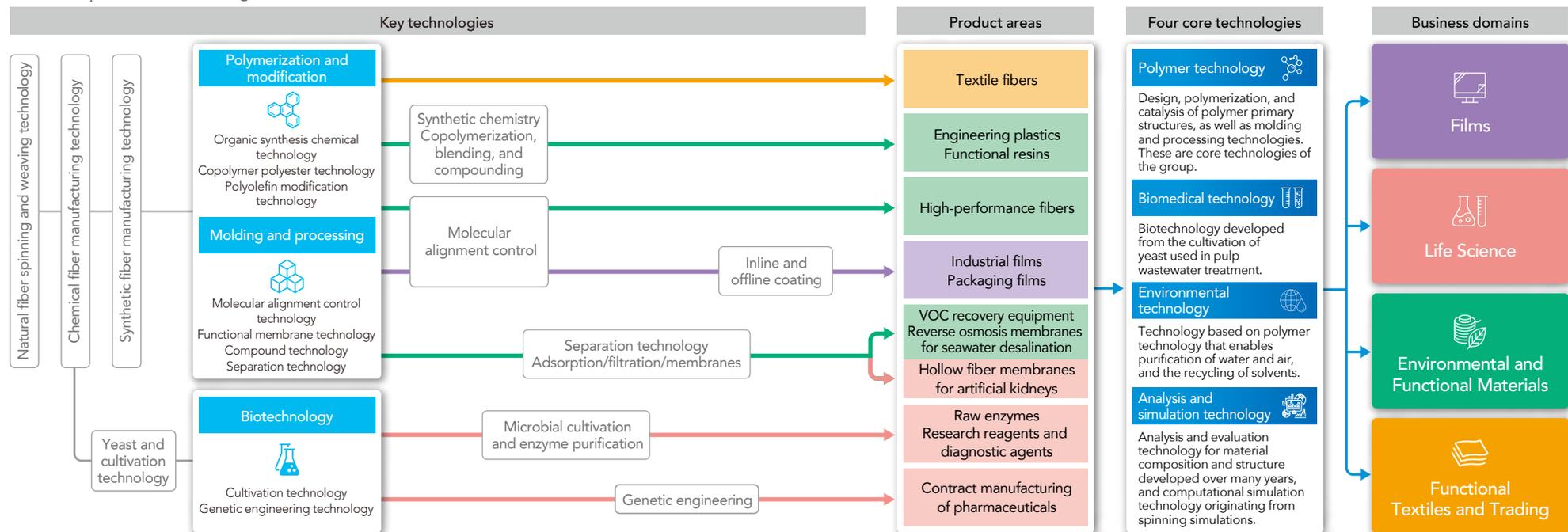


# The evolution and progress of Toyobo's technology

## Meeting social needs and challenges through technology to advance our business

Since its founding, Toyobo group has prioritized technology development, resulting in the evolution of four core technologies. We will continue to leverage these technologies to create solutions that meet the needs of people and the planet.

### Relationship between Technologies and Products



### Business evolution

1882 Osaka Boseki established  
Commencement of the  
spinning business

1886 Mie Boseki established

1914 Toyobo born from the merger  
between Osaka Boseki and  
Mie Boseki

1927 Entered the rayon business

1956 Entered the acrylic business

1963 Entered the film business

1970 Entered the plastics business

1972 Entered the diagnostic reagents and raw materials market

1978 Entered the functional membranes business

1979 Entered the medical business

1982 Entered the life sciences reagents field

1991 Entered the super fibers business

1993 Entered the contract pharmaceutical manufacturing business

2002 Non-fiber businesses surpassed fiber  
businesses in consolidated sales

2009 Entered the cosmetic  
ingredients field

### Market needs and social issues

Development of Japanese industry

- Expansion in light industries such as spinning and silk production

Postwar reconstruction  
and rapid economic growth

- Improved quality of clothing, food, and housing

Stable growth period

- Increasing pollution issues due to air contamination
- Pursuit of comfort in clothing
- Rise in traffic accidents due to motorization

Advancement in information technology and globalization

- Increase in lifestyle-related diseases
- Water scarcity issues recognized worldwide

Rising environmental awareness and evolution of digital technology

- Proliferation of LCD televisions
- Spread of the COVID-19 pandemic
- Growing attention to food waste
- Widespread adoption of smartphones

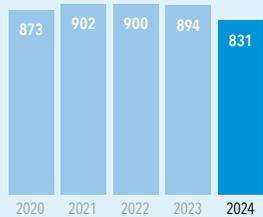
# At a glance

As of March 31, 2024

## Planet

CO<sub>2</sub> emissions (Scope 1 and 2)

# 831

 thousand t-CO<sub>2</sub>


Biodiversity conservation activities

Toyobo Aya-no-Mori registered in the international database as an OECM (Other Effective area-based Conservation Measure) Certified as a "Natural Symbiosis Site"



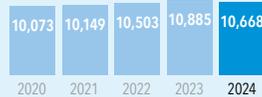
Participating in the 30by30 Alliance for Biodiversity



## People

Number of employees (global)

# 10,668



Ratio of women managerial staff

# 5.5

 %


Training investment per employee

# 50

 thousand

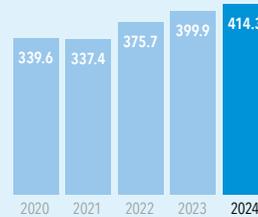

External evaluations



## Prosperity

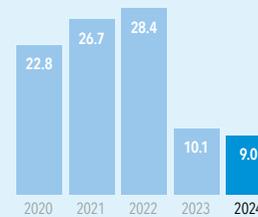
Consolidated net sales

# ¥414.3

 billion


Consolidated operating profit

# ¥9.0

 billion


Market share

Polarizer protective films for LCD TVs

# 60

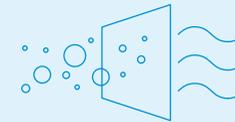
 %


Market share in the LCD TV market (Toyobo estimation)

Product share

VOC treatment equipment for solvent recovery

# No. 1



Top share for adsorption and recovery equipment using fiber activated carbon (Toyobo estimation)

External evaluations

FTSE  
**4.1**

MSCI  
**AA**

CDP  
**A-**  
(climate change and water)

EcoVadis  
**Silver medal**  
(top 15%)

As of June 2024

## Innovation

Core technologies

Polymer technology



Biomedical technology



Environmental technology



Analysis and simulation technology



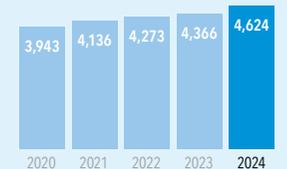
R&amp;D expenses

# ¥15.3

 billion

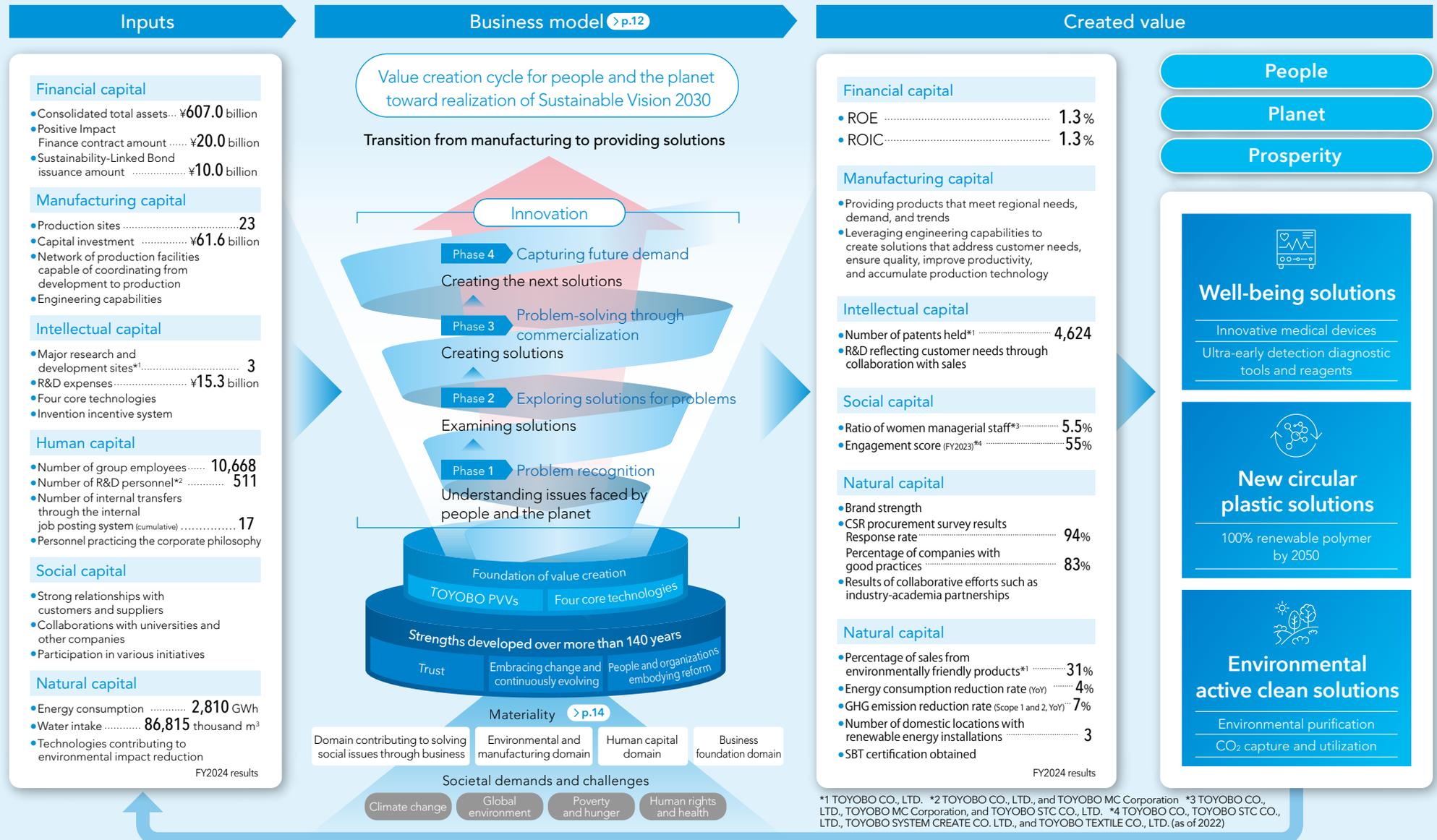

Number of patents held

# 4,624



# Value creation process

Corporate philosophy: Jun-Ri-Soku-Yu



# Toyobo's strengths

Toyobo group creates value based on three strengths and four core technologies developed over its more than 140-year history. To achieve sustainable growth, we will accelerate the value creation cycle by continuously enhancing our strengths and technologies.

## Four core technologies

### Polymer technology

#### Overview

This core technology of Toyobo group has been developed since the introduction of synthetic fibers. It encompasses a wide range of technologies, including the design, polymerization, and catalysis of polymer primary structures, as well as molding and processing technologies, to deliver advanced products.

#### Strengths

We possess expertise in controlling molecular orientation and advanced processing techniques, developed through our work with fibers and films. In addition, we leverage our polymerization and modification technologies to develop a diverse range of high-performance resins.

#### Main product examples

- Super retarder film
- Transparent recycled PET film for labels
- Ultra-high-strength polyethylene fiber
- Polyester-based adhesive resins
- Thermoplastic polyester elastomer

### Biomedical technology

#### Overview

This technology evolved from the cultivation of yeast used in pulp waste treatment. Through the advanced application of both biotechnology and polymer technology, we provide medical materials with high biocompatibility.

#### Strengths

We can develop and manufacture research and diagnostic reagents comprehensively, from raw materials to final products. Our CTA hollow fiber membranes for dialysis are highly acclaimed in the global market.

#### Main product examples

- Diagnostic enzymes
- Genetic testing equipment and reagents
- Hollow fiber membranes for artificial kidneys

### Environmental technology

#### Overview

Based on polymer technology, this technology enables the purification of water and air, as well as the recycling of solvents. It achieves the purification of air (gas) and water (liquid) by combining filtration techniques with adsorption and desorption technologies.

#### Strengths

Our seawater desalination membranes have a long history of use in the Gulf countries, with an estimated market share of around 20%. In addition, we were the first to industrialize activated carbon fiber adsorbents and currently hold a leading share in VOC adsorption and recovery systems.

#### Main product examples

- Reverse osmosis membranes for seawater desalination
- Activated carbon fiber filter
- VOC concentration equipment

### Analysis and simulation technology

#### Overview

We have developed analytical evaluation technology for material composition and structure over many years, along with computer simulation technology that originated from yarn spinning simulations.

#### Strengths

Our sales, manufacturing, and development departments work together to advance analysis and simulation efforts. We propose solutions based on qualitative and quantitative results grounded in scientific evidence to address challenges effectively.

#### Main product examples

- Elucidation of product performance mechanisms
- Analysis of product defects and proposals for improvement strategies
- Evaluation of equipment specifications to achieve design performance
- Examination of molding and processing conditions

## Three strengths cultivated over more than 140 years

### Trust earned from society over many years

For more than 140 years since its founding, the group has consistently earned and maintained strong trust from stakeholders, including customers, through dedicated efforts in safety and disaster prevention, quality assurance, and compliance.

Safety and disaster prevention > p.45

Quality > p.46 Compliance > p.54

### Continuous business evolution through adaptation to environmental changes

We continuously enhance our technological capabilities in manufacturing, processing, and research and development to respond to all customer demands and adapt to shifts in the business environment, driving innovation and creating new business opportunities.

Innovation strategy > pp.29-30

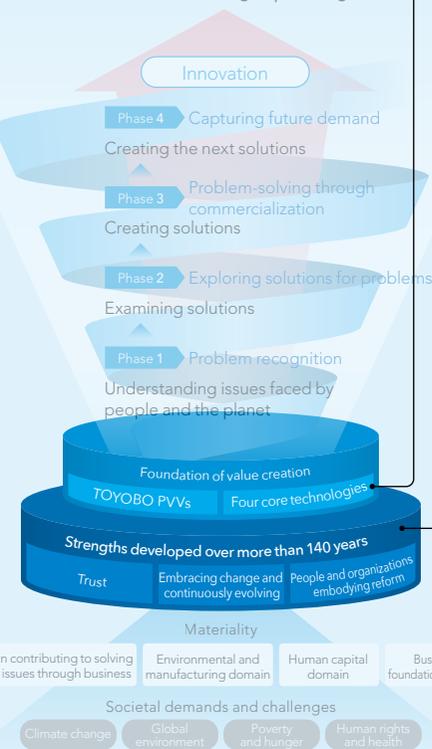
### People and organizations carrying out corporate activities and reforms

To sincerely address stakeholder demands, we have cultivated a workforce and organizational culture that fosters flexible thinking.

Human Resource strategy > pp.22-28

Value creation cycle for people and the planet toward realization of Sustainable Vision 2030

Transition from manufacturing to providing solutions



Contributing to solving issues through business

Materiality

Environmental and manufacturing domain

Human capital domain

Business foundation

Societal demands and challenges

Climate change

Global environment

Poverty and hunger

Human rights and health

# Capital and business model

Toyobo group enhances the various types of capital that support its business model while driving a value creation cycle for people and the planet, providing advanced manufacturing that maximizes material potential and offering next-generation solutions.

