



# **Challenge for the Future**

We develop with society and continue to fulfill our goals of being a responsible and innovative company.

## **Management Principles**

Continue efforts to enhance our technology; Raise the quality levels of our products; Contribute to society; and, Create a frank and open-minded business culture.

## **Management Vision**

Aim to be a globally trusted corporate group by inspiring customers with high value-added products that have satisfying features, low cost and superior quality.

## **The Source of the Value We Create**

### **—Microprocessing Technologies That Create Inspiration**

TOK delivers value in a wide variety of fields, including the manufacture of semiconductors, by rolling out microprocessing and applied technologies for the nanoscale\* domain, along with implementing our strategy of building close relationships with customers and developing high value-added technologies from new standpoints.

\* Nanometer (1nm) = one millionth of a millimeter; one hundred-thousandth the width of a human hair

**TOK founder** **Shigemasa Mukai**

During Japan's advanced stage of economic growth that began at the outset of the Showa era, when industrialization gained momentum, the founder of TOK, Shigemasa Mukai, provided industry with numerous world-leading products through sheer ingenuity and grit. The following words that Mukai repeatedly said to his employees have continued to live in our DNA to this day.



—Ideals when TOK was founded—

**Challenge ourselves to develop products that entail any difficulties but are useful to society and are not offered by other companies**

—Policy when TOK reemerged after World War II—

**We shall conduct manufacturing to create products that others cannot imitate, to be original, to focus on high purity products, and to support manufacturing with advanced technological capabilities.**

—On the establishment of the Tokyo Ohka Foundation for The Promotion of Science and Technology—

**The development of Japan, a nation with few natural resources, depends on the development of innovative technologies from advances in fundamental research, and the application of these technologies in industry will lead to peace and prosperity for humanity.**






## Value Creation Rooted in Our Management Principles

Over the 78 years since its founding, TOK has done its best to put into practice its four management principles, evolving along the way.

With a frank and open-minded business culture, we will carry on, contributing to society by continuing efforts to enhance our technology and raise the quality levels of our products.

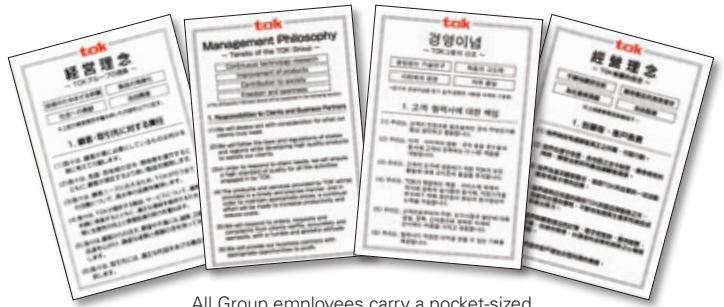
Founding to 1969

1970–

Contribute to society	Contribution to industrialization of society	Contribution to innovation
<p><b>Contribute to society</b></p> <ul style="list-style-type: none"> <li>Development and provision of fine chemical products that will contribute to innovation in many industries</li> <li>Contribution to solving social issues</li> </ul>	 <p><b>Major applications/End products, etc.</b></p> <ul style="list-style-type: none"> <li>Battery used in hard hat light for coal miners</li> <li>Electrical wire</li> <li>Black and white TV</li> </ul>	 <p><b>Contribution to innovation</b></p> <ul style="list-style-type: none"> <li>Color TV/Electronic calculator</li> <li>Word processor/PC</li> <li>Videocassette recorder</li> <li>CD player/Home game console</li> </ul>
<p><b>Continue efforts to enhance our technology</b></p> <ul style="list-style-type: none"> <li>Development of photoresists throughout time</li> </ul>	<p><b>Establishment of "Photoresists Specialist TOK"</b></p>  <p><b>Major photoresists</b></p> <ul style="list-style-type: none"> <li>1968*1 Negative photoresists for semiconductors</li> <li>1971 Eco-friendly synthetic rubber photoresists</li> <li>1972 Japan's first positive photoresists for semiconductors</li> </ul>	
<p><b>Raise the quality levels of our products</b></p> <ul style="list-style-type: none"> <li>Pursuit of high purification technology that minimizes impurities in products</li> </ul>	<p><b>Establishment of world-leading "high purification technology"</b></p>  <p><b>Major high-purity products, etc.</b></p> <ul style="list-style-type: none"> <li>1936 Japan's first high-purity potassium hydroxide</li> <li>1964 The world's highest-purity potassium hydroxide</li> </ul>	
<p><b>Create a frank and open-minded business culture</b></p> <ul style="list-style-type: none"> <li>Creation of workplaces where employees can work in a motivated manner</li> <li>Creation of safe and sound working environment</li> <li>Diversity and inclusion</li> </ul>	<p><b>Foster a frank and open-minded corporate culture</b></p>  <p><b>Key employee and occupational safety measures</b></p> <ul style="list-style-type: none"> <li>1961 Launched employee proposal system</li> <li>1976 Formed the Tokyo Ohka Kogyo Labor Union</li> <li>1979 Established Employee Stock Ownership Plan</li> <li>1986 Established the Tokyo Ohka Kogyo Health Insurance Society</li> </ul>	

\*1 Years in front of product names indicate, in principle, the year the first product was shipped. Circuit line width generations include TOK's estimates.

## Management Principles Card



All Group employees carry a pocket-sized card with our management principles written down in Japanese, English, Korean or Chinese.

1990-

2000-

2010-

### throughout time by developing and supplying semiconductor photoresists



Mobile phone  
DVD player  
Hybrid car



LCD  
Smartphone  
Tablet device



AI  
IoT  
Self-driving vehicle  
5G communication

Line width **130\*1nm**



1987 i-Line photoresists  
1995 KrF excimer laser photoresists

Line width **130-32nm**



2001 ArF excimer laser photoresists

Line width **32-7nm**



2018 EUV photoresists

Impurities in products **Less than 1ppm\*2**



High purification of photoresists  
Reductions in impurities in high-purity chemicals

\*2 ppm: parts per million, ppt: parts per trillion, ppq: parts per quadrillion

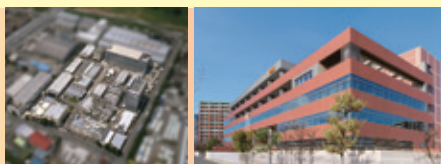
Impurities in products **Less than 10ppt\*2**



High purification of photoresists  
Reductions in impurities in high-purity chemicals  
Ultra-high-performance clean solutions

**Move to ppq\*2 level**

### Expansion of human resources alongside growth



1990 Introduced the childcare leave system  
1991 Achieved 5.4 million hours of zero-accident (type 1) operations at the Sagami Operation Center  
1993 Adopted the sick leave system

2003 Introduced the rehiring system  
2005 Adopted the occupational rehabilitation system  
2007 Introduced childcare time  
2008 Introduced the expired paid leave reserve system

### Training next generation of global personnel



2012 Introduced the Employee Stock Ownership Plan (ESOP) Trust (Trust matured in 2017)  
2012 First woman appointed to a management position  
2014 Started TOK Global Practical Training for Selected Members  
2015 Formulated Data Health Plans for health & productivity management  
2016 Set target of 20% or higher for women's recruitment ratio

\*3 Received the Kurumin mark in 2012; selected as a constituent stock in the MSCI Japan Empowering Women Index in 2017 and 2019, MSCI Japan ESG Select Leaders Index in 2019, and SNAM Sustainability Index in fiscal 2018; and recognized in the 2018 Certified Health & Productivity Management Outstanding Organizations Recognition Program (White 500).

# Our Resources

## Accumulation of Unique Management Resources

TOK has never stopped contributing to innovation, addressing the needs of its customers and society throughout time, while accumulating robust financial capital and unique non-financial capital. The Company will further advance both types of capital and strengthen its capabilities for sustainable value creation.

### Financial capital

*Financial capital*



- ◆ Financial foundation for the super-long term
- ◆ Dividend policy based on net assets

#### ■ Balance Sheet Management

TOK seeks the optimal balance between investment, cash reserves and shareholder returns within the context of its niche top strategy, which has been in its DNA since its founding, aggressive risk-taking as an R&D-driven company, and competition with rivals larger in size.

#### ■ Solid Financial Position

TOK's policy on cash reserves, consisting of working capital, investment reserves and risk reserves, takes into account requirements for developing technologies in anticipation of a super-long time frame, continuously tackling challenges over a super-long time frame, and responding to the unexpected, including major disasters. As of December 31, 2018, the Company had an equity ratio of 78.0% and a debt-to-equity ratio of 0.07 times, representing top-class financial soundness in the chemicals sector.

#### ■ Strengthened Shareholder Returns

Beginning on December 31, 2018, the Company distributed dividends based on its new dividend policy targeting a DOE of 3.5%, with the objective of steadily and continuously returning profits to shareholders.

#### ■ Pursuit of Higher Asset Efficiency

The Company targets an ROE of over 8%, and uses ROIC, IRR, etc. as indicators for monitoring investments and business strategies.

### Manufactured capital

*Manufactured capital*



- ◆ World-leading microprocessing technology
- ◆ World-leading high purification technology

#### ■ Microprocessing Technology

TOK continues to satisfy the sophisticated needs of its customers, i.e., manufacturers of semiconductors and electronic components, by accumulating and applying its world-leading microprocessing technology in the development and production of materials to make semiconductor circuit line widths fine, materials used to make high-density semiconductor packages, and materials for stacking semiconductor devices in three dimensions.

#### ■ High Purification Technology

TOK supplies chemicals (clean solutions, thinner, developing solutions, etc.) of the highest purity in the world with an absolute minimum of impurities, realizing shared value with customers by improving yields on their mass production lines for cutting-edge devices. TOK has expertise in highly challenging domains, such as controlling performance down to the molecule.

#### ■ Niche Top Products

Having inherited the DNA that has existed in TOK since its founding, we are developing a business to continue to create materials that support advanced technologies and that cannot easily be imitated by other companies. We are developing a business model able to continue developing and bringing to market new, high-end, high-value-added products. Our primary domains are niche business fields shaped by extremely disruptive and rapid cycles of technological change.

### Intellectual capital

*Intellectual capital*



- ◆ Sustaining high levels of R&D investment
- ◆ Improving R&D efficiency

#### ■ High Ratio of R&D Costs to Net Sales

The Company's R&D budget is equivalent to roughly 8% of consolidated net sales, which is primarily used to strengthen R&D functions in Japan and overseas, including the U.S., South Korea, and Taiwan. Our main focus is on research into functional polymer materials and the development of applied technologies. We are also concentrating on the development of better microprocessing and high purification technologies for the cutting-edge electronics field, in addition to the development of related equipment and production technologies. In new business development, we are accelerating open innovation.

#### ■ Refining Our R&D Strategy

R&D efficiency (operating income/R&D costs) has been improving as a result of efforts to further refine our strategies in R&D fields and the marketing of technologies.

#### ■ Strategic Patent Portfolio

TOK has been expanding its portfolio of patents related to semiconductors, displays, and new businesses. The Company aims to develop reliable businesses with new promising technologies, and erect barriers to entry with its patent portfolio.

## Human capital

Human capital



- Increasing investment in human capital
- Hiring foreign employees locally

### Human Resources as a Company Asset

Based on the spirit of a frank and open-minded business culture, one of our management principles, the Company focuses its energy on creating safe and sound working environments where each and every employee can work in a motivated manner. The Company is also expanding investments in human capital in line with its human resources policy of never forgetting that business always starts with "people." The average annual salary at TOK has increased for nine consecutive years to reach ¥8.16 million\*<sup>1</sup> as of December 31, 2018, and the average tenure figure rose to 20.8 years\*<sup>1</sup>, also increasing for a ninth straight year. The ratio of employees taking paid leave was 75.3%, much higher than the average of 58.4%\*<sup>2</sup> for the manufacturing industry.

\*<sup>1</sup> Non-consolidated basis

\*<sup>2</sup> Source: Ministry of Health, Labour and Welfare's 2018 Summary of General Survey of Working Conditions for 2017 or fiscal 2016

### Advancing Globalization of Personnel

The consolidated ratio of non-Japanese employees is on the rise, reflecting the expansion of customer-oriented sites overseas and an emphasis on merit-based hiring and promotions regardless of nationality. The Company has made progress appointing non-Japanese employees to top positions and promoting local hires to key positions at local subsidiaries. In sales and marketing departments in particular, local personnel who have a deep understanding of TOK's management principles and approach to marketing have made strong contributions to sales growth.

## Social and relationship capital

Social and relationship capital



- Robust customer base and relationships based on trust
- Supplier engagement

### Development of Customer-Oriented Sites Overseas

TOK has established manufacturing and development sites in the U.S., South Korea, and Taiwan where many of our customers are located. By introducing prototype production lines equal to customers' lines, we can quickly commercialize the results of development, and build a robust customer base with solid trust relationships in the fast-changing semiconductor/electronics industry.

### Collaboration with Stakeholders Other Than Customers

As technical development in cutting-edge semiconductor fields grows increasingly difficult with each passing year, building ties with a variety of stakeholders aside from customers will become a key to solving issues and innovating on the technological front. TOK is working to build deep social and relationship capital through R&D. These efforts include discovering and supporting venture companies with superior technological capabilities, engaging in joint research with academics, and participating in a variety of consortiums.

### Cooperation with Suppliers

The Company is strengthening and augmenting its engagement with suppliers, because cooperation with suppliers is essential to managing risks inherent in chemical substances, and because it is necessary to start at the raw material formulation stage in order to further raise the quality levels of its products.

## Natural capital

Natural capital



- Creating environmental value through business activities
- Minimizing environmental risks

### Provision of Environmentally Beneficial Products

One example of creating environmental value through business is our supply of photoresists that contribute to the miniaturization of semiconductors, which in turn reduces energy consumption. Furthermore, TOK has a top share\* of the world market for g-Line and i-Line photoresists that are essential in the manufacture of power semiconductors used to conserve and control energy in renewable energy systems, electric vehicles and hybrid cars. Sales of g-Line and i-Line photoresists have reliably accounted for almost 10% of consolidated net sales.

\* Share of sales volume for 2017 (Source: Fujii Keizai's "Whole View of Photo-functional Material and Product Market 2018")

### Responsible Care Activities

As a manufacturer that handles chemical substances and uses large volumes of water in production processes, TOK focuses efforts on the minimization of environmental risk in the production process and throughout its supply chain. With laws, regulations and customer requirements regarding the management of chemical substances at increasingly high levels overseas, the Company also focuses on Responsible Care activities\* as a part of its GMS (Group Management System) that reinforces the Group management structure globally.

\* Activities in which companies handle chemical substances voluntarily take environmental, safety and health measures in every process from chemical substance development through manufacturing, logistics, use and final consumption to disposal and recycling, and announce the results of these activities while engaging in dialogue and communication with the public. (Defined by Japan Chemical Industry Association)



# Our Material Issues

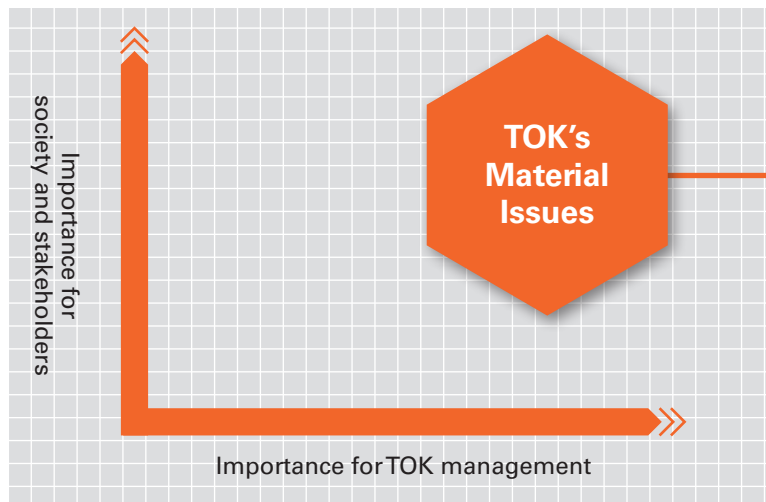
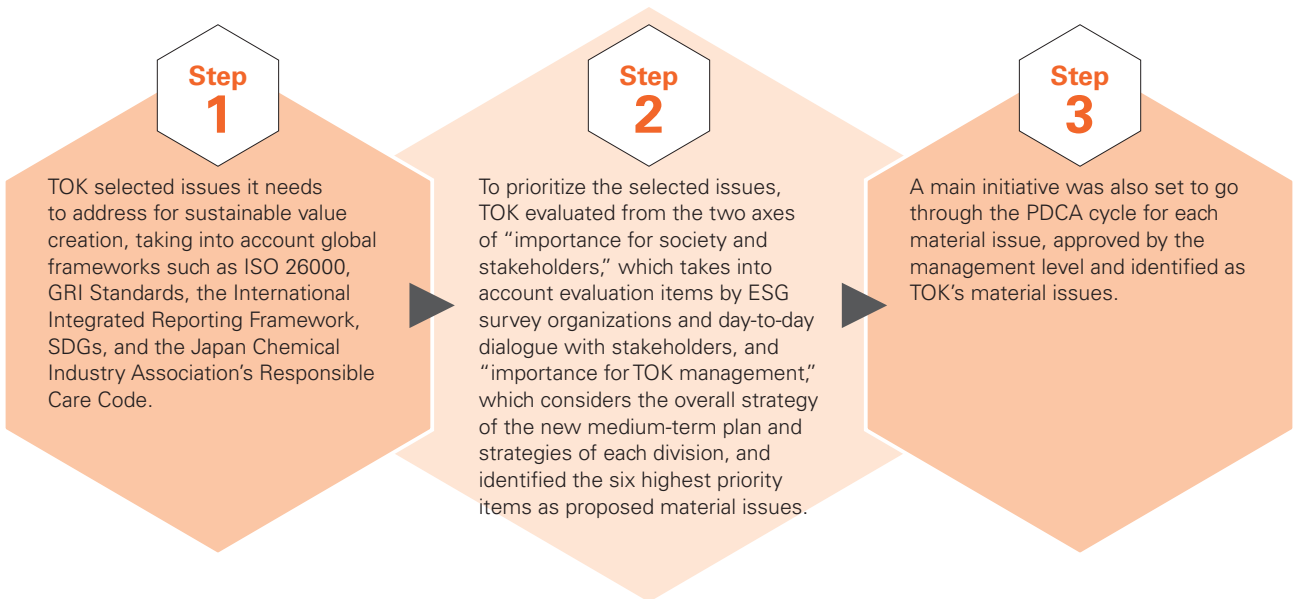
## Identification of Material Issues for Enhancing Corporate Value

TOK has identified material issues to improve corporate value for further evolution of non-financial capital and to promote sustainable growth. Through efforts for these material issues, we aim to create shared value and enhance sustainable corporate value.

### —Continuing Contributions to Society—






















TOK aims for sustainable enhancement of corporate value by contributing to resolving social issues through provision of high value-added products in cutting-edge fields, as well as sincerely and pro-actively fulfilling its social responsibilities through all of its activities (value chain). Going forward, we will focus on material issues, which are guidelines to respond to various stakeholders' expectations and trust, and to continue to "contribute to society," a management principle.

#### Material Issues Identification Process



# Sustainable enhancement of corporate value through shared value creation

## Material issues for enhancing corporate value

Material issues	ESG fields	Key initiatives	Related SDGs
Development and provision of high value-added products that will contribute to innovation	Social (S)	Further improve customer satisfaction	    
		Contribute to innovation and solving social issues	
Environmental protection	Environment (E)	Promote environmental management	      
		Address climate change issues	
		Promote resource recycling	
		Preserve air, water, and soil environments	
		Preserve biodiversity	
Chemical substance management		Precisely address laws and regulations	 
Enhancement of personnel measures	Social (S)	Strengthen personnel capabilities	   
		Diversity and inclusion	
Occupational health and safety/security and disaster prevention	Social (S)	Respect for human rights and fair working conditions	 
		Occupational health and safety/Reduction of risks posed by chemical substances	
Enhancement of corporate governance	Governance (G)	Strengthen the effectiveness of governance	
		Compliance	
		Risk management	

**Our Value Creation**  
Solve social issues through business

**Our Foundation**  
Sustainable foundation for value creation

Our Value Creation

Our Focus

Our Foundation

Data Section

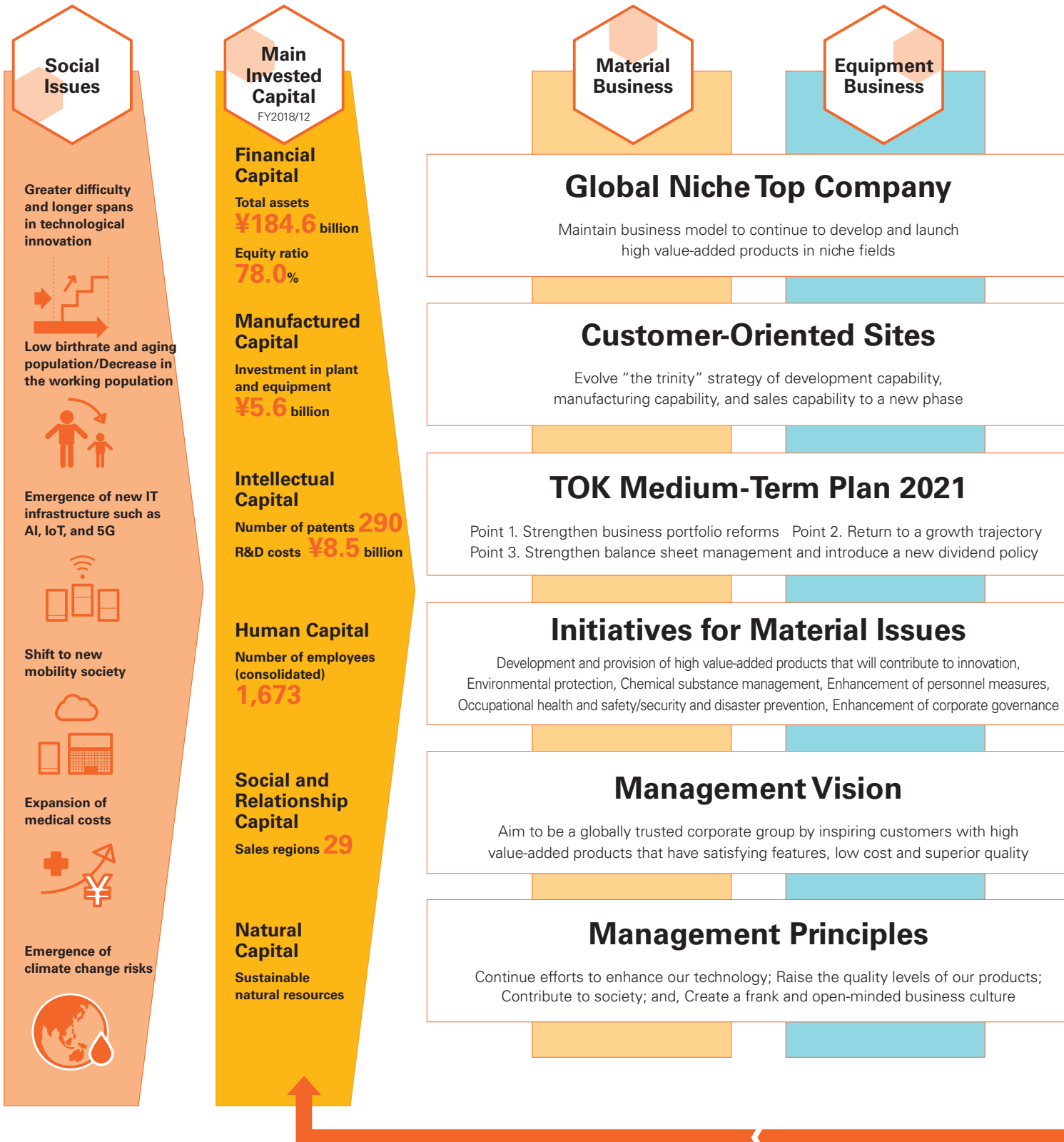




# Our Value Creation Process

## TOK's Sustainable Value Creation Process

As a global niche top company, TOK is contributing to solving social issues by developing products that are useful to society and are not offered by other companies, based on a solid customer foundation it has built within and outside of Japan. Sustainable value creation in the semiconductor-related and electronics-related businesses, where technologies change at an extremely fast pace, is supported by a financial foundation with a super-long-term view, world-leading technological capabilities, constant R&D and investment in human capital.



### Social Issues

Greater difficulty and longer spans in technological innovation



Low birthrate and aging population/Decrease in the working population



Emergence of new IT infrastructure such as AI, IoT, and 5G



Shift to new mobility society



Expansion of medical costs



Emergence of climate change risks



### Main Invested Capital FY2018/12

#### Financial Capital

Total assets  
**¥184.6 billion**  
Equity ratio  
**78.0%**

#### Manufactured Capital

Investment in plant and equipment  
**¥5.6 billion**

#### Intellectual Capital

Number of patents **290**  
R&D costs **¥8.5 billion**

#### Human Capital

Number of employees (consolidated)  
**1,673**

#### Social and Relationship Capital

Sales regions **29**

#### Natural Capital

Sustainable natural resources

### Material Business

### Equipment Business

## Global Niche Top Company

Maintain business model to continue to develop and launch high value-added products in niche fields

## Customer-Oriented Sites

Evolve "the trinity" strategy of development capability, manufacturing capability, and sales capability to a new phase

## TOK Medium-Term Plan 2021

Point 1. Strengthen business portfolio reforms Point 2. Return to a growth trajectory  
Point 3. Strengthen balance sheet management and introduce a new dividend policy

## Initiatives for Material Issues

Development and provision of high value-added products that will contribute to innovation, Environmental protection, Chemical substance management, Enhancement of personnel measures, Occupational health and safety/security and disaster prevention, Enhancement of corporate governance

## Management Vision

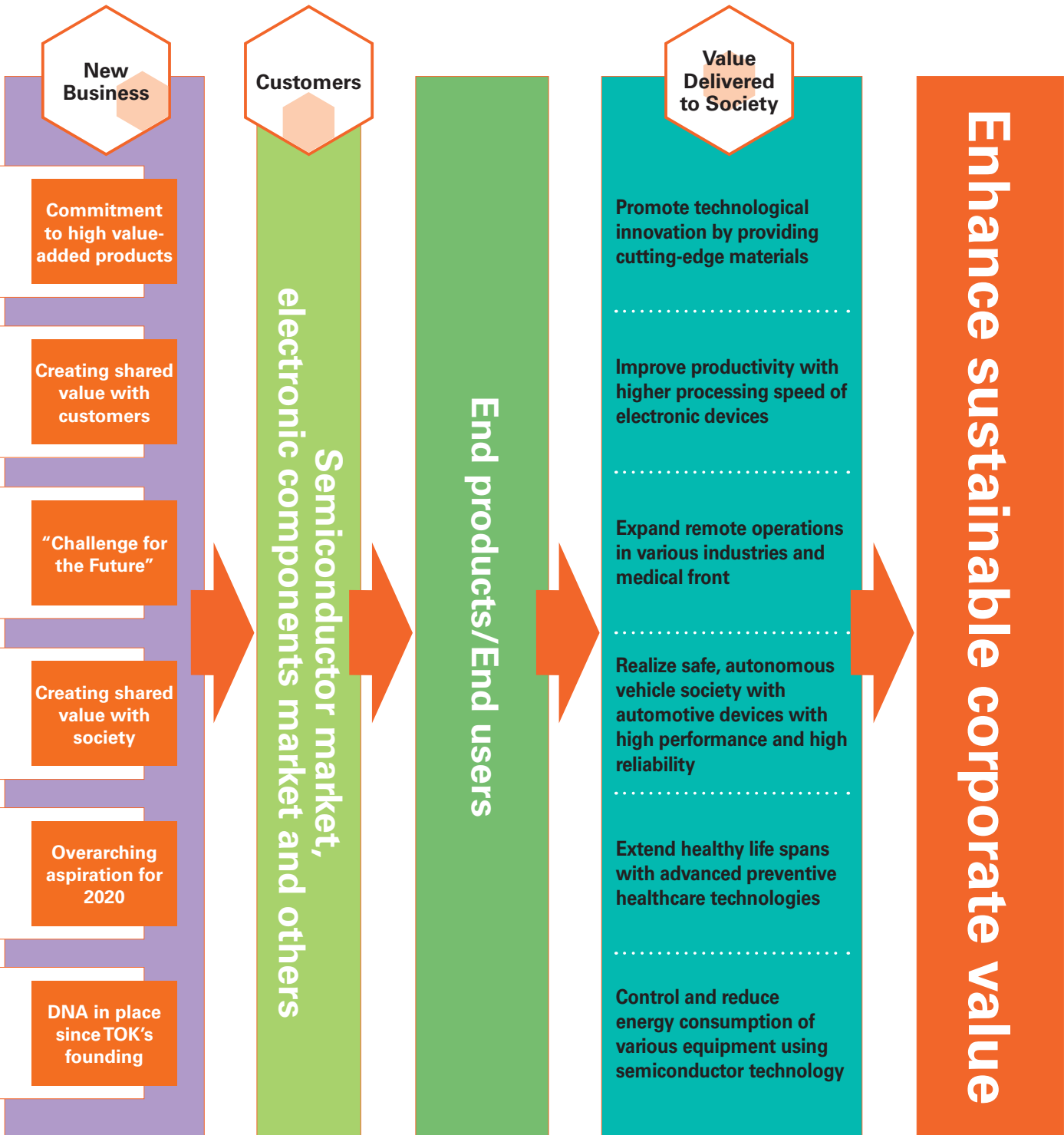
Aim to be a globally trusted corporate group by inspiring customers with high value-added products that have satisfying features, low cost and superior quality

## Management Principles

Continue efforts to enhance our technology; Raise the quality levels of our products; Contribute to society; and, Create a frank and open-minded business culture

Under the TOK Medium-Term Plan 2021, we will create shared value by further evolving these management resources and focusing on initiatives for material issues and reinvesting toward sustainable value creation.

Performance targets for FY2021/12: Net sales **125.0 to 145.0** billion yen Operating income **15.0 to 20.5** billion yen



Reinvest toward sustainable value creation



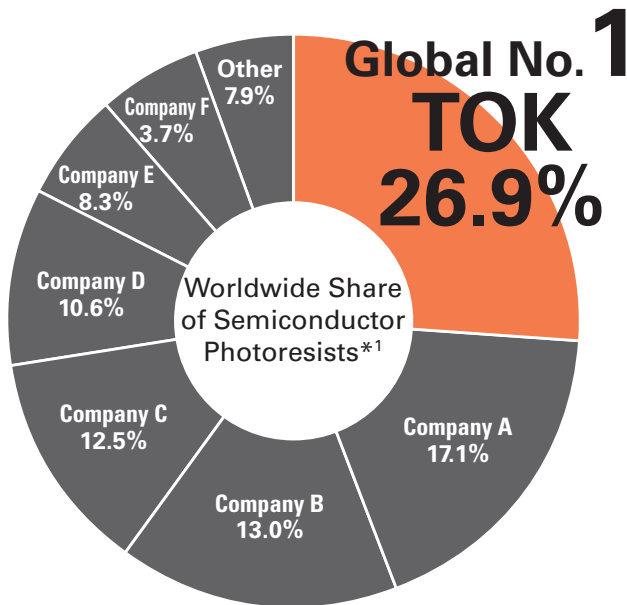
## TOK's Photoresists

TOK is the world's No.1 manufacturer of photoresists, which are photosensitive materials indispensable for the manufacture of semiconductors. We will explain the functions and performance of photoresists in the semiconductor manufacturing process.

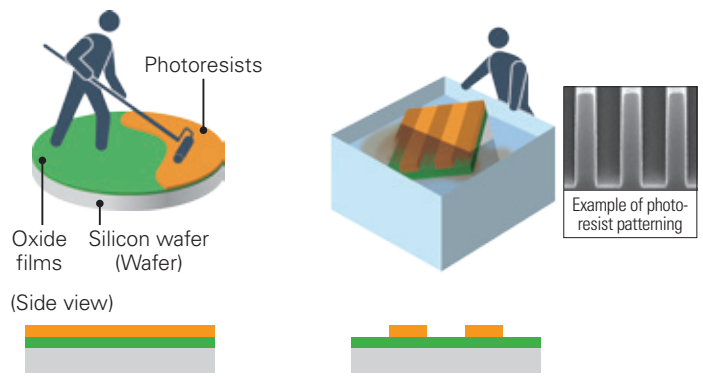
# Breakdown

### TOK's Semiconductor Photoresist Business

**Front-end processes of semiconductor manufacturing**  
Process of making integrated circuits on a silicon circuit board and producing LSI chips. The process utilizes photoresists' resistance to etching.



\*1 Based on actual total sales volume of ArF, KrF, g-Line and i-Line photoresists in 2017 (Calculated by TOK based on Fuji Keizai's "Whole View of Photo-functional Material and Product Market 2018")



Semiconductor manufacturing flow

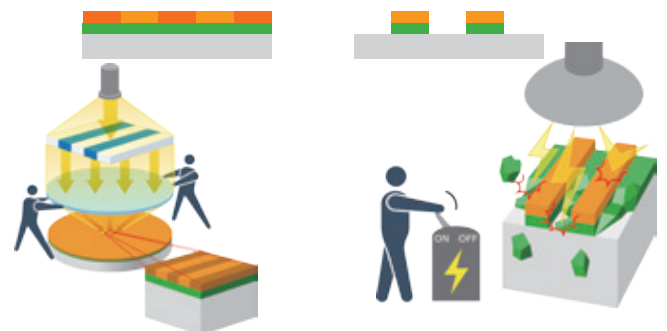
## Front-end processes

**(2) Exposure**  
A photomask (circuit design) is transferred to the photoresist.

**(4) Etching (Engraving)**  
Patterns are formed in the etching process. (Photoresist works as a protective film.)

### Our Value Creation

We have accumulated deep knowledge of all front-end processes of semiconductor manufacturing through our engagement not only in photoresists, but also in high-purity chemicals and process equipment. This enables the creation of further high added value.



# Creating Shared Value

Mount in various types of end products and create shared value

## Our Strength

Providing photoresists that become growth drivers in both **front-end processes** and **back-end processes** of semiconductor manufacturing

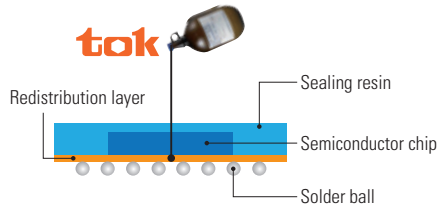
### Achieving SDGs



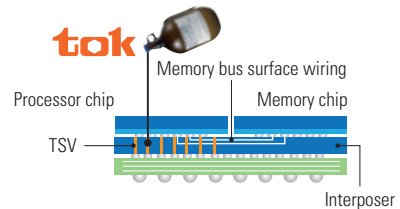
#### Back-end processes of semiconductor manufacturing

Process of dicing individual semiconductor chips and inserting in each type of packaging. The process utilizes photoresists' thick-film forming capabilities.

#### EX. 1 Fan-out wafer level packaging (FOWLP) with photoresists for RDL fabrication



#### EX. 2 2.5D interposer with photoresists for RDL fabrication



**(5) Removal of photoresists**  
Photoresist having served its purpose is removed from the circuit board.

**(7) Formation of insulation film and wiring**  
Aluminum or copper wirings are formed.

**(9) Completion of an integrated circuit**  
Multiple ICs are created on wafer surface using microprocessing technology.

**Semiconductor chips completed**  
After dicing, each wafer portion becomes a semiconductor chip.

**(6) Formation of a semiconductor field**  
A semiconductor field is formed by coating with a diffusing agent and baking at high temperature.

**(8) Formation of integrated circuits**  
ICs are formed by repeating the processes (1) through (7).

**(10) Dicing of wafers**  
Wafer is diced into chip-sized components.

### Back-end processes

Our Value Creation

Our Focus

Our Foundation

Data Section

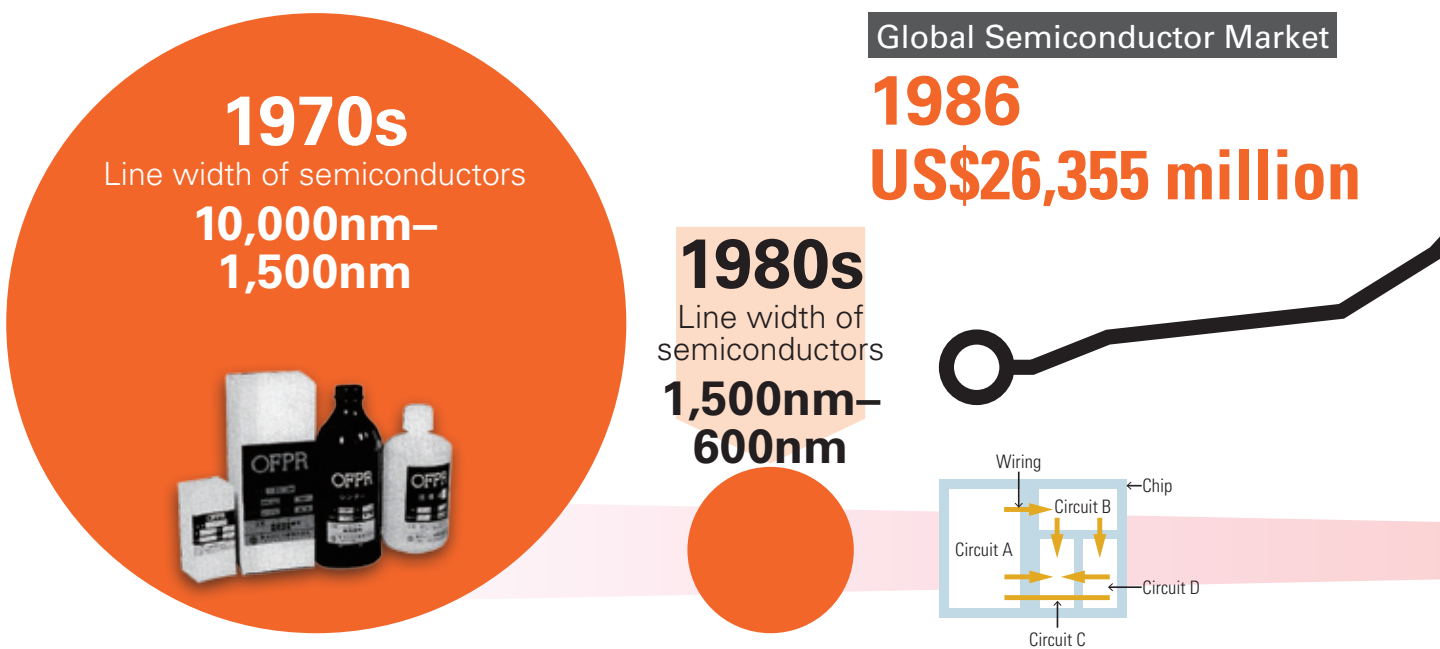
## Core Values of the Photoresist Business

Even when making semiconductors with the same line width and specifications, the features required of photoresists and methods in which they are used can be vastly different depending on the semiconductor manufacturer. TOK's photoresist business provides finely tuned tailor-made products appropriately and swiftly for the different needs and requirements of each customer or process, contributing to the evolution of all types of industry and technological innovation and creation of an environmentally friendly society.


### Semiconductor Line Width\*<sup>1</sup> and Global Semiconductor Market Size\*<sup>2</sup>

\*1 Includes TOK's estimates for the decades shown

\*2 Source: World Semiconductor Trade Statistics



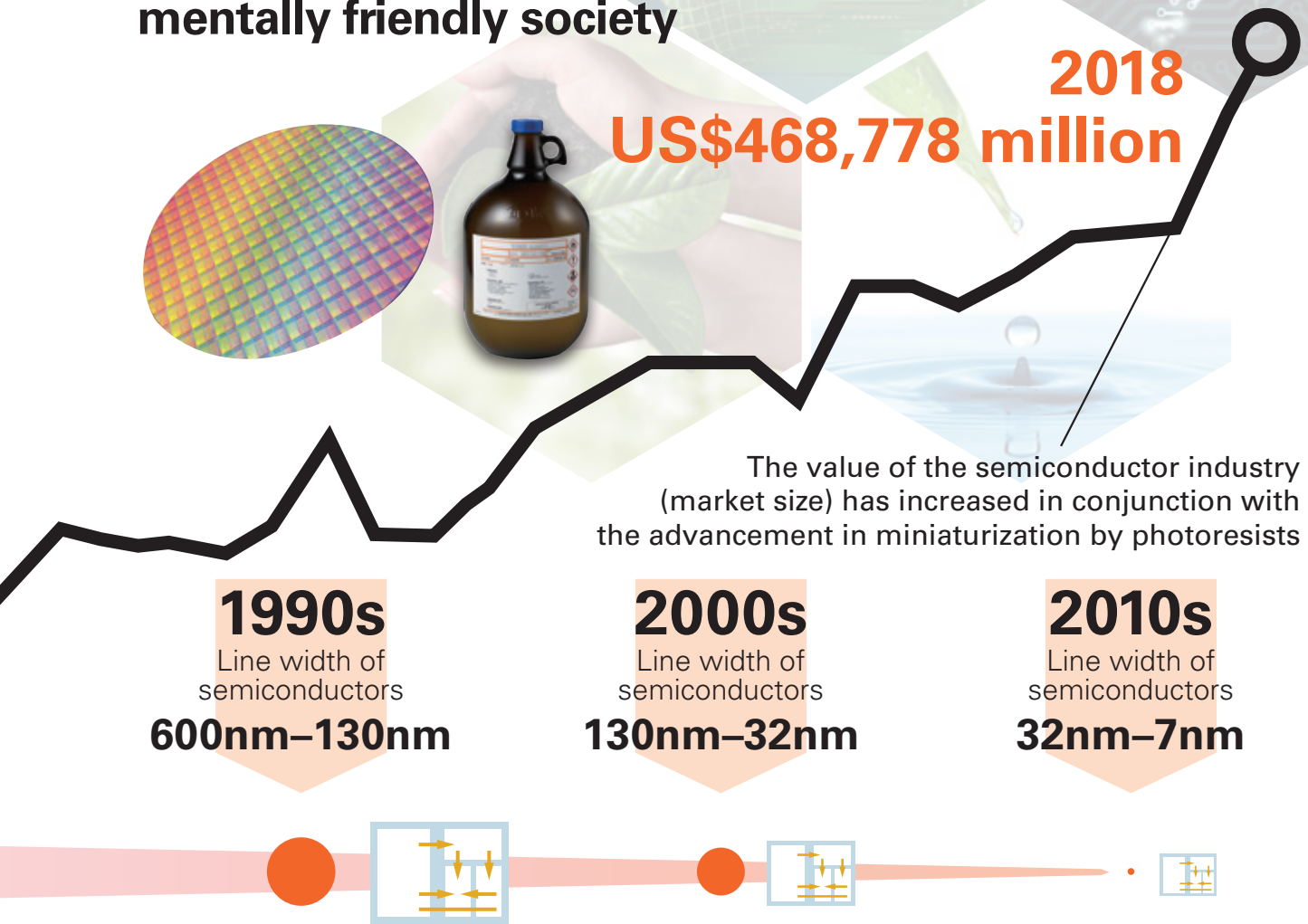
### TOK's Core Values



#### Factors Adding Value to Semiconductor Photoresists

Sensitivity	Resolution	Roughness* <small>* Fluctuations in line width</small>
Etching resistance	Substrate adhesiveness	Processing applicability
Purity	Substance safety	Cost

# Contributing to the evolution of all types of industry and technological innovation/creation of an environmentally friendly society



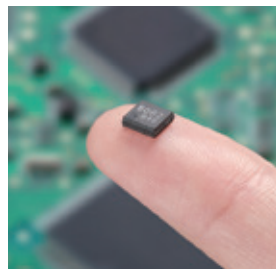
Our Value Creation

Our Focus

Our Foundation

Data Section

Higher processing speeds and lower manufacturing costs of semiconductors



Higher performance, greater compactness, lower power consumption, and lower cost of electronic devices

We have **the capability** of swiftly providing finely tuned tailor-made photoresists for the different needs and requirements of each customer or process



Customer A	Process A	Process B	Process C
Customer B	Process 1	Process 2	Process 3
Customer C	Process I	Process II	Process III



# TOK at a Glance

## Business Portfolio

We are leveraging the Material Business, our current earnings driver centering on cutting-edge domains, and realizing synergy with our Equipment Business, which is cultivating new niche business domains.

### Material Business

Develops high value-added products as an earnings driver

#### Electronic functional materials

##### Photoresists

Widely used materials indispensable for the **microprocessing** of devices including semiconductors, LCDs, and other electronic products



##### High-density integration materials

Packaging photoresists and MEMS materials compatible with **multilayer stacking** accompanying advances made in semiconductor microprocessing



#### High-purity chemicals

##### High-purity chemicals

Developing solutions, clean solutions, rinsing solutions, thinners and other chemicals with **world-leading high purity**



##### Inorganic and organic chemicals

Chemicals used in a wide range of industries



Other  
**0.1%**

Material Business:  
Electronic functional materials  
**55.9%**

### Equipment Business

Getting one step ahead of market needs in synergy with the Material Business

#### Process equipment

##### Semiconductor manufacturing equipment

TOK's Zero Newton wafer handling system that enables significant increases in efficiency of the **3D packaging process** of semiconductors



##### LCD panels manufacturing equipment

Various types of process equipment including UV curing machines used to manufacture **flexible displays**, coating machines that can achieve high-precision performance, and coating machines for R&D



Equipment Business  
**2.5%**

Material Business:  
High-purity chemicals  
**41.5%**

FY2018/12  
Consolidated net sales  
**105.2**  
billion yen

# Materials

# Equipment

—M&E (Materials & Equipment) Strategy—

Material Business



Strengthen our value creation in all directions in the 2D and 3D semiconductor markets



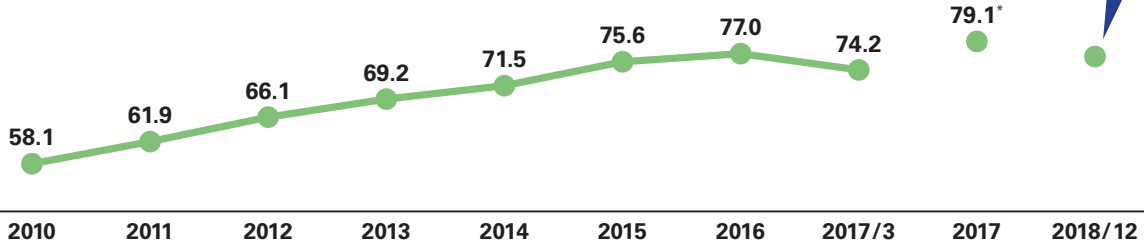
Equipment Business

SWOT analysis by segment  
>>> Refer to pages 58 and 62

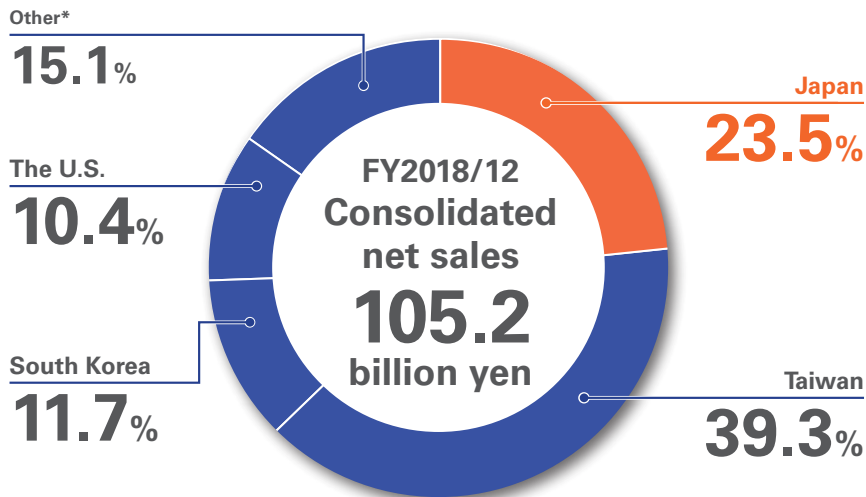
# Global Expansion

As a result of our focus on the semiconductor field and strategy of building close relationships with customers, overseas net sales account for approximately 75% of consolidated net sales, and are on an upward trend.

Overseas sales ratio (%)



\* Due to a change in fiscal year-end, the fiscal year ended December 31, 2017 was an irregular nine-month period in Japan, and 12 months overseas.



\* Other: China, Europe, and Singapore, etc.

**Japan**

Headquarters/Five plants/  
Two operation centers/  
Distribution control center

- Headquarters (9 sites)
- Number of employees (consolidated): 1,199

**The United States**

TOKYO OHKA KOGYO AMERICA, INC.

- 1 local subsidiary (2 sites)
- Number of employees (consolidated): 113

**South Korea**

TOK Advanced Materials Co., Ltd.

- 1 local subsidiary (1 site)
- Number of employees (consolidated): 121

**Taiwan**

TOK TAIWAN CO., LTD.

- 1 local subsidiary (3 sites)
- Number of employees (consolidated): 175

\* Number of employees: as of December 31, 2018



# Product Portfolio

We excel in niche areas in both the front-end process and back-end process of semiconductor manufacturing, and we excel at both miniaturization and 3D packaging. We also offer cutting-edge value in the fields of high-purity chemicals, which are non-photosensitive materials, and equipment.

## Semiconductor Manufacturing Field



g-Line/i-Line Photoresists	<b>Global No.1*</b>	KrF Excimer Laser Photoresists	<b>Global No.1*</b>
ArF Excimer Laser Photoresists	EUV (Extreme Ultraviolet) Photoresists	EB (Electron Beam) Photoresists	
Interlayer Insulating Film	Diffusing Agents	Materials for Shrink Process	
Materials for Cover Coat	Directed Self-Assembly Materials (DSA)	High-Purity Chemicals	

## Semiconductor Packaging Manufacturing Field



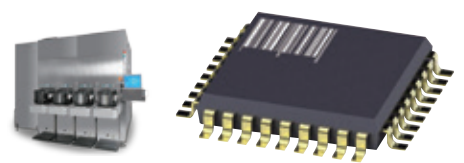
Bump Photoresists	Resists for Wafer-level CSP	High-Purity Chemicals
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## Image Sensor/MEMS Manufacturing Field



Materials for Photosensitive Permanent Films	Resists for Micro Lens	High-Purity Chemicals
Lift-off Resists		

## 3D Packaging Field



3D Packaging Equipment Zero Newton	Adhesive Materials	High-Purity Chemicals
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## Panel Manufacturing Field



TFT Resists	Resists for Color Filters	UV Curing Machines
Resists for Organic EL	High-reliability Transparent Materials	High-Purity Chemicals

## High-Purity Chemicals



Clean Solutions	Thinner	Developing Solutions
Organic Chemicals	Inorganic Chemicals	

\* Share of sales volume for 2017 (Source: Fuji Keizai's "Whole View of Photo-functional Material and Product Market 2018")

VALUE

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## Main Target Markets, Applications, and End Products, etc.

All of TOK's products are based on the B-to-B business, and people never see our products in their daily lives. However, these materials are essential for the evolution of end products, and they contribute to various innovations and to solving a range of social issues.

