

Development Strategy

Message from the CTO

Anticipating social challenges beyond 2030, we are accelerating technological development, contributing to the realization of a prosperous society.

Mitsuhiro Nawashiro
Director, Corporate Officer, CTO



Development Policy toward the 2030 Business Plan

We are developing products to expand our car-centered technologies into diverse fields, aiming to contribute to the overall progress of future society. Our 2030 Business Plan focuses on delivering value through three key initiatives: "Safety" based on our safety systems, "Comfort" grounded in interior and exterior components, and "Decarbonization" through new businesses in high-performance polymer materials. To achieve the 2030 Business Plan and address social challenges with an eye to 2035 and beyond, we are driving forward three policies:

1. Expanding safety products to eliminate traffic fatalities and developing comfort-oriented products with a focus on autonomous driving
2. Developing technologies that lead the way in carbon neutrality and circular economy

3. Focusing on solutions in the key areas of Healthcare, Smart Homes, and Energy

Expanding Safety Products to Achieve Zero Traffic Fatalities

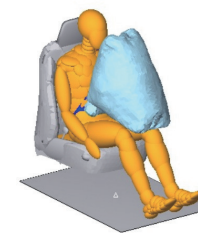
Globally, traffic accidents claim around 1.2 million lives annually, and efforts across industry, government, and academia are being strengthened to try to achieve zero traffic fatalities.

As an airbag manufacturer, we are working to develop airbags that respond to various types of collision accidents based on our abundant experience and technological capabilities to contribute to reducing the number of traffic fatalities. We promote the development of innovative safety technology based on the key concepts of safety and comfort, as a company that handles safety products such as steering wheels and airbags.

By analyzing traffic accidents in regions around the world, we are implementing forward-looking measures and responding to safety issues from a global perspective. We will anticipate these needs and work to expand preventative safety technologies addressing collision safety issues in conjunction with autonomous driving and ADAS. Specifically, by installing sensing technology and HMI notification technology in steering wheels and instrument panels, we are able to enhance safety according to individual driver conditions.



Biometric sensing steering wheel (such as to detect alcohol)



Lap airbag

For example, by using technology to monitor the driver's condition through biometric sensing, provide driving support tailored to the driver's physical state, and prevent drunk driving, enhanced safety can be achieved. Furthermore, seat-integrated safety devices, such as lap airbags, can create a safe vehicle interior and provide new value and safety space. In addition, regarding new mobility safety other than vehicles, we will pursue even greater safety by evolving the safety technologies accumulated to date and utilizing them in drone crashes, new forms of mobility, and other applications.



Airbag for drones



Specified small motorized scooter as a new form of mobility (airbag)



Wearable airbag

Looking ahead to future challenges in a mobility society, we are changing the broad concept of providing safety to everyone on the move into concrete solutions, and by proposing products that exceed expectations, we will contribute to achieving zero traffic fatalities.

Providing Comfortable Spaces for Autonomous Driving

Autonomous driving technology is advancing rapidly, with research and development ongoing in regions such as Japan, China, and Western countries, and regulatory frameworks for autonomous driving have also begun in various countries. Going forward, efforts to expand practical applications from demonstration tests are expected to accelerate further. As autonomous driving technology becomes more widespread, there will be a focus on diversifying ways to utilize in-vehicle spaces, and we will work on planning and developing various

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elemental technologies to create safe spaces with personalized comfort.

By tracking the rapid evolution brought by CASE from a practical and technical perspective in regions around the world, making accurate future predictions, and anticipating shifts in people's values, we aim to develop products from a global perspective. Toyota Gosei will leverage this strength as one of the few manufacturers that handle both safety systems, such as steering wheels, and interior and exterior components.

Specifically, we aim to create overwhelmingly convenient spaces by combining modular technologies for components such as the steering wheel, instrument panel, and center console. In addition, by harmonizing sensory elements—such as light, sound, and fragrance—that appeal to all five senses, we believe we can provide comfortable spaces with new value.



Toyota Gosei's vision of the cockpit beyond 2030

Anticipating the value expected in future forms of mobility, we are changing the broad concept of spaces and mobility into concrete solutions, while contributing to the future of mobility by proposing products that exceed customer expectations.

Contributing to Society through Plastic Structural Components

As the trend for vehicle development progresses, lightweighting to enhance driving performance and modularization to simplify manufacturing have become key development themes.

While plastic replacement of metal parts is one solution to reducing weight, our approach focuses on enhancing strength and rigidity through material development, structural design, and manufacturing capabilities. By taking advantage of the freedom of design of plastic to integrate surrounding components, consolidate functions, streamline processes, and incorporate peripheral components such as wire harnesses, we propose structural components that contribute to labor savings during vehicle assembly. These technologies also offer enhanced freedom of design, with the potential to realize vehicle-transforming architecture and create a spacious interior.

Through these initiatives, we will improve fuel efficiency through weight reduction, increase freedom of design through functional integration, and change logistics, processes, and work styles through modularization, thereby contributing to the future of vehicles, the environment, and society.



Achieving expansive space through the use of plastic-based structures (instrument panel reinforcement)

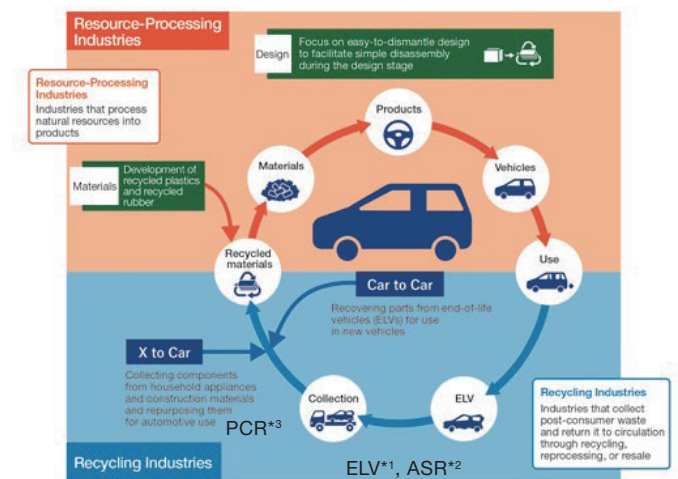
Carbon Neutrality/Circular Economy

As a manufacturer specializing in rubber and plastic polymer materials, we are promoting carbon neutrality and circular economy initiatives worldwide. One such goal is to reduce Scope 3 (Category 1) CO₂ emissions by 27.5% compared to 2019 levels (SBT criteria) by 2030. To achieve this target, we will steadily advance our efforts by incorporating items that contribute to reducing emissions into our design specifications based on the three pillars of utilizing recycled materials, reducing material use, and utilizing bio-derived materials. Specifically, the use of recycled materials is a key pillar of our

circular economy initiatives.

We are developing recycled plastics and rubbers, and have introduced ELV*¹-derived recycled polypropylene (PP) into the market for interior and exterior products ahead of the rest of the world. Going forward, we will continue to develop lower-cost, high-performance materials to expand their application on a component-by-component basis.

We announced that we will use 1,200 tons of recycled rubber annually, and will continue to develop higher-quality materials, including our own waste materials as well as waste materials from other companies and materials recovered from the market. In an effort to integrate upstream and downstream operations, we will strengthen external partnerships and ensure the quality of recycled materials by securing recycled resources and developing new technologies. In this way, we aim to further contribute to society in the areas of carbon neutrality and circular economy as an environmental leader.



*1 ELV: End-of-life vehicle; a vehicle that has reached the end of its usable life

*2 ASR: Automobile shredder residue

*3 PCR: Post-consumer recycled material

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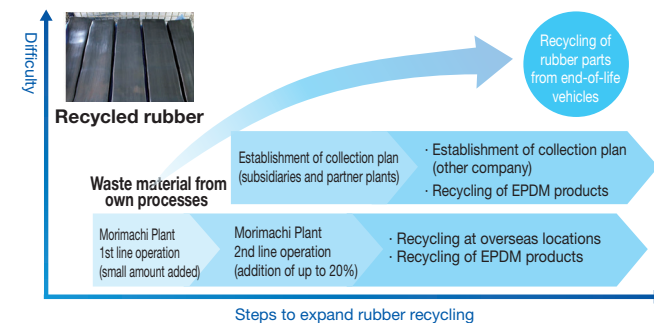
Building Stronger External Partnerships

To realize a recycling society, we are accelerating our efforts through proactive external partnerships. Through collaboration with the Japan Auto Parts Industries Association (JAPIA) and the Japan Automobile Manufacturers Association, Inc. (JAMA), we contribute to establishing rules for the use of recycled materials and promote industry standardization.

In developing materials, we aim to establish an integrated circular system, from raw material procurement to automotive application and recovery, through collaboration between upstream and downstream sides. Furthermore, by leveraging government subsidy projects, we have begun developing next-generation recycling technologies, such as easy vehicle disassembly techniques and application of X-to-car materials. In addition to our own efforts, we will promote the realization of a recycling society through co-creation involving industry and society as a whole.

Recycled Rubber Initiatives

In October 2024, we began operation of our second rubber devulcanization and recycling line, doubling our production capacity to 1,200 tons per year. In addition, we announced to the Ministry of Economy, Trade and Industry's Circular Partners that full production will be achieved by 2030. To realize this target, we are expanding the range of waste materials utilized and are examining waste materials from partner plants, functional components such as hoses, and processes at other companies. Going forward, development will proceed with an eye on recycling natural rubber such as from ELV-recovered weatherstrips and tires.

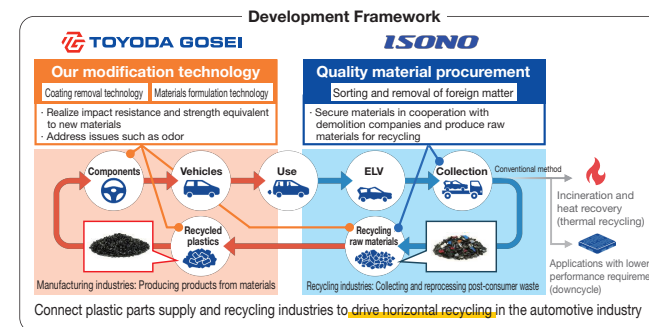


In addition, we have developed devulcanization technology that significantly increases the recycled rubber content from the conventional level around 5% to 20%, and it has been selected for use in vehicles for mass production by the end of 2025. We will continue to lead the rubber recycling industry in developing the technologies of the future.

Recycled Plastic Initiatives

We are focusing on the development of recycled plastic materials to enhance circularity and reduce CO₂ emissions throughout the entire vehicle lifecycle. Raw materials for recycling collected on the market often contain various foreign substances, making them unsuitable for direct use in automotive parts. Through collaboration with recycled material manufacturers, we are working on the development of high-quality recycled polypropylene (PP) materials suitable for automotive parts by utilizing technologies for removal of foreign substances and modification of polymer materials. Products developed last fiscal year in collaboration with Isono Co., Ltd. using recycled PP materials derived from ELVs have already been approved for use.

Going forward, we will expand their application to future vehicle models and other interior and exterior components, thereby advancing the application of recycled materials. In FY2025, we will promote the development of recycled materials using automotive shredder residue (ASR) and post-consumer recycled (PCR) material from other industries.



For initiative details, refer to our website.

New Businesses

Creating New Businesses to Enhance Corporate Value and Resolve Social Issues

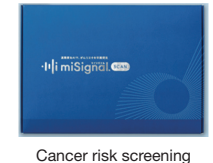
In January 2025, we established the New Value Business Division, consolidating previously dispersed new business functions to accelerate the process from business creation to commercialization.

In addition to semiconductor businesses, such as LEDs and power devices, we will promote the development of solutions in the key areas of healthcare, smart homes, and energy that aim to solve societal challenges.

Healthcare: Preventive Health

As a health management company, we focus on the healthcare field, especially prevention, to help extend the healthy lifespan of employees and their families. Collaborating with startups funded by corporate venture capital, we started providing employees cancer risk screenings, a blood sugar management program, and other services through the health insurance union. After completing in-house demonstrations, we aim to expand similar health management solutions to other companies through the development of new businesses.

In addition, we will provide local governments a short-distance walking analysis service using our smart insole developed in-house to support the health promotion of the elderly and promote its commercialization.



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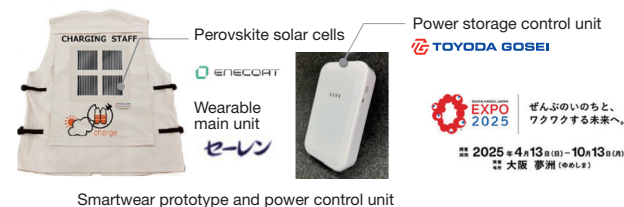
Energy: Perovskite Solar Cells

We believe that maximizing the use of renewable energy is essential to achieving carbon neutrality and a decarbonized society. As such, in January 2023, we leveraged our corporate venture capital function to invest in EneCoat Technologies Co., Ltd., a startup engaged in the development of perovskite solar cells, and began developing applied products using this next-generation solar cell technology.

One such applied product is a smartwear prototype, in which an EneCoat solar cell is affixed to clothing to provide cooling and heating using the generated electricity. Utilizing our high-frequency power supply control technology, we developed a power control unit that stores electricity generated by solar cells. In addition, we established a technology that integrates solar cells into clothing without wiring, by combining sewing technology with Viscotecs, the proprietary technology of our partner company Seiren Co., Ltd. With the aim of accelerating development toward commercialization, we collaborated with private pavilion exhibitors at the 2025 World Exposition, held from April 13 to October 13, 2025, to conduct demonstration tests of durability and other factors.

We have also conducted field verification of perovskite solar cells installed outdoors and have begun societal demonstrations using applications at golf courses as a use case. Going forward, we will consider installation of the technology on exterior walls of houses and buildings to realize further development.

[For initiative details, refer to our website.](#)

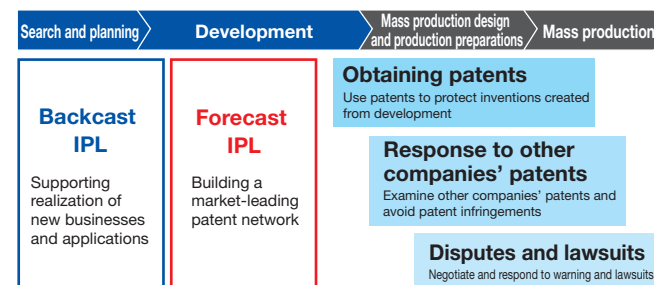


Social demonstration of perovskite solar cells

Intellectual Capital Strategy

Implementation System

Intellectual capital is a source of sustainable growth. We have established an Intellectual Property Department to create and properly manage intellectual property that supports our business activities utilizing our human resources, technology, organizational capabilities, and other strengths. As a key initiative under the IP Landscape Project, we are promoting both Backcast IPL and Forecast IPL. These initiatives are submitted to the Board of Directors, ensuring appropriate oversight.



Details of IP Landscape Activities

Backcast IPL: Supporting the Creation of New Businesses

The goals of Backcast IPL are to contribute to rapid commercialization of new initiatives and support sustainable growth. To ensure the early implementation of new businesses using technologies such as perovskite solar cells, microwave electricity supply, GaN-based power devices, and plastic and rubber recycling, we are conducting overview and analysis of internal and external technologies, brainstorming ideas, and providing support for enhancing relationships with external partners.

Forecast IPL: Building a Market-Leading Patent Network

Forecast IPL is an initiative to transform intellectual capital in existing business areas in response to the future market and evolving values and needs, in anticipation of these changes.

For each initiative, we provide proposals on key points where intellectual property rights should be secured using intellectual property information.

Management of Intellectual Property Rights

The number of patents registered in FY2024 was 213 in Japan and 104 outside Japan, and the total number of patents held as of March 31, 2025 is 2,354 in Japan and 2,045 outside Japan. In our patent portfolio, domestic patents account for 60% in the automotive sector and 40% in non-automotive sectors. We carry out development to achieve our business plans and protect the outcomes as patents, thereby strategically building a patent portfolio based on our vision, and through this approach, we contribute to realizing our business objectives. In this way, we promote and manage the acquisition of technologies, contributing to enhancing the corporate value we aim to achieve.

Taking into account future sales and profits of each business area, as well as competitor trends in the industry, we optimize the number and proportion of patents held by each business across the Company. To achieve this, we review the number of patent applications in each year as a KPI. This is a two-pronged initiative involving acquiring necessary patents and releasing unnecessary patents.

[For initiative details, refer to our website.](#)

Percentage of patent rights held by field as of March 31, 2025

■ Automotive sector
■ Non-automotive sectors

