force under the jurisdiction of the Sustainability Committee to discuss activity themes, targets and KPIs in relation to ESG issues in the supply chain. The Sustainability Committee regularly confirms and monitors the status of these activities.



Procuring sustainable natural rubber

The securing of a stable natural rubber supply into the future is an important management issue for a business group like ours that uses natural rubber as the main raw material. The natural rubber industry is facing issues relating to deforestation at production sites and the infringement of local residents’ rights. We recognize the importance of striving to solve these problems across the entire supply chain from production through consumption.

**International cooperation for building a sustainable supply chain**  
Toyo Tire Corporation is a member of the Global Platform for Sustainable Natural Rubber (GPSNR)\* launched in 2018 under

the leadership of the Tire Industry Project (TIP), which is part of the World Business Council for Sustainable Development (WBCSD). As a member, we participate in discussions designed to solve relevant issues. We are working to prevent deforestation, conserve biodiversity and water resources, uphold human rights and support local communities, improve the productivity of natural rubber and make our supply chain more transparent. We also exchange information with the civil society sector, which includes NGOs and other groupings that have specialized knowledge of environmental and social issues at natural rubber production sites.

Our aim going forward is to continue to cooperate with international initiatives and stakeholders and to build a sustainable natural rubber supply chain across our whole value chain.

Global Platform for Sustainable Natural Rubber

\*A platform that seeks to transcend industrial boundaries and ensure that the production and use of the world's natural rubber is carried out in a way that is more conscious of the natural environment and social issues.

**Promoting sustainable procurement**  
Following the guidance provided by GPSNR encouraging tire manufacturers to incorporate the platform’s Principles of Sustainable Natural Rubber into their business activities, we conducted a thorough review of the items related to natural rubber procurement that were determined as part of our CSR Procurement Guidelines. Then, from 2021, we strengthened our system based on the separate Sustainable Natural Rubber Procurement Policy. That policy is designed to improve the effectiveness of initiatives relating to healthy ecosystems, human rights, communities and other issues. Currently, in addition to conveying this policy to suppliers and asking for their cooperation, we are forming contracts with suppliers and exchanging information with environmental NGOs to ensure a

level of traceability that complies with the activity plan prescribed by our Supply Chain Task Force. We have also set up a dedicated contact point specifically for the natural rubber supply chain. We received no reports in 2022.

Supplier management

**Using guidelines to engage suppliers**  
We have formulated the Toyo Tire Group CSR Procurement Guidelines and request suppliers to pursue activities in accordance with these guidelines to help address environmental and social issues across our entire supply chain. We also appeal to our suppliers to help convey the purpose and nature of these guidelines further up the supply chain. The guidelines are reviewed whenever there is change in social demands or the business environment. The guidelines have been published in Japanese, English and Chinese.

To help objectively assess environmental and social risks in our supply chain, we formed a contract with EcoVadis, a third-party organization that conducts CSR assessments, and commissioned CSR questionnaires of our suppliers from 2022. We conduct risk assessments based on the results of fair and objective surveys carried out by EcoVadis expert analysts, promote engagement with suppliers, and work together to solve any issues in our supply chain. We are gradually expanding the survey’s reach, starting with natural rubber suppliers, and aim to cover all our suppliers by the end of 2025.

Furthermore, since 2021, we have been conducting our own questionnaire of existing suppliers with regards to decarbonization, and we will strive to solve issues in order to reduce the environmental impact of our supply chain.

**Fair and transparent transactions**  
We declared our commitment to free competition and fair trading in each market in the Toyo Tire Group Code of Conduct. We conduct our activities in compliance with antimonopoly and subcontracting law, pursue fair procurement activities, comply with import and export-related laws and regulations, and ensure appropriate labeling and product explanations.

For instance, the Group seeks to ensure business activities are based on fair and free competition by establishing purchasing regulations that stipulate the thorough implementation of fair and non-discriminatory business dealings and prohibit the development of personal interests with suppliers. At Toyo Tire Corporation, we have established anti-cartel regulations to prevent cartels and bid-rigging activities. In addition, we continuously perform self-inspections regarding compliance with subcontracting law and implement e-learning programs on the law.

Responding to conflict minerals risks

**Conflict minerals response**  
In Europe and the United States, manufacturers are legally obliged to conduct due diligence when purchasing conflict minerals (tin, tantalum, tungsten and gold) and cobalt mined in conflict and high risk areas in light of the fact that the money from such purchases may be used to fund local armed groups and promote corrupt practices, such as human rights infringements, bribery and money laundering. When procuring minerals and raw materials mined and manufactured in such areas, the Group’s policy is to ensure those materials are not linked to human rights violations, environmental destruction, conflict, or corruption, and we enlist the cooperation of suppliers to trace back to the smelters and confirm that the raw materials purchased by the Group are not linked to any such inhumane acts. We would request remediation through our suppliers if any such concerns were to emerge.

Efficient logistics

As the shortage of truck drivers grows ever more serious in Japan, the Ministry of Land, Infrastructure, Transport and Tourism is developing initiatives to improve the productivity and efficiency of truck transportation and create more comfortable working environments.

To promote efficient logistics, Toyo Tire Corporation is instigating a modal shift to ships, national railways and large trailers for the long-distance transportation of goods in Japan dispatched from our factories. We have already shifted over 50% of transportation to these new modes, and, ten years from now, we aim to have reduced long-distance truck transportation to roughly half of 2022 levels. Ensuring even safer cargo handling operations will not only reduce the burden on drivers, but will also fuel economic growth and help create higher levels of job satisfaction.

Specific initiatives

- Introduced and expanded large container transportation by Japan Freight Railway Company for shipments from Sendai Logistics Center and Kuwana Logistics Center
- Introduced a large trailer transportation method that reduces the burden on the driver by changing drivers at transit points
- Installed safety fences in our Sendai Logistics Center warehouse following a risk assessment (to prevent tire racks from toppling or items from falling in the event of an earthquake)
- Installed monitoring cameras at logistics centers in each plant and distribution centers in Japan to ensure safe operation; installed monitoring cameras to ensure safe forklift operation



Quality

**Our policy**

Our principle for manufacturing is to provide high-quality and safe products and services that are useful to society, and we state our basic policy for product quality and code of conduct in the Toyo Tire Group Global Product Safety Policy.

The policy clearly states that product safety and global environmental protection must be taken into consideration throughout the value chain, from the product planning, development and design stages to production, sales, use and after-use.

We operate a quality management system based on IATF 16949 (or ISO 9001 at some production sites) predominantly at our production bases, and take measures against risk.

—ISO 9001 certification (as of the end of May 2023)

Production bases: 14 sites (3 Toyo Tire Corporation sites\*, 11 affiliated company sites)

Sales bases (affiliated companies): 4 sites

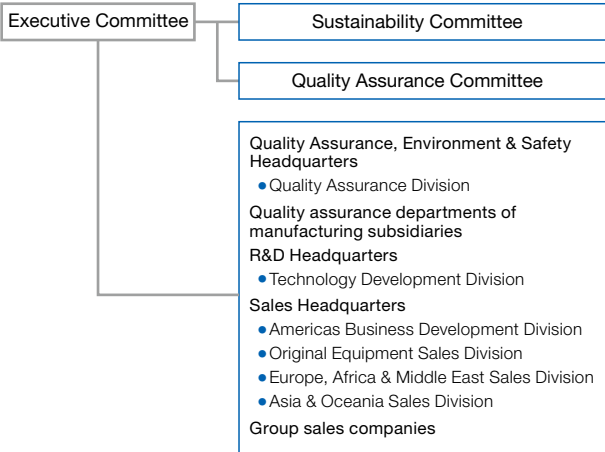
\*The Kuwana Plant has independently acquired certification at two sites: its tire production plant and automobile parts plant.

—IATF 16949 certification (as of the end of May 2023)

Production bases: 9 sites (3 Toyo Tire Corporation sites, 6 affiliated company sites)

Action promotion system (April 2023)

Quality Assurance, Environment & Safety Headquarters is responsible for promoting initiatives in this area, and reports progress to the Sustainability Committee.



Improving product quality

Meeting the quality standards of each country

In the face of factors such as greater climate change risks, many countries are rapidly introducing new regulations related to the environmental performance and quality of vehicles to promote higher fuel efficiency and reduce the CO<sub>2</sub> emissions. We are working to strengthen our response to quality standards

throughout the Group to ensure we comply with the increasingly complex quality-related regulations in each country.

Our tire and automotive parts businesses each hold annual Global Quality Management Committee (Global QMC) meetings, bringing together quality assurance managers and relevant representatives from manufacturing bases worldwide to share and discuss each site's initiatives related to product quality, improvement of quality assurance systems for production, and quality-related demand of our business partners.

In addition, at the four tire testing and evaluation sites in Japan, we test our tires in compliance with ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) since our initial certification in 2013, and have been working to improve test accuracy and reliability to continue conducting tests in accordance with standard requirements.



Example Efforts to Meet Quality Standards

- Collecting information locally
- Making recommendations by participating in industry groups
- Exchanging opinions with regulatory institutions
- Sharing information on the latest legal and regulatory trends
- Giving presentations on legal and regulatory matters

Increasing customer satisfaction

Responding to feedback from consumers

Every piece of feedback that we receive from our customers is valuable and conveys their expectations in the Group, thereby providing us with opportunities to further improve our products and services. In 2022, our Japan-based Customer Relations Department received a total of 2,669 inquiries by telephone or via our website. We respond to such inquiries by giving priority to accurate and simple explanations.

We analyze the content of these inquiries and send the findings to relevant departments to improve the usability of our products and services. Such efforts have led to the development of the Open Country series, our popular line of SUV tires, and the improvement of the readability of our catalogues and websites.

We take complaints seriously, and work with the Group's sales offices and technical service departments to ensure that issues are dealt with promptly and satisfactorily, and that the problem or complaint is resolved so that we can build long-lasting positive relationships with customers.

Visualizing manufacturing quality using manufacturing execution systems (MES)

The Toyo Tire Group aim to build a quality assurance system that can predict and prevent issues from occurring in the manufacturing process.

We have introduced automatic measuring instruments into the tire manufacturing process, and are launching a system that digitally collects and visualizes quality- and production-related information from production equipment. This will ensure quality in each manufacturing process, and make it possible to analyze and monitor collected data to detect changes in process trends.

Starting with the installation of manufacturing execution system (MES) at our Serbia Factory, a new production base that opened in 2022, we are working to introduce MES at other production bases, as well as foster data-centric talent and corporate culture.

TOPICS

Quality initiatives at our Serbia Factory

Our Serbia Factory, opened in 2022, features state-of-the-art technologies, such as enterprise resource planning (ERP) and MES, to visualize processes. By precisely linking the status information of each piece of highly productive production equipment, this "smart factory" unlocks a higher dimension of production management system optimization.

By using cutting-edge materials researched and developed at our R&D Center located in our European headquarters in Germany and by using high-performance technologies in each design process, the plant is responsible for the production of high-performance, competitive tires that respond to market insights, including the shift to EVs. The proving ground with a straight track of 720 meters and a total length of 1,690 meters, located adjacent to the plant, is used to carry out test runs. We use the results to promptly verify compliance with finely-segmented laws and regulations, and certification requirements in Europe.



Tire proving ground for Serbia Factory

Tire safety awareness activities

We believe that one of our most important duties is to help drivers learn how to use tires appropriately. Since the emergence of COVID-19, demand for cars as a means of transportation has increased, and improving awareness of safety precautions has become even more important.

Using our proprietary driving simulator, we offer a workshop for driver to experience the difference between worn and new tires when breaking on wet roads or getting a puncture, and maneuverability under different tire pressures. The results of a post-workshop questionnaires of participants indicates that this workshop has led to an increased awareness of tire safety.



A participant using the driving simulator