

Toray's Story of Creating Value



INNOVATION BY CHEMISTRY

Materials can Change Our Lives

Toray Group firmly believes that “materials, as the foundation of all products, have the power to bring about fundamental transformations in society.” Based on this belief, our goal is to become a global top company in advanced materials as an integrated chemical industry group. Since our establishment, we have positioned “contributing to communities” as the focus of our existence. Carrying this focus into our corporate philosophy of “contributing to society through the creation of new value with innovative ideas, technologies, and products,” we are ramping up efforts to solve a host of issues worldwide together with global partners by providing innovative technologies and advanced materials. With this in mind, we are working to become a corporate group that provides high value to all stakeholders.

The World as Envisioned by Toray Group in 2050





Using the Power of Chemistry to Address a Host of Issues Worldwide



Materials are the foundation of all products. And we at Toray believe that the evolution of materials is what will help change the future in a bigger and better way. Much like the butterfly effect*.

Looking at such issues as climate change, water scarcity, and the depletion of resources, the world in which we live is growing increasingly severe with each passing day. Exacerbating many of these problems, the world's population is projected to reach around 10 billion in 2050. Against this backdrop of population growth and the continuous aging of society, the need to maintain and improve people's health is becoming an increasingly important issue. Looking ahead, Toray Group recognizes the need to overcome a host of challenges for people all over the world to enjoy prolonged healthy lifestyles while benefiting from the abundant gifts of nature.

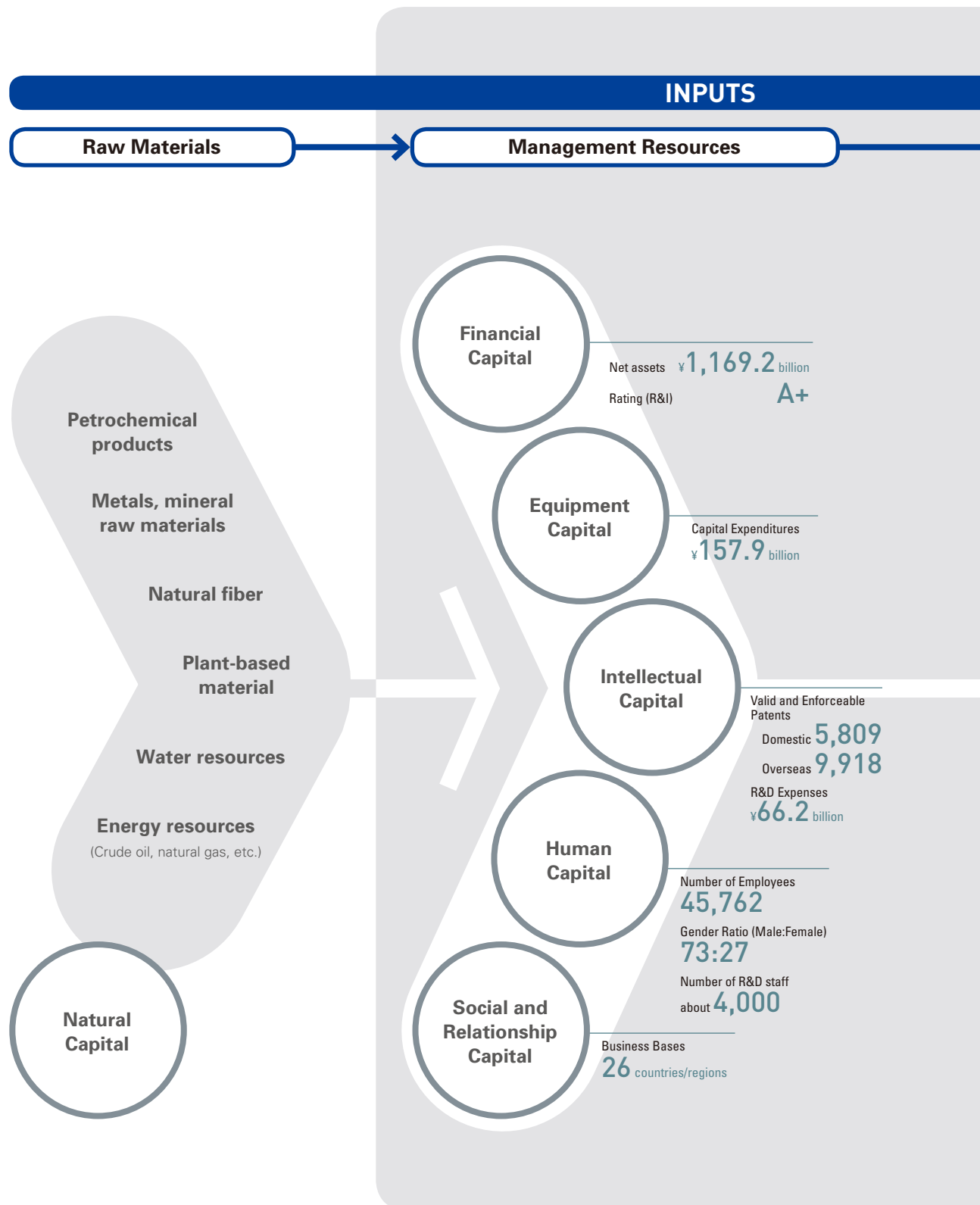
At the same time, we remain fully confident that material innovation is vital to the manufacture of attractive end products that can in turn provide the fundamental solutions necessary to address many of these global problems. It is in fact this confidence that drives our mission to develop and commercialize innovative technologies and advanced materials from a long-term perspective, and to contribute to society as a part of efforts to realize the world to which we aspire.

* The Butterfly Effect is one of the ideas in chaos theory that suggests that a flap of a butterfly's wings in one part of the world can set off a tornado in another. This idea proposes that one small change can instigate various phenomena that ultimately results in a larger transformation in the future.



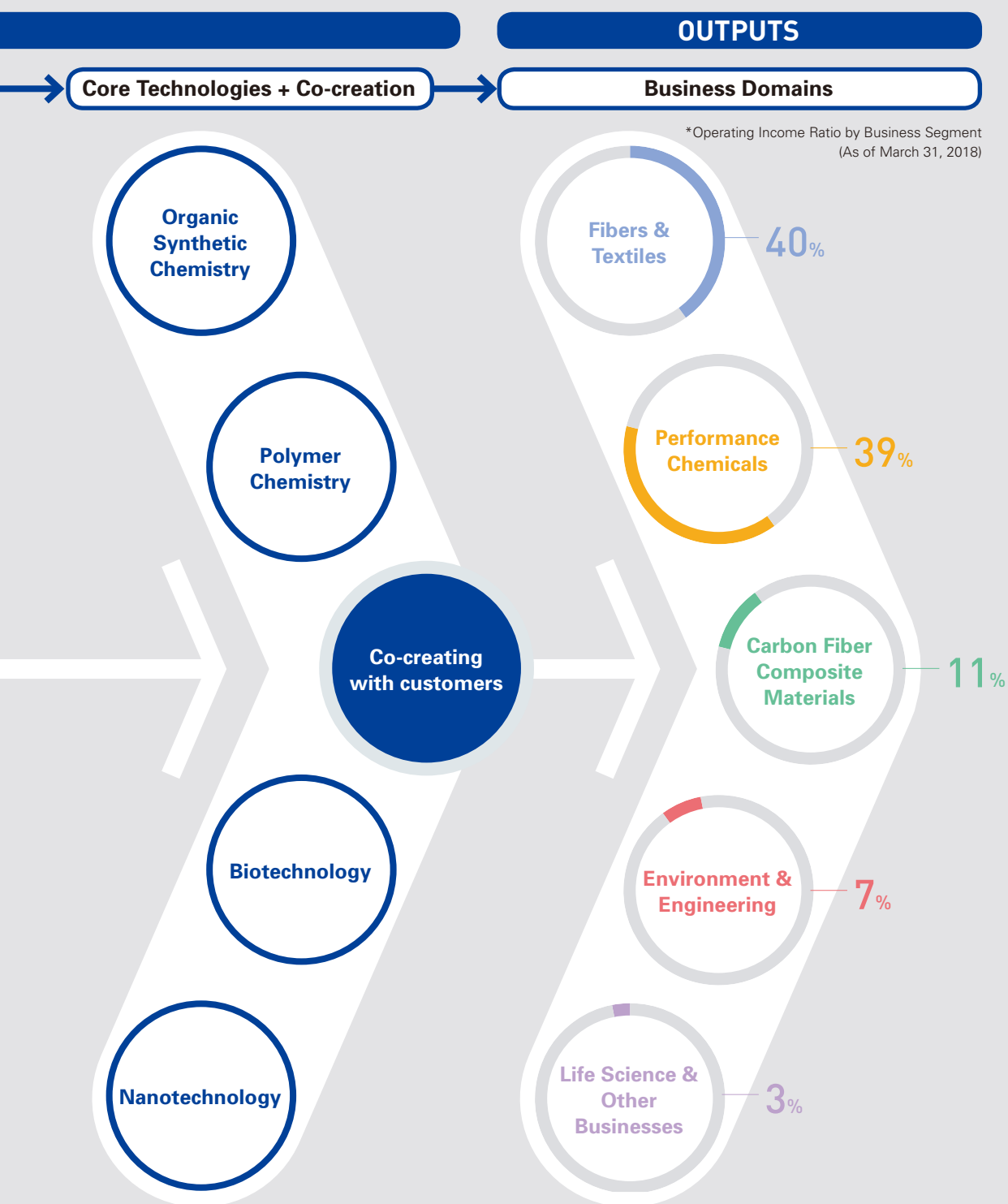
Advanced Materials Give Shape to Advanced Industries

—Toray Group's Business Process



Drawing on organic synthetic chemistry, polymer chemistry, bio- and nanotechnology as its core technologies, Toray Group provides innovative technologies and advanced materials in each of the fibers and textiles, performance chemicals, carbon fiber composite materials, environment and engineering, and life science business domains. Through a process of co-creation with customers, we are generating new value.

Toray Group's Business Process



Employees Shape the Destiny of a Company

—Toray Group’s Basic Strategy for Sustainable Growth

People-centric Management

Based on the concept that “the success or failure of a company is decided by its people, and that employees shape its destiny,” Toray has continued to nurture its employees as a long-term management resource since its establishment. Management’s efforts therefore reflect the importance placed on continuously motivating employees as the key to improving the Company’s performance.

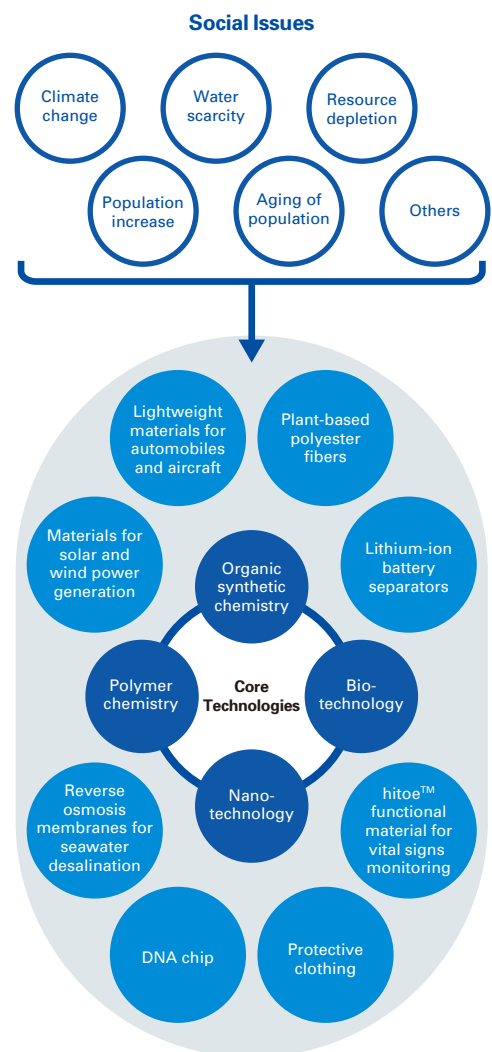
The Direction of Toray’s Human Resources Development



Toray executes diverse training programs to enhance management, sales and marketing, and production technology capabilities, and specialized skills, and to better equip employees to address globalization. These programs cover all levels of employees and fields, aiming to develop future management candidates while expanding and educating the base of core staff ready to employ their strong work place capabilities to lead on the front lines.

Toray’s Basic Strategies (Toward Sustainable Growth)

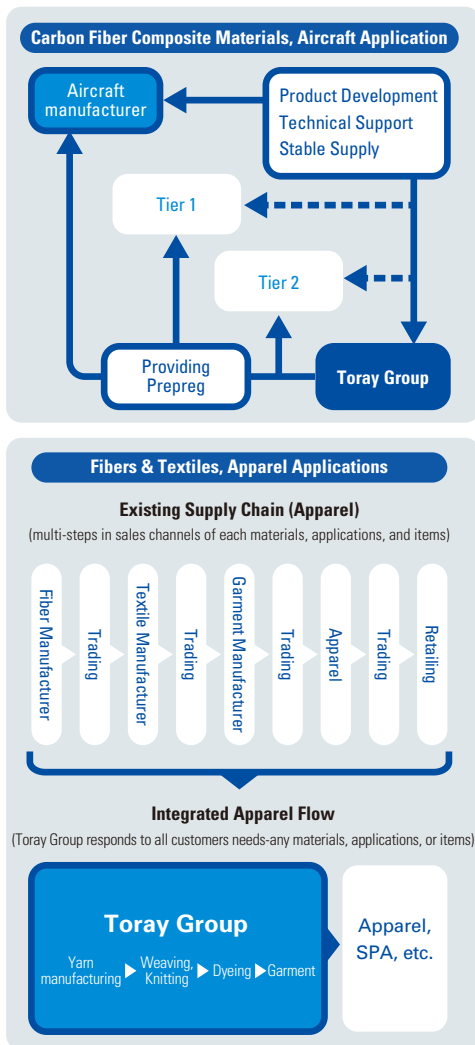
1 Developing Innovative Technologies and Advanced Materials from a Long-term Perspective



Adopting a long-term perspective, Toray sees the potential value that materials can provide in addressing social issues and market needs through innovative and effective solutions. As a result, the Company engages tenaciously in the development of advanced materials drawing on its core technologies.

Guided by the understanding that “employees shape the destiny of a company,” Toray Group is leveraging the strengths of our human resources together with our research and development capabilities while adopting the basic strategy of building competitive advantage. This enables us to ensure its sustainable growth.

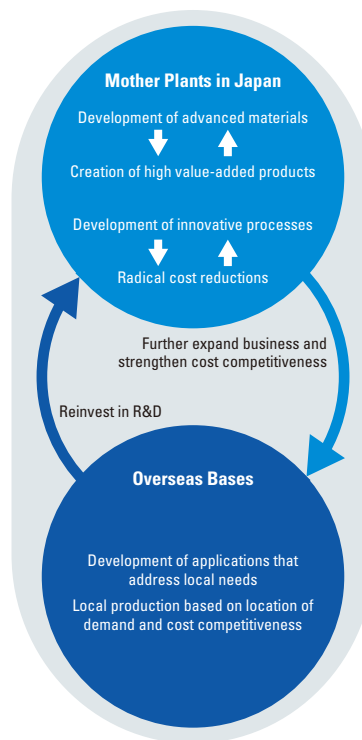
2 Carrying Out Business Strategies that Take into Account the Entire Supply Chain



Toray is building close-knit ties with powerful business partners by carrying our business strategies that take into account the entire supply chain. At the same time, the Company is honing the quality and performance of new materials. Through these means, we are establishing a position of competitive advantage.

3 Working Toward Sustainable Growth on a Global Scale

Business Bases **26** countries/regions
 Overseas Sales Ratio **54%**



Toray engages in cutting-edge innovative R&D at mother plants in Japan while working to realize a sustainable growth cycle on a global scale. To this end, we are adopting both a flexible and timely approach as we work to build a local production structure that takes into consideration the location of demand as well as cost competitive concerns. At the same time, we are undertaking the development of applications that address local needs at each site. By the same token, we are cultivating markets in growth countries and regions while taking steps to capture new profit opportunities.

Enhancing Long-term Corporate Value

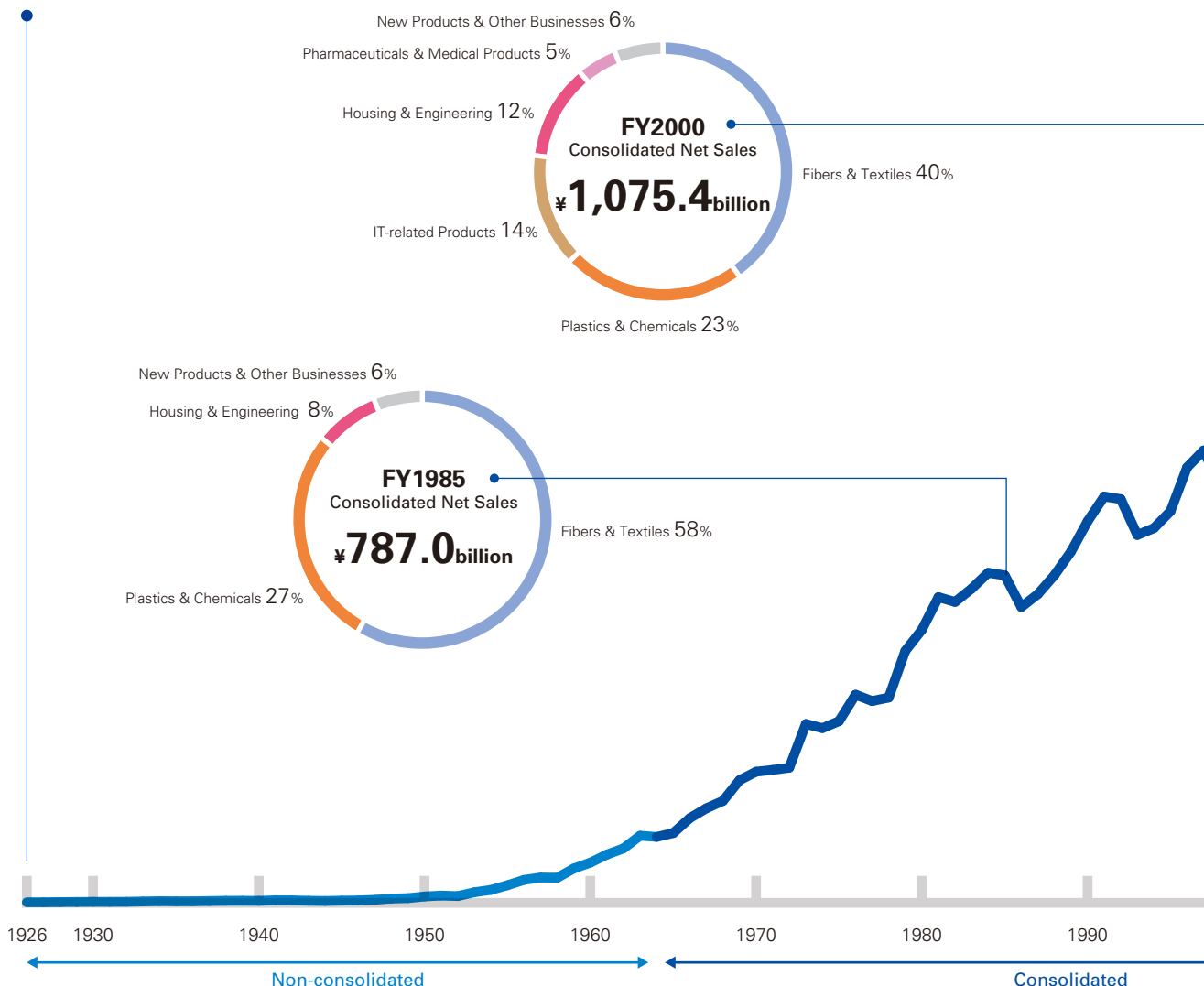
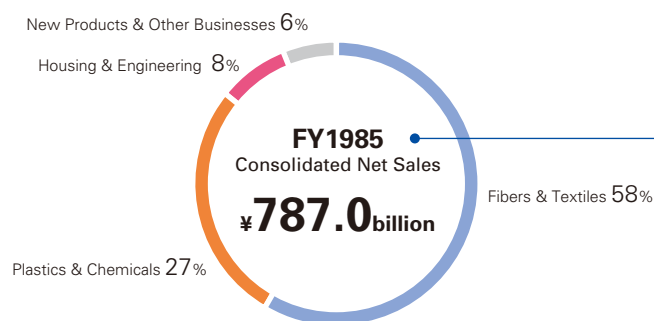
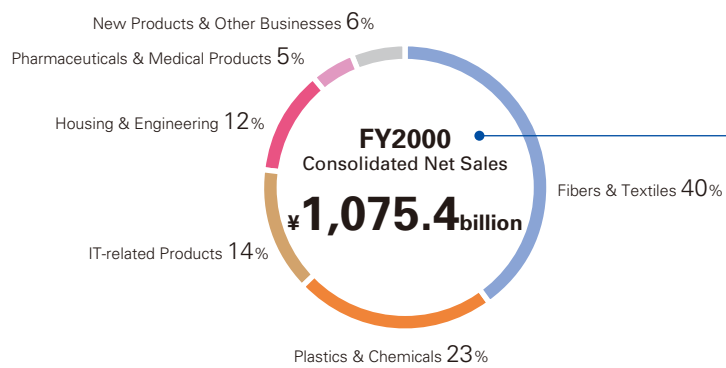
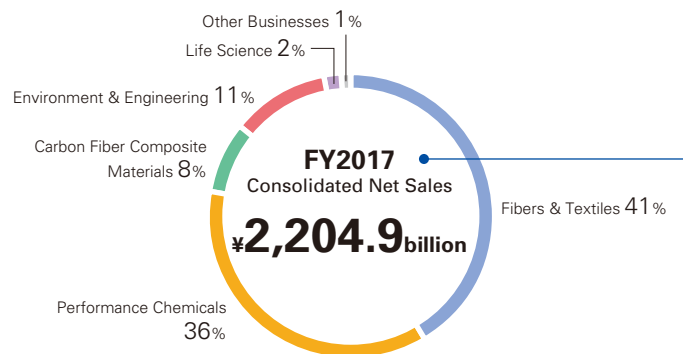
—A Path of Sustainable Growth since the Company's Foundation and Medium- to Long-term Targets (KPIs)

1926

Began as a manufacturer of viscose rayon

The former Mitsui & Co.* was an importer of rayon yarn from Courtaulds PLC of the U.K. for sale in Japan. Mitsui established Toyo Rayon Co., Ltd. based on the national policy promoting Japanese industrial manufacturing. At the inaugural meeting on January 12, 1926, Yunosuke Yasukawa—at the time a managing director of Mitsui & Co.—acted as a representative of the incorporators and stated his hopes that the company would generate “major benefits for the national economy.”

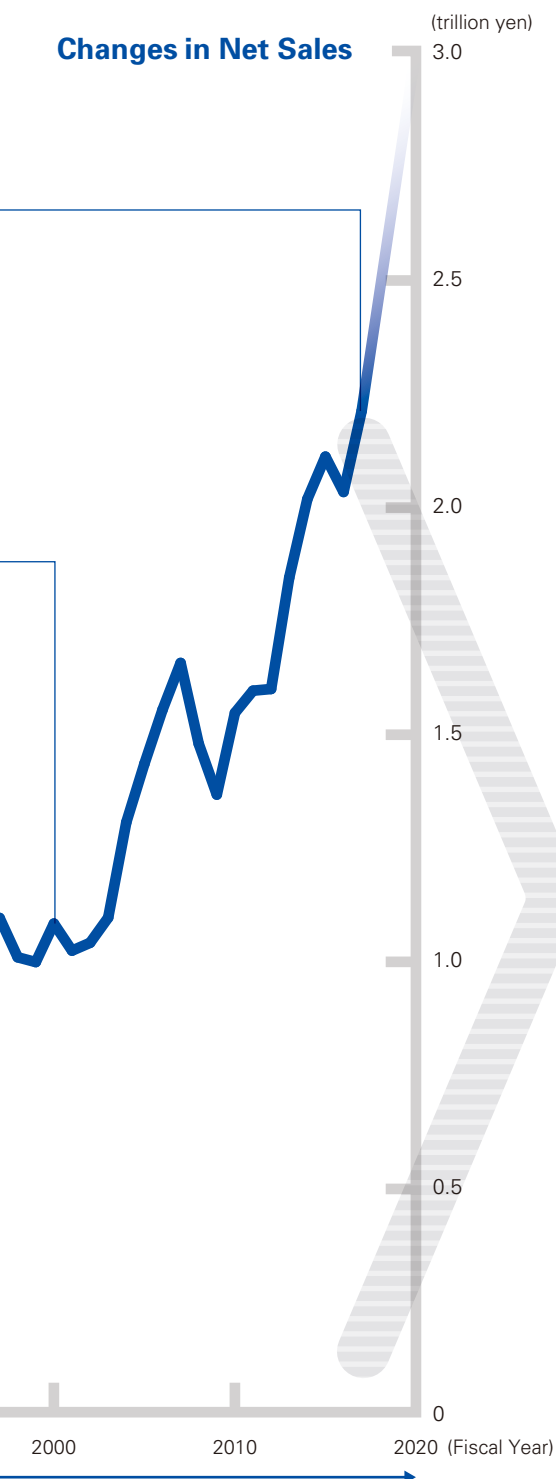
* Note that the former Mitsui & Co. was a completely different corporate entity with no legal connection to the present-day Mitsui & Co.



“US GAAP” for 1964 - 1983, “Japanese GAAP” after 1984

Toray Group began as a manufacturer of viscose rayon in 1926. On top of all three major synthetic fibers, nylon, polyester, and acrylic, the Company has continued to develop innovative technologies while creating a host of advanced materials and high-value-added products in a broad range of films, chemicals, plastic resins, carbon fiber composite materials, pharmaceuticals, and medical products, water treatment, and environmental fields. With an eye toward how society will evolve in 2050 and how innovative technologies and advanced materials may be utilized as a driving force, we will adopt a long-term perspective toward enhancing our corporate value.

Changes in Net Sales



Financial KPI	FY2016	FY2019 (Target)
Net Sales	¥2,026.5 billion	→ ¥2,700.0 billion
Operating Income	¥146.9 billion	→ ¥250.0 billion
Operating Income to Net Sales Ratio	7.2%	→ 9%
ROA	6.3%	→ approx 9%
ROE	10.1%	→ approx 12%
Dividend policy	Aim for sustainable dividend increase linked to business performance	
Guideline of D/E ratio	Below 1	
Net Sales of Green Innovation Business	¥628.2 billion	→ ¥900.0 billion
Net Sales of Life Innovation Business	¥195.5 billion	→ ¥270.0 billion
R&D Expenses	¥220.0 billion (Total of 3 years from FY 2017)	
Capital Investment	¥500.0 billion (Total of 3 years from FY 2017)	
Net Sales of New Business Creation	¥1,000.0 billion (2020s)	

Improve Long-term Corporate Value



Sustainable Related KPI (excerpt) FY 2019 Target

Environmental Management

Reduction of greenhouse gas emissions per unit of sales:

15% reduction continued (Compared to FY 1990)

Water usage per unit of sales (Compared to FY 2001): **61%** reduction

Human Resource Management

Group companies that have adopted a mid-term human resource plan: **100%**

Supply Chain Management

Number of Group companies that have requested their suppliers to practice CSR procurement: More than **40** companies

For details, we are publishing it as a KPI on promoting CSR:

Toray website > Social Responsibility > CSR Road Map

An Advanced Materials Manufacturer That Gives Shape to Advanced Industries

—A History of Value Creation

1955

Company principle established

"Toyo Rayon contributes to communities" was identified as the Company's original principle. Shigeki Tashiro, the Company's chairman at that time, states "Just like individual people, companies have a social responsibility to improve the society in which they live."

1941

Succeeded in the synthesis and melt spinning of nylon 6 fiber using proprietary technology

Developed using proprietary technology, "Nylon 6" has created new markets as a new fiber that can be applied in fishing nets as well as apparels such as stockings.



1959

Manufacture of Lumirror™ polyester film began

Toray was the first company in Japan to industrialize polyester film. Positive steps have been taken to address market growth and to adapt to changing conditions and circumstances while gaining a share across a wide range of fields such as video tapes, industrial materials, specialty products, and others.



1971

Manufacture and marketing of carbon fiber TORAYCA™ began

High-performance carbon fiber TORAYCA™ features light weight, high tensile strength, and high stiffness. Sales activities commenced under the registered trademark "TORAYCA" from 1971.



1971

Marketing of ESCAINE™, ultra-microfiber non-woven fabric with suede texture, began

ESCAINE™ is a non-woven fabric with suede texture using ultrafine microfibers. It was highly acclaimed as a fashion material for its lightweight and excellent chromogenic properties. Currently, it is being used in such areas as automobile interiors and furniture.



1976

Marketing of TORAYCON™ PBT resin began

Featuring outstanding long-term heat-resistance, chemical-resistance, weather resistance, and electrical characteristics, TORAYCON™ is widely used in various connectors and other automobile parts, bobbins, coil cases and other electronic and electrical components, and precision parts for office equipment.



1980

Marketing of ROMEMBRA™ reverse-osmosis membrane elements began

Research began in 1968 with ongoing development as a water treatment membrane. ROMEMBRA™ enabled the production of ultra-pure water for the semiconductor industry and the desalination of sea and brine water.

Since our establishment, we have positioned “contributing to communities” as the focus of our existence. Carrying this focus into our corporate philosophy of “contributing to society through the creation of new value with innovative ideas, technologies, and products,” we have created a succession of materials that bring unprecedented levels of value to the world and forged a globally leading presence as an advanced materials manufacturer that gives shape to advanced industries.



1990

TORAYCA™ carbon-fiber prepreg certified as a primary structural material for U.S. Boeing passenger aircraft

Initially the main applications of carbon fiber were fishing rods, golf shafts, and other sporting goods. Through improved technology and quality, the Company built up trust in this product as a secondary structural material in aircraft applications. In 1990, Toray prepreg was certified for the first time as a primary structural material (for structural parts where damage is directly linked to a crash) for the Boeing 777.

1986

‘TORAY’

The declaration of “A new founding” and a corporate philosophy was established to commemorate 60 years in business

We reviewed the Company principle and established a new corporate philosophy: “Contributing to society through the creation of new value with innovative ideas, technologies, and products.” At the same time, we established our new corporate symbol as further commemoration of 60 years in business.

2016

Decided to establish the R&D Innovation Center for the Future as a project to commemorate the Company’s 90th anniversary

Toray decided to establish the R&D Innovation Center for the Future at its Shiga Plant where the Company was founded, and will strengthen R&D to make people’s lives better with Kotozukuri, value creation, which utilizes the strengths of advanced materials.



2006

‘TORAY’

Innovation by Chemistry

Corporate slogan formulated

In April 2006, Toray Group created a new, long-term corporate vision—“AP-Innovation TORAY 21”—and adopted the corporate slogan “Innovation by Chemistry,” declaring its aspiration “to become a global top company of advanced materials,” while focusing on Chemistry.

2006

Strategic partnership started with UNIQLO Co., Ltd.

As a company that provides innovative technologies and materials that have the power to fundamentally change society, Toray Group entered into a partnership agreement with UNIQLO, a company that enriches people’s lives through clothes. Under this partnership both companies provide products that deliver new value and unprecedented levels of performance and comfort to people all over the world. The two companies are now on the third stage of the strategic partnership agreement.



Providing Solutions to Social Issues through Innovation —Toray Group’s Providing Value

Carbon Fiber Composite Materials

Reducing CO₂ Emissions and Realizing a New Energy Society through Lightweight Materials

Carbon fiber is one quarter the weight while providing 10 times the tensile strength of steel, plus it does not rust. Toray has tenaciously honed its stable production technology for high-quality carbon fiber for over 50 years. Toray’s carbon fiber composite materials are currently used in the manufacture of aircraft wings, fuselage and other parts helping to reduce fuel consumption and CO₂ emissions thanks to their lightweight properties. They are also used in the hydrogen tanks for wind turbine blades and fuel cell vehicles that support a new energy society.



Aircraft with 50% CFRP used in their body structure weight compared with conventional aircraft approx

20% lighter

Lifecycle CO₂ emissions exhibit a

27,000 t-CO₂

reduction per aircraft over 10 years

Fibers & Textiles, Performance Chemicals

Toward a Sustainable Society through the Use of Biomass Resources

With the increase in the world’s population as well as energy consumption, the global scale depletion of petroleum/fossil fuels and increased atmospheric CO₂ concentration (the main cause of global warming) are becoming issues. Toray believes in realizing a sustainable society that takes into consideration the needs of both the Earth and its inhabitants by changing the raw materials of petroleum-derived products. Materials and products made using Toray’s biomass-based polymers make this a reality.

Toray Group’s Vision for the World and Contributions

A net zero emissions world, where greenhouse gas emissions are completely offset by absorption

Accelerating measures to counter climate change

A world where resources are sustainably managed

Realizing sustainable, recycling-based use of resources and production

Fibers & Textiles, Performance Chemicals, and Carbon Fiber Composite Materials

Supporting the Automobile Industry, Where Technology Innovation Continues to Progress, through Advanced Materials

The automobile industry is experiencing a period of technology innovation from a wide range of energy, IT, environmental and other related perspectives. As the manner in which cars are manufactured continues to adapt to changing trends including the focus on a sustainable, low-carbon society, self-driving automobiles and the way in which people view vehicles, Toray Group is placing the utmost emphasis on four core concepts—lightweight, electrification, safety, and comfort—in its development of new materials.

Light-weight

Electrification

Safety

Comfortable



Toray Group is providing innovative technologies and advanced materials that greatly contribute to the fundamental solutions of global problems.

We help accelerate the pace of transition to a sustainable society to cope with increasing environmental problems including climate change and water shortages due to population growth and secure the health and longevity that people desire by stimulating improvements in medical technologies, developments in preventative health care, and reduction of burdens on medical professionals.



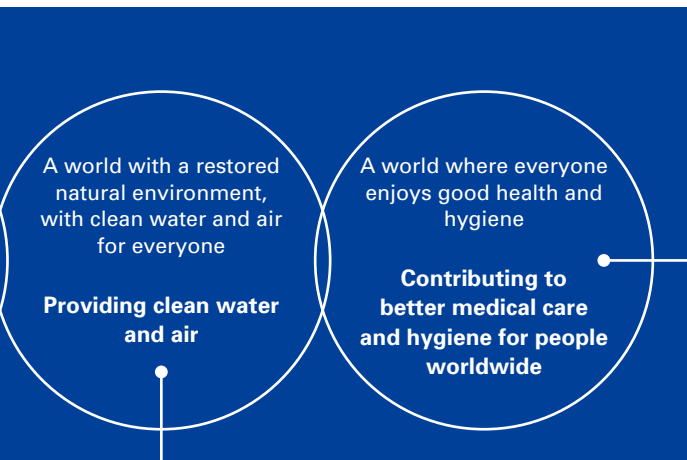
Renewable resources

No increase in **CO₂** concentration in the atmosphere



Continuous measurement of biological information by simply wearing

Maintaining sound health



A world with a restored natural environment, with clean water and air for everyone

A world where everyone enjoys good health and hygiene

Providing clean water and air

Contributing to better medical care and hygiene for people worldwide



Fibers & Textiles

Functional Materials That Biosense Body Signals

Toray took on a new challenge and collaborated cross-industrially with Nippon Telegraph and Telephone Corporation (NTT) to develop and commercialize hitoe™, a functional material capable of gathering biological information. Nanofibers measuring just 1/100th the diameter of a human hair are coated with special highly conductive resins and are used for biosensing clothing with the ability to sense a heart rate, cardiographic waveforms, and other body signals with high sensitivity. Since this material is highly durable, formfitting, and breathable, expectations are that it will be used across a wide range of sporting, work safety management as well as nursing, monitoring and health care fields.



Water Treatment

Resolving Global Scale Water Shortage Issues with Water Treatment Technologies

Toray has developed reverse osmosis (RO) membranes that facilitate the extraction of drinking water from the Earth's abundant supply of seawater. The Company's water treatment technologies are today being used at water treatment plants worldwide. In addition to seawater desalination, Toray's RO membrane elements are helping in the fight against global water shortages and improvement of the world's water environments by reusing sewage water. Toray's RO membrane elements account for a cumulative water equivalent of 59.9 million m³ per day. This in turn is equivalent to the daily life water of 420 million people.



Cumulative water equivalent of RO membrane elements used at water treatment plants

59.9
million m³ per day

Equivalent to the daily life water of 420 million people