

# “Cs+ for Tomorrow 2021” Medium-term Management Initiative Progress and Outlook

December 2020  
Asahi Kasei Corp.

Asahi**KASEI**

# Overview

1. Though the management climate is a challenging one faced with a global economic crisis, we will maintain the basic concepts of “Cs+ for Tomorrow 2021” while **proactively seeking opportunities to innovate with changes to society**
2. While forecasting performance is difficult, our 3-sector **business portfolio is successful to maintain a sound financial foundation** with an outlook for stable profit from Homes and Health Care
3. With greater financial discipline and further business portfolio transformation we will **strengthen the constitution for cash generation and maintain or raise the level of shareholder returns** even under the challenging environment
4. In the 5 priority fields for provision of value we will **proactively address discontinuous and irreversible market changes** due to COVID-19 through Asahi Kasei’s strengths of “diversity” and “capability to change”, raising corporate value
5. We will continue to **reinforce the management platform for sustainable growth** through various “Cs”, especially **Communication to build an environment for employees** and **Challenge to heighten operations** in the “new normal” for greater productivity

# Stance for execution based on changing environment

Maintaining basic concepts of  
“Cs+ for Tomorrow 2021”

Recognizing expected environmental changes as opportunities to innovate, proactively moving ahead toward our goals



## Thorough financial discipline

- Careful selection of investments
- Scrutinizing investment efficiency

## Strengthened constitution

- Maximizing returns on previous investments
- Acceleration of portfolio transformation
- Company-wide cost reduction

## Innovation toward future changes

- Advancing contribution to sustainability
- Anticipating new trends and structural changes

# Outline

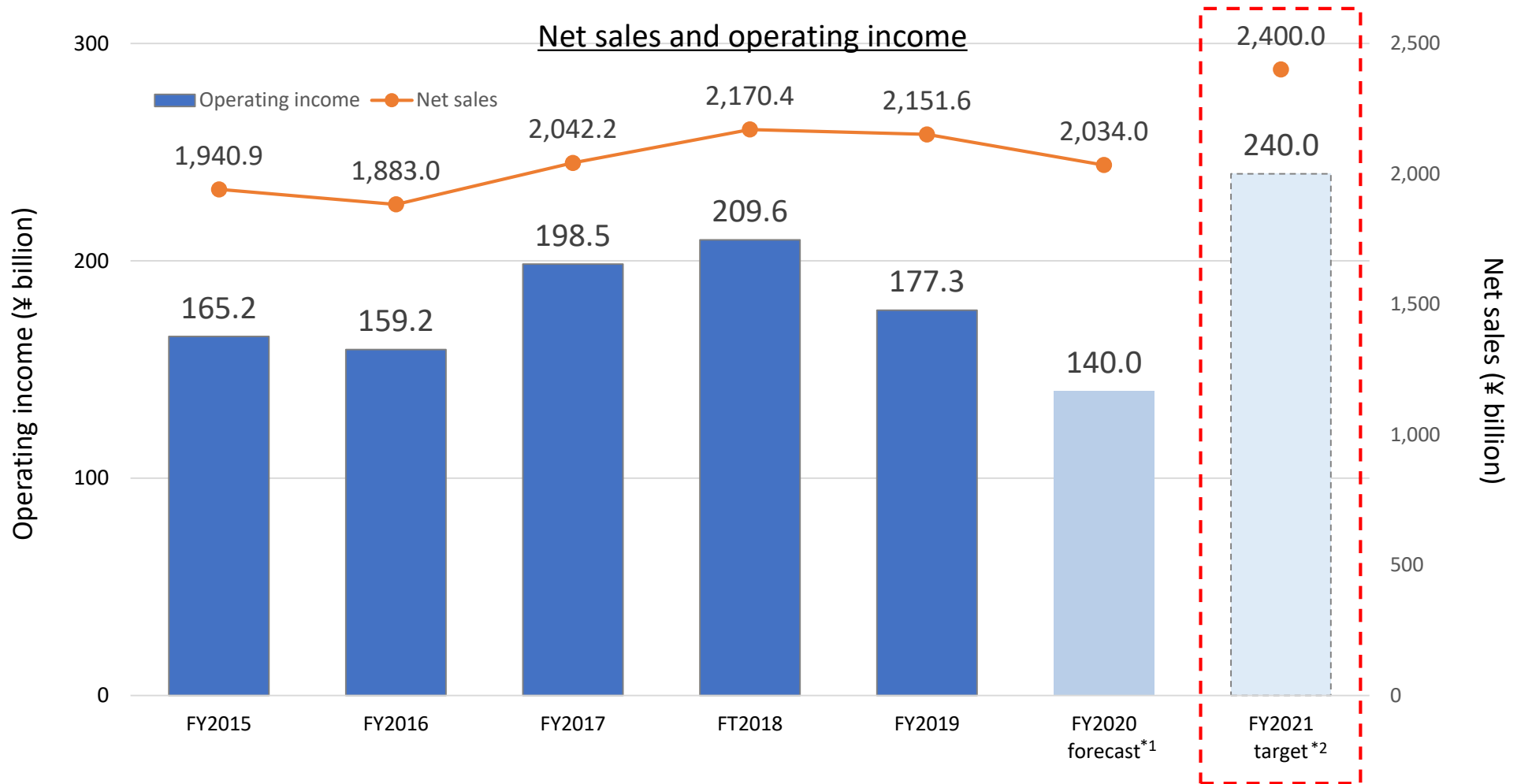
1. Progress on financial objectives
2. Progress on growth strategy
3. Building platform for sustainable growth

# 1. Progress on financial objectives

# Net sales and operating income

Target to be reviewed when impact of COVID-19 becomes visible.

While FY21 target appears challenging, all possible measures will be taken toward attainment.



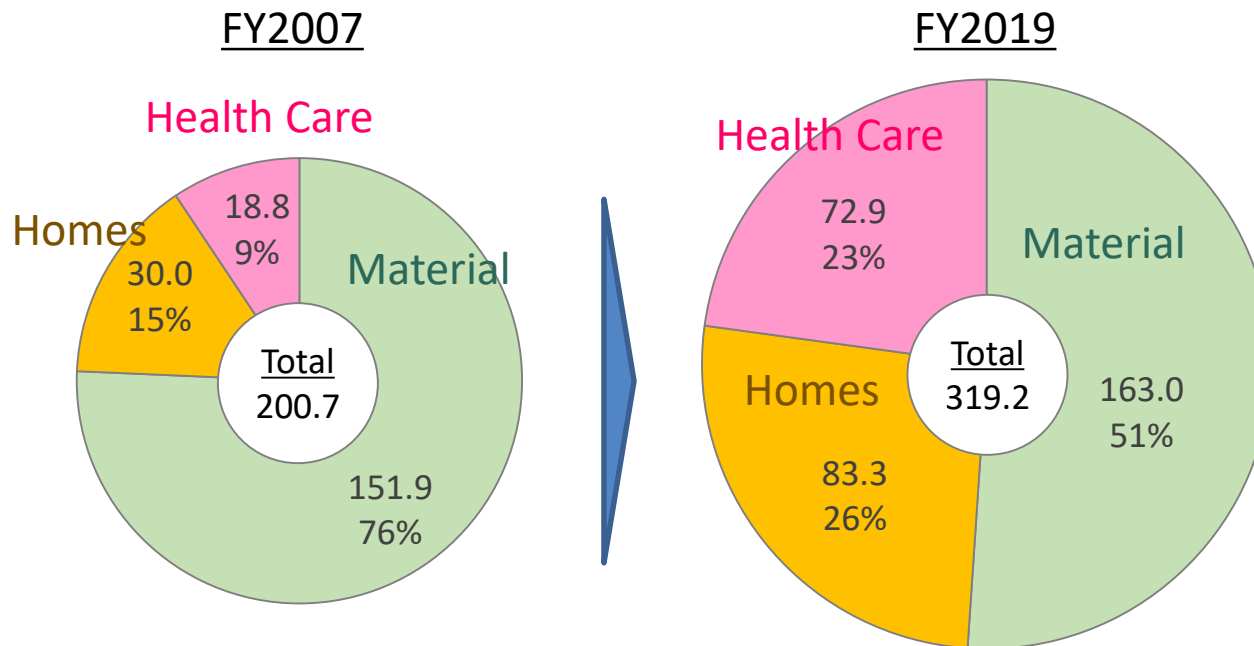
<sup>1</sup> Forecast in November 2020

<sup>2</sup> Target announced in May 2019

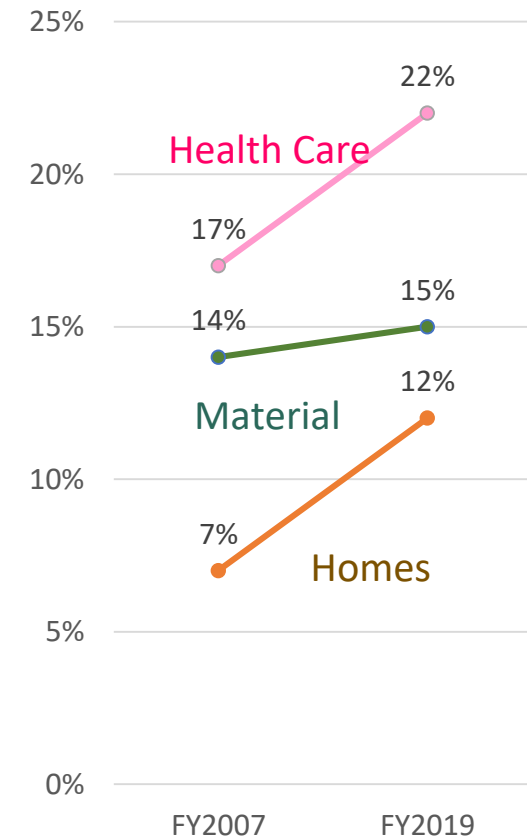
## EBITDA by sector

Compared to before the 2008 financial crisis, our portfolio transformation has advanced and both earnings margins and amounts have increased significantly in the Homes and Health Care sectors. Even during recessions, Homes and Health Care generate steady earnings that support the overall portfolio.

### EBITDA by sector (¥ billion)



### EBITDA margin by sector





# Financial performance by sector

(¥ billion)		FY2017	FY2018
Material	Net sales	1,087.7	1,176.2
	Operating income	121.9	129.6
	Operating margin	11.2%	11.0%
	EBITDA	186.9	190.7
	EBITDA margin	17.2%	16.2%
Homes	Net sales	641.0	659.8
	Operating income	64.4	68.2
	Operating margin	10.0%	10.3%
	EBITDA	73.9	77.2
	EBITDA margin	11.5%	11.7%
Health Care	Net sales	296.3	316.2
	Operating income	39.5	41.8
	Operating margin	13.3%	13.2%
	EBITDA	67.6	68.6
	EBITDA margin	22.8%	21.7%

Sums of figures by sector differ from consolidated amounts.

FY2019
1,093.1
92.4
8.4%
163.0
14.9%
704.4
72.7
10.3%
83.3
11.8%
337.8
43.5
12.9%
72.9
21.6%

FY2021 target <sup>*1</sup>
1,350.0
150.0
11.1%
240.0
17.8%
750.0
75.0
10.0%
89.0
11.9%
370.0
56.0
15.1%
83.0
22.4%

To be reviewed

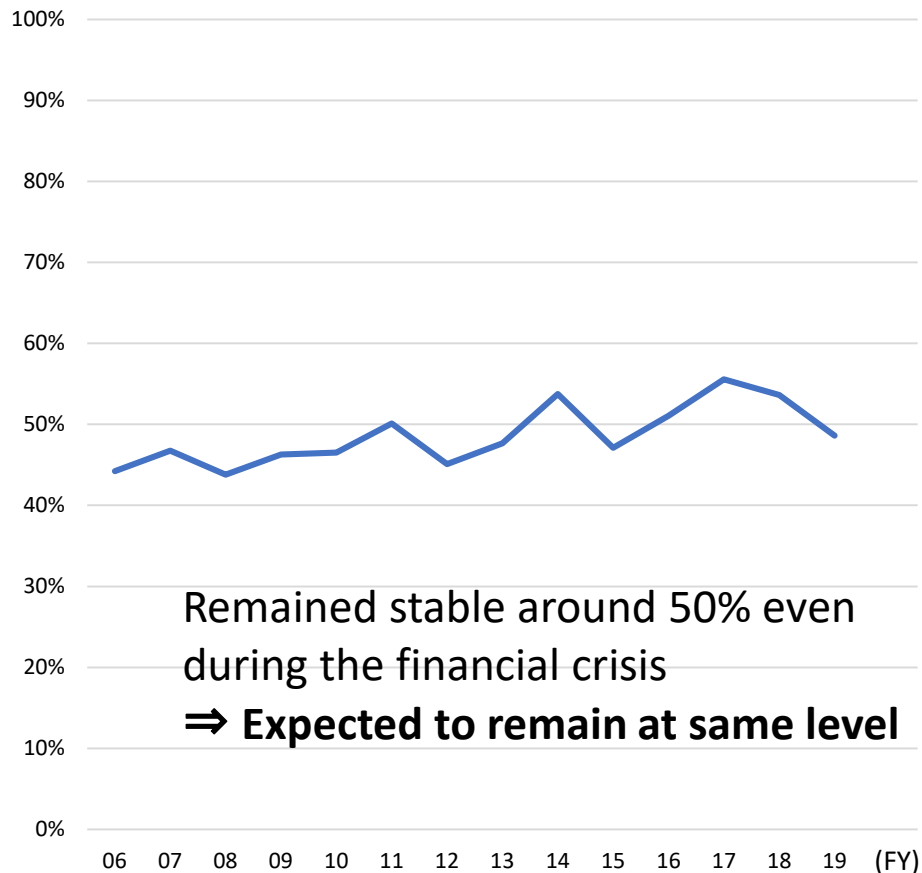
<sup>1</sup> Target announced in May 2019



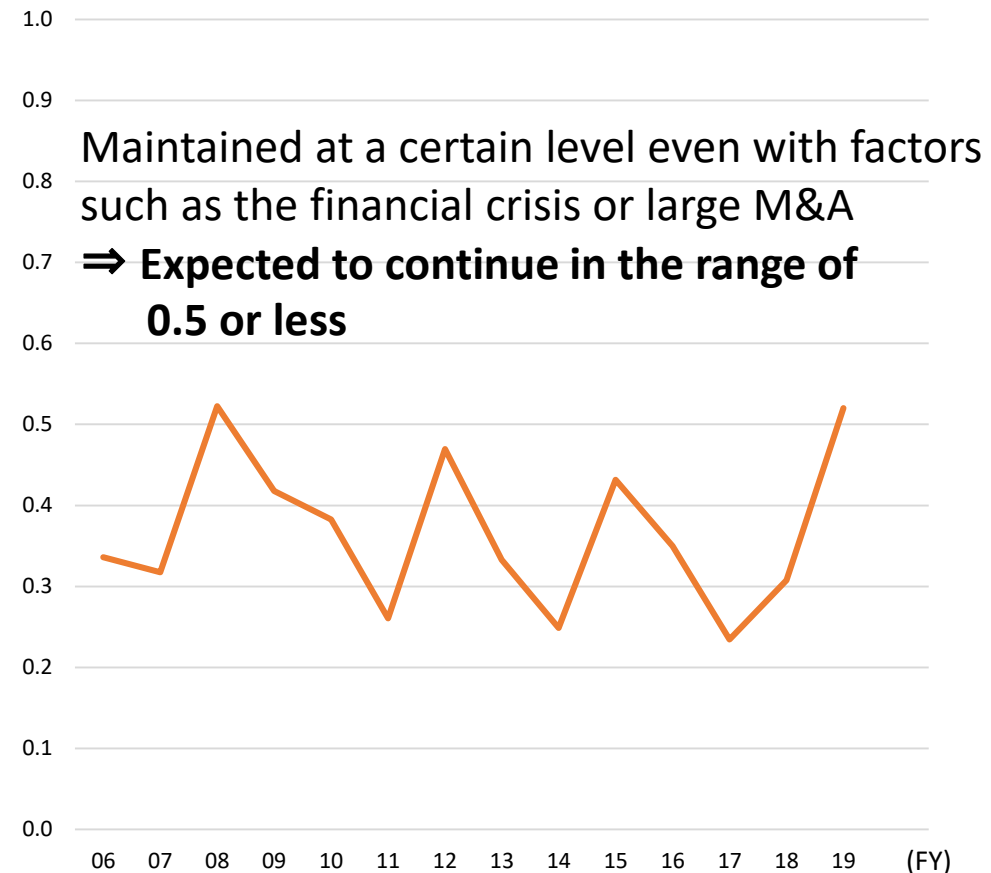
# Financial health

Aiming to raise corporate value while maintaining financial health

## Net worth ratio



## D/E ratio

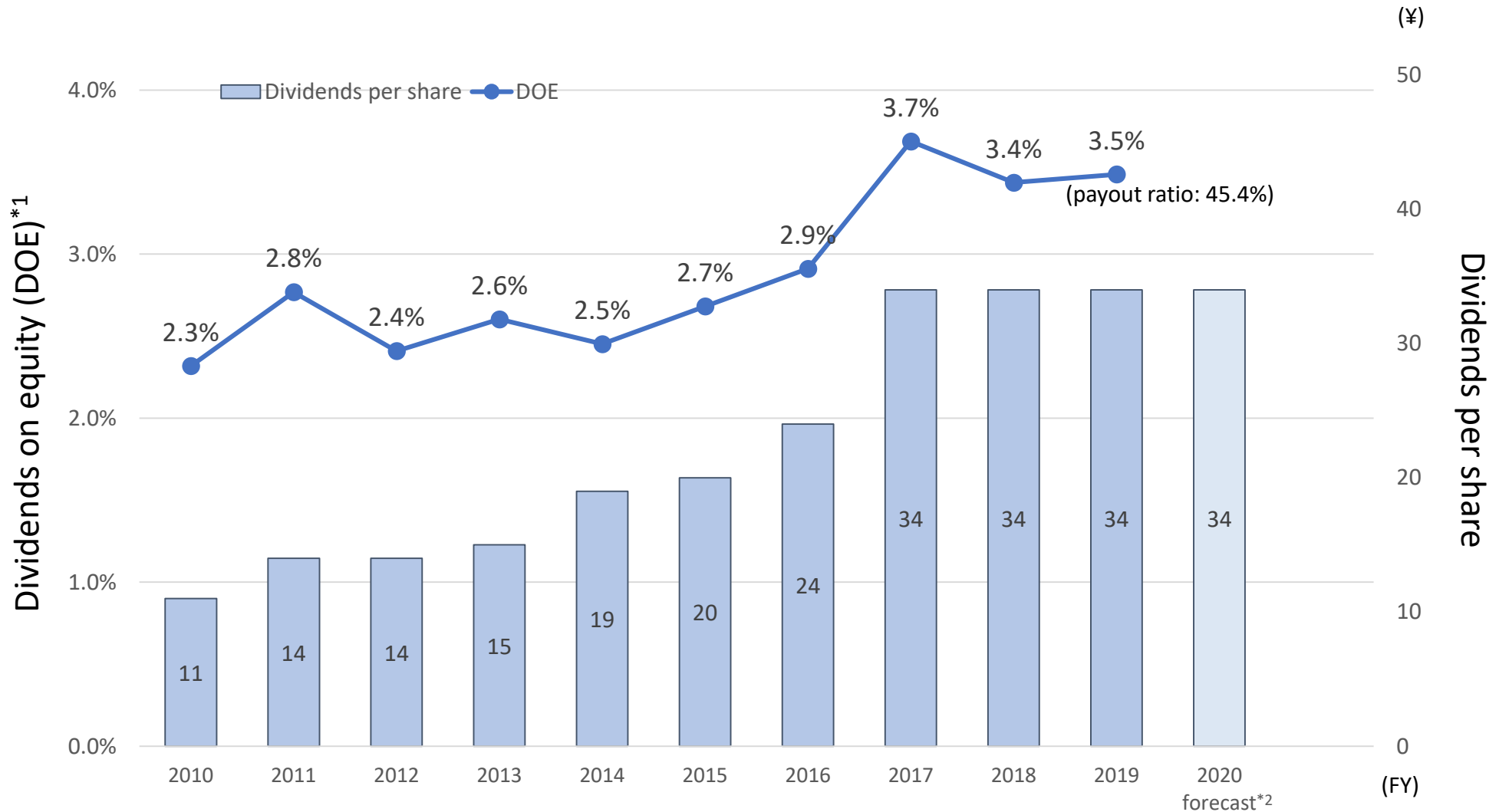


## Shareholder returns policy

- 1 Determining level of shareholder returns based on medium-term FCF outlook**
- 2 Shareholder returns basically by dividends, aiming to maintain or increase dividends per share**
- 3 With payout ratio of around 30–40%, considering dividend on equity (DOE) as well, aiming to steadily increase level of shareholder returns**
- 4 Share buybacks as appropriate considering suitable level of equity**

**Though challenging environment is expected, planning to maintain or increase level of shareholder returns based on medium-term FCF outlook**

# Dividends



\*1 DOE = dividend total / shareholders' equity

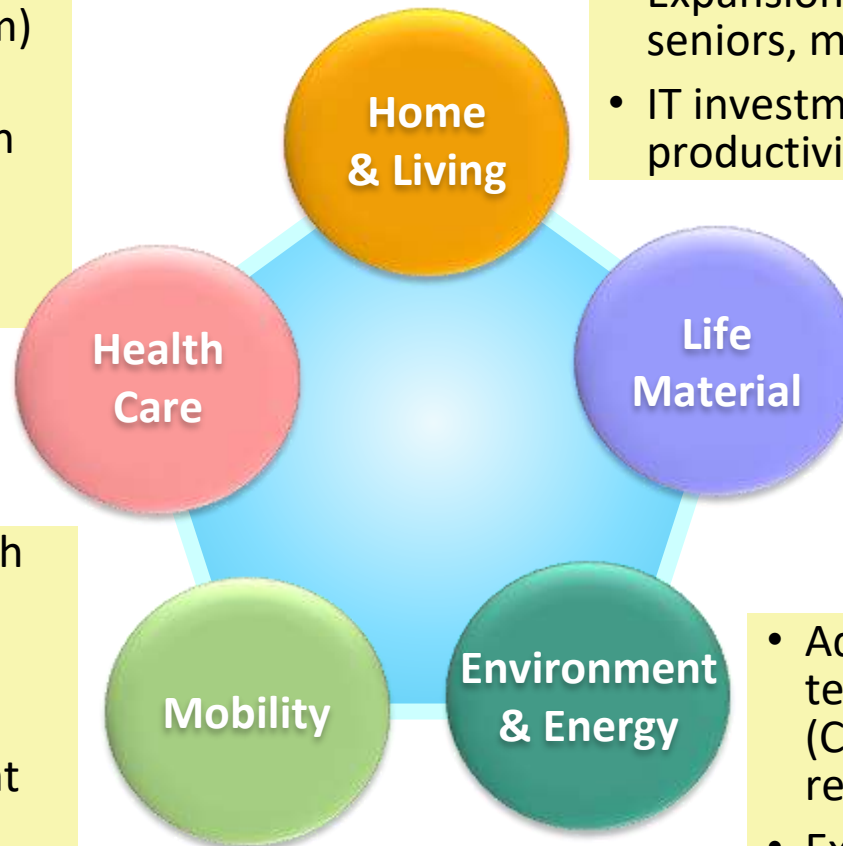
\*2 Forecast in November 2020

## 2. Progress on growth strategy

# Actions in priority fields for provision of value

- Acquisition of US pharmaceutical company Veloxis (gaining North American business platform)
- Strengthening existing businesses (growth through acquisitions by ZOLL, etc.)
- Strengthening of domestic Japanese businesses

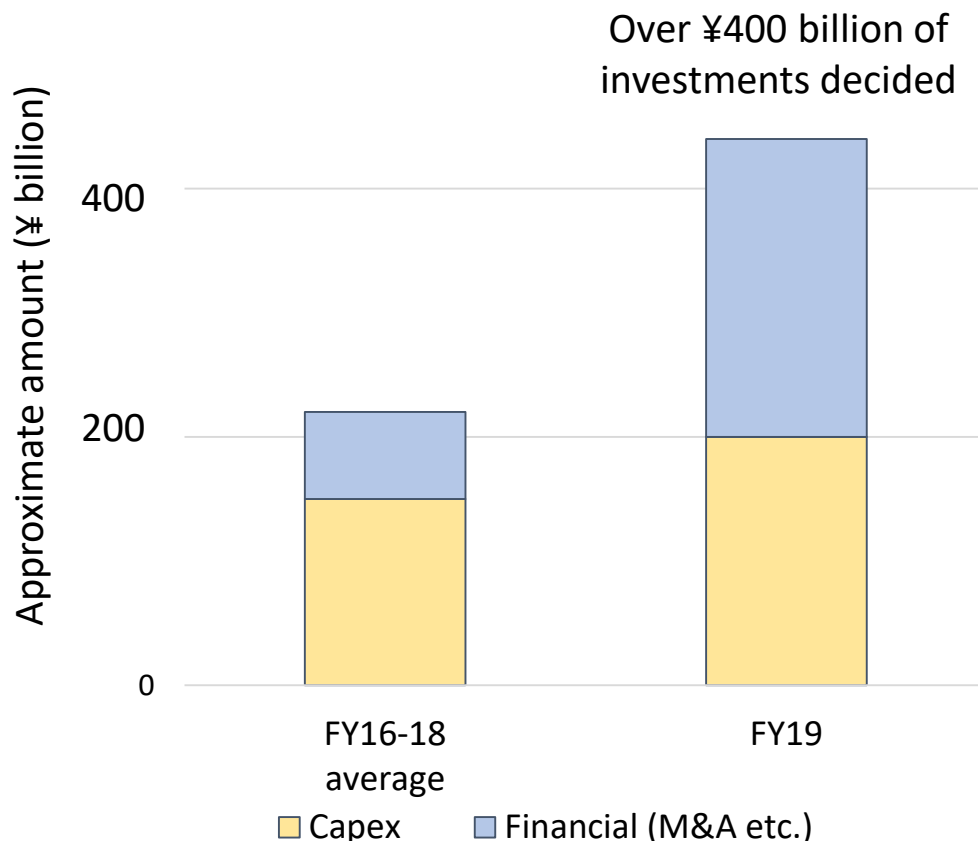
- Expansion of Sage (growth through acquisition)
- Expanding capacity for Lamous artificial suede
- Accelerating development of SunForce mPPE foam beads



# Long-term investments for sustainable growth

FY19 investment decisions for growth in priority fields for provision of value, such as acquisition of Veloxis

## Investment decisions adopted



## Stance for future investments

Focusing resources on selected investments for growth opportunities based on operating climate

### Viewpoints

Contributing to sustainability

Raising productivity  
(workstyle reform, digital transformation, etc.)

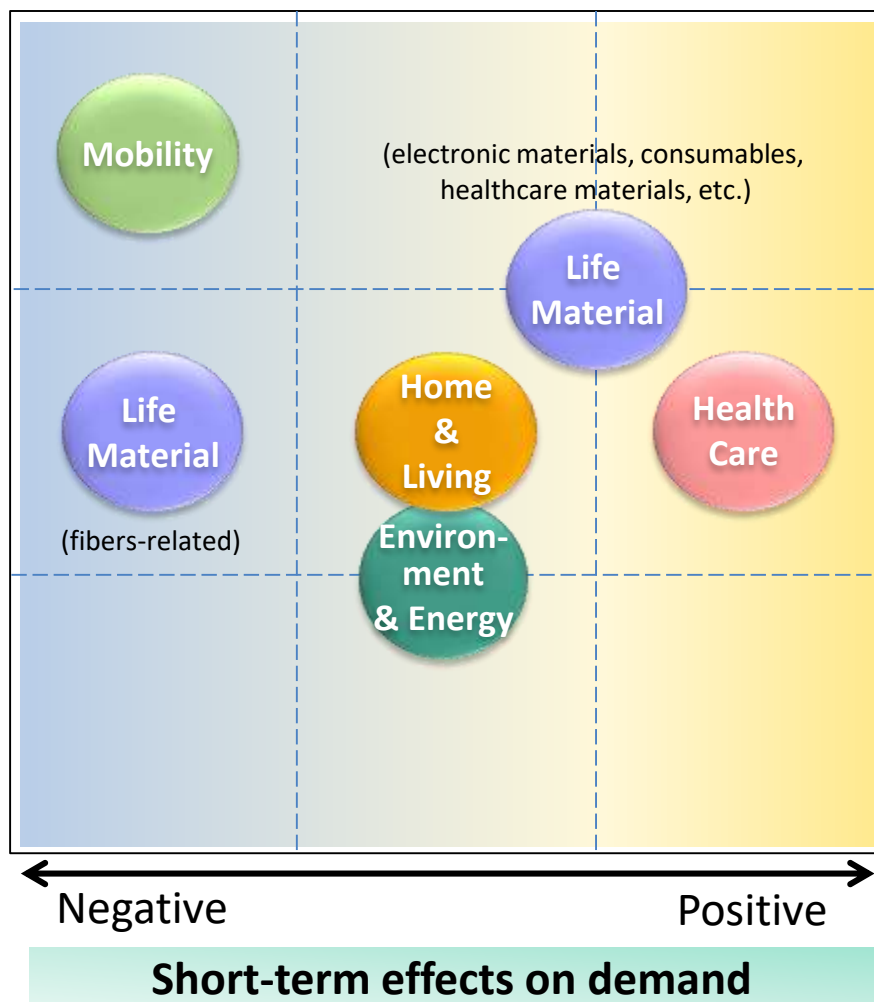
Innovation

Emerging needs/trends

# Review of operating climate in priority fields for provision of value

Disparate impacts of COVID-19 on the 5 priority fields for provision of value—striving to ascertain short-term effects on demand and long-term structural changes

View of COVID-19 impacts



## Short-term effects on demand

- Decline or obscurity:  
Mobility, apparel fibers
- Careful observation:  
Homes-related, environment & energy
- Stability or growth:  
Health Care, electronic materials, consumables, healthcare materials

## Long-term structural market changes

- Rising or changing needs related to life  
(critical care, hygiene materials, etc.)
- Product/service needs arising from new lifestyles  
(accelerated progress of CASE\*, 5G, smart house, etc.; spread of new styles of living and working)

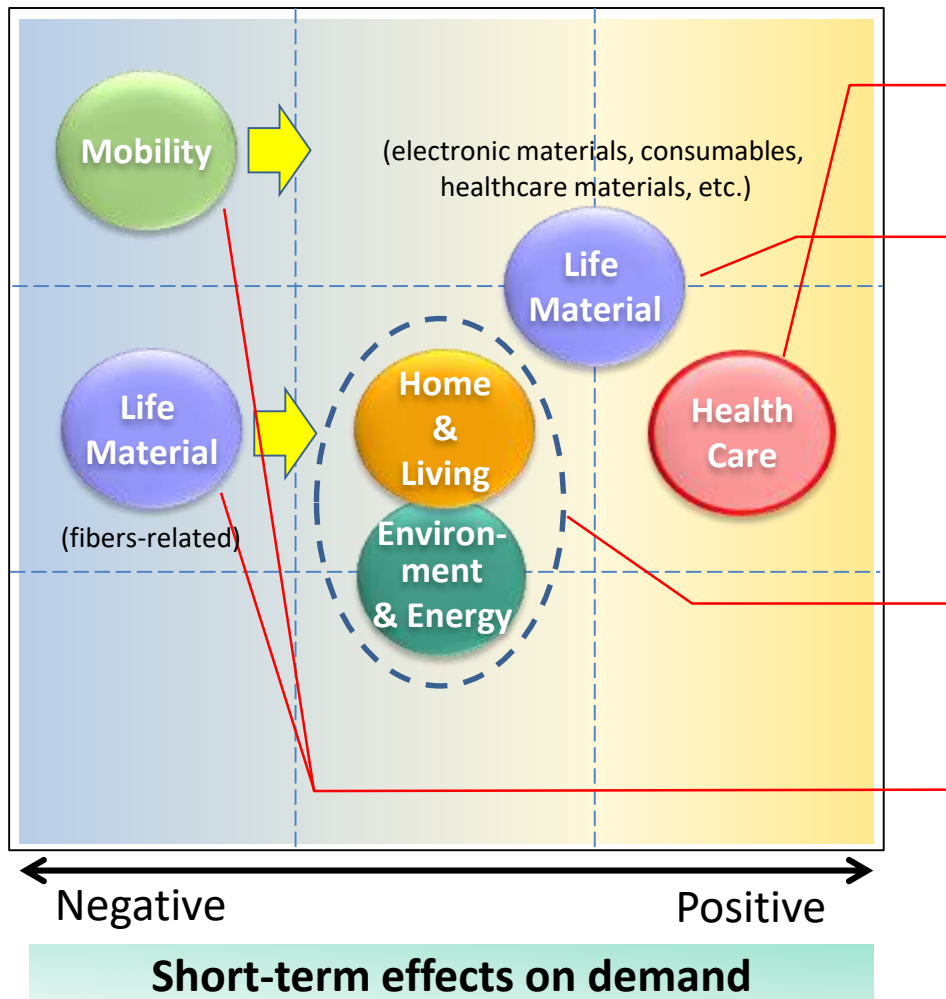
\* CASE: Connected, Autonomous, Shared & Service, Electric



# Perspective on growth strategy in priority fields for provision of value

Accelerating growth in Health Care through concentration of management resources. Though Mobility and Life Material (fibers-related) face severe climate for now, taking structural market changes as opportunities to seek medium-term profit growth.

## View of COVID-19 impacts

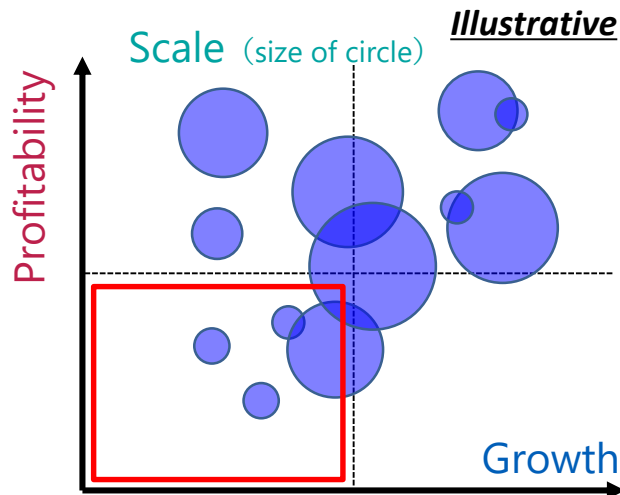


- Management resources **further concentrated on Health Care**, growing as 3rd major pillar through further cultivation of critical care and advancement in North America
- While carefully observing short-term effects, **providing innovative materials and solutions for new needs** arising from advance of 5G, awareness for hygiene, and changing lifestyles
- **Maintaining and advancing medium-term growth strategy** while reducing the impact through productivity improvements
  - ✓ Home & Living: Leveraging know-how gained in urban markets to contribute to quality social infrastructure and living fulfillment
  - ✓ Environment & Energy: Contributing to harmony with the environment through diverse technologies
- **Structural changes** such as acceleration of CASE and heightened needs for hygiene materials **taken as opportunities** to seek medium-term profit growth
  - ✓ Accelerating transformation of portfolio to high value-added products
  - ✓ Reinforcing marketing to key customers

# Approach of business portfolio transformation

Advancing portfolio transformation of low-profit businesses based on evaluation of each business, shifting corporate resources into priority fields for provision of value

## Growth × Profitability

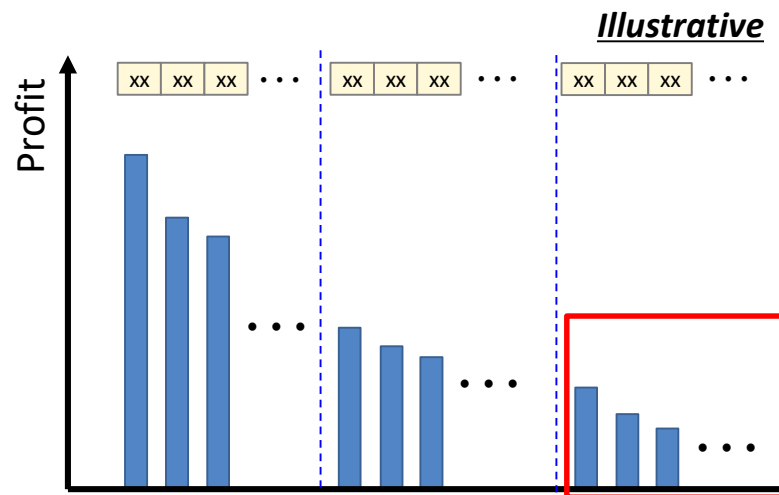


**Growth:** Revenue growth rate, market growth rate, etc.

**Profitability:** ROS, ROIC, etc.

**Scale:** Capital employed, revenue, etc.  
(Size of circle)

## Amount of profit, productivity



- Categorized by amount of profit
- Considering profit per employee, etc.

## Business profile

- Priority fields for provision of value
- Contribution to sustainability
- Competitive advantage  
(Market position, cost competitiveness, technological advantage, etc.)
- Synergies with other businesses  
⋮

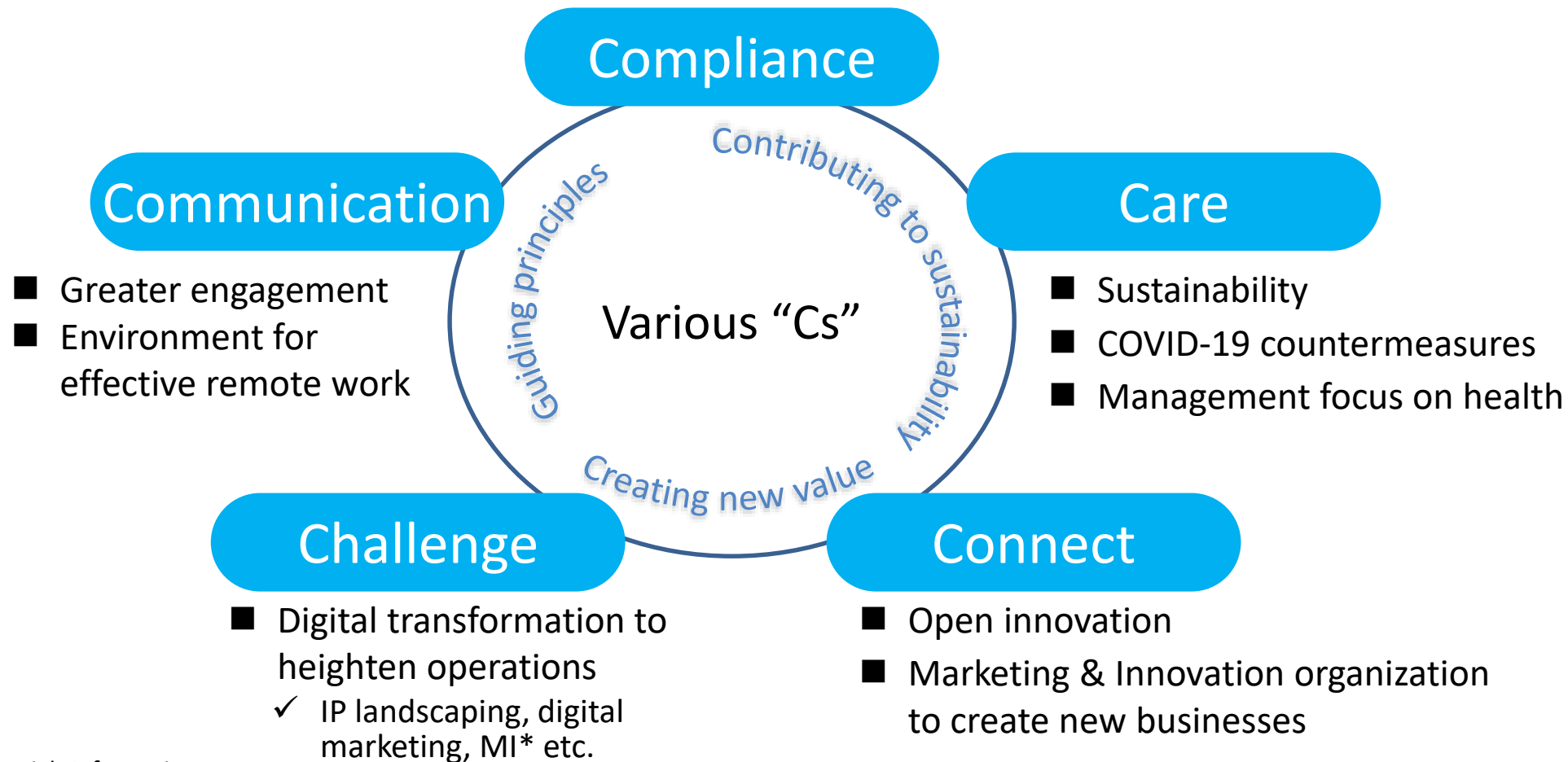
- Review the portfolio position of each business twice per year
- Based on review, select items to execute

### 3. Building platform for sustainable growth

# Strengthening platform for sustainable growth

Continuously strengthening the platform for sustainable growth through various “Cs”, with particular focus on Communication to build the environment for employees in the new normal, and Challenge to heighten operations by digital transformation, for higher productivity

■ 3 Actuals ■ Quality/safety ■ BCP



# Care: Efforts against COVID-19

## Ventilators

Raising monthly production from 400 units toward target of 10,000 units



## Therapeutic apheresis

Devices and filters to treat critical conditions such as acute renal failure



## Pharmaceuticals

Examining the potential of COVID-19 indication for existing drugs



## Virus removal filters

Used in the process of manufacturing biotherapeutics



## Medical gowns



Spunbond nonwoven for surface material

## Masks

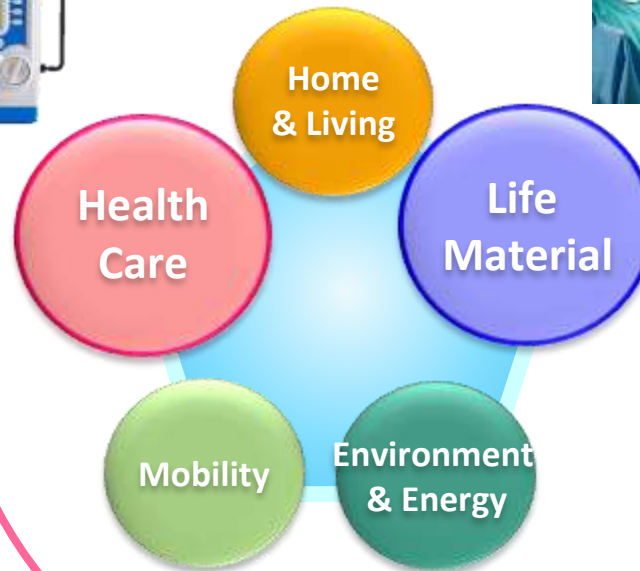


Spunbond nonwoven for surface and edge material

## Disinfectant wipers



Cellulose nonwoven for disinfectant wipers



# Care: Measures for sustainability

- Reducing GHG emissions
- Working on plastic waste issues
- Determination of environmental contribution products
- Joining initiatives
  - Support for recommendations of TCFD
  - Joining CLOMA\*
  - Joining RE100 (Asahi Kasei Homes)

Environmental

Care for People  
Care for Earth

Social

- Designation of Executive Officer for Health
- Management declaration on health
- White logistics declaration

Governance

- Establishment of department and committee for sustainability
- Enhancing effectiveness of BOD (fuller information provision, enriching discussions at BOD meetings, etc.)

Examples of environmental contribution products



Hipore LIB separator

Membrane process for chlor-alkali electrolysis



\* CLOMA: Clean Ocean Material Alliance

# Challenge: Heightening operations by digital transformation

Advancing use of digital transformation for strategic proposals and new business creation in addition to raising efficiency

**MI to innovate means of development**



**AI for automatic image inspection**



**Enhancing plant diagnostic technology**



**Formulating business strategy with IP information**



## Example of using IP information for formulation of business strategy

- Together with Sage, acquired in 2018, high-level analysis of industry and competitors' IP
- Results being used in search for new fields to develop by combining technologies of Sage and Asahi Kasei

 **Launched joint development project for new business**

## Strengthening capabilities for digital transformation

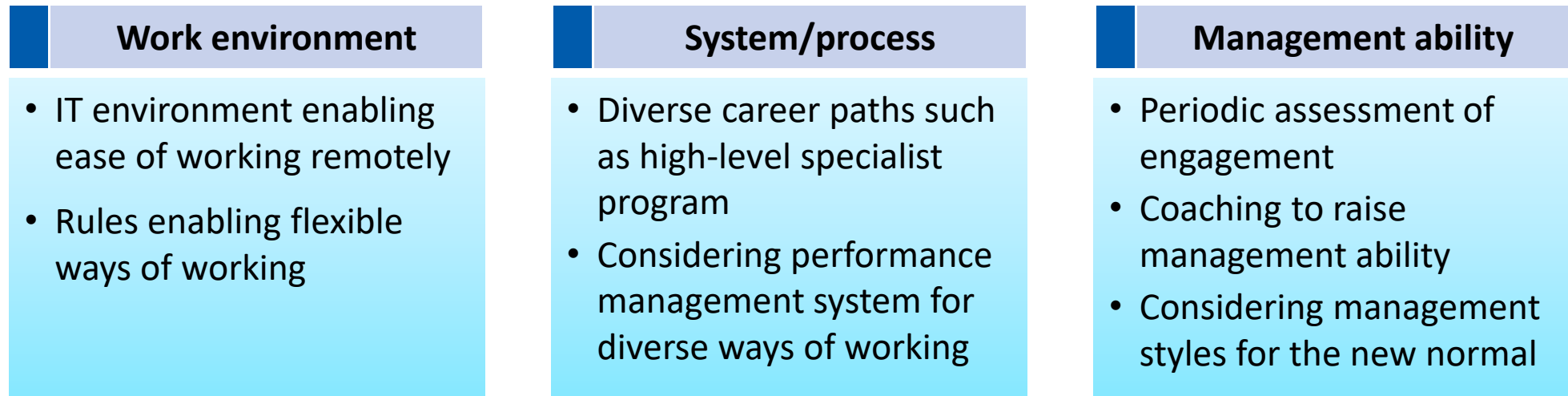
- Increasing digital professional personnel to 150 by end of FY2021
- Establishing open innovation site for digital engineers (scheduled for end of FY2020)





# Communication: Building foundation for employees to thrive

Raising management ability to enhance employee engagement while creating environment to enable employees to perform in the new normal



## Enhanced employee engagement/greater sense of organizational participation

- Producing results as a team of diverse employees; each individual feels more engaged and fulfilled
- Greater motivation by sensing how one's own work contributes to life and living for people around the world

I have to work ⇒ **We want to work together**

## Closing

- **We view the current broad social transformations as opportunities, and are proactively executing change**
- **We are reviewing what should be preserved and what should be changed, and advancing business portfolio transformation to continue to provide value to society**
- **By boldly taking Challenges, actively making Connections, and changing the concept of Communication, we are leveraging our strengths of “diversity” and “capability to change” to achieve sustainability**  
(contributing to a sustainable society,  
sustainable increase in corporate value)



# Appendix: Financial results

		FY2015	FY2018	FY2019
	(¥ billion, unless otherwise specified)			
	Net sales	1940.9	2170.4	2151.6
Profitability	Operating income	165.2	209.6	177.3
	Operating margin	8.5%	9.7%	8.2%
	EBITDA <sup>*1</sup>	274.8	313.6	295.6
	EBITDA margin	14.2%	14.5%	13.7%
	Net income	91.8	147.5	103.9
	EPS (¥)	66	106	75
Capital Efficiency	ROIC <sup>*2</sup>	7.9%	8.8%	6.6%
	Net income per shareholder's equity (ROE)	8.6%	11.1%	7.6%
Financial Health	D/E ratio	0.43	0.31	0.52
	Capital ratio	47.1%	53.6%	48.6%
Exchange rate (¥/ \$)		120	111	109

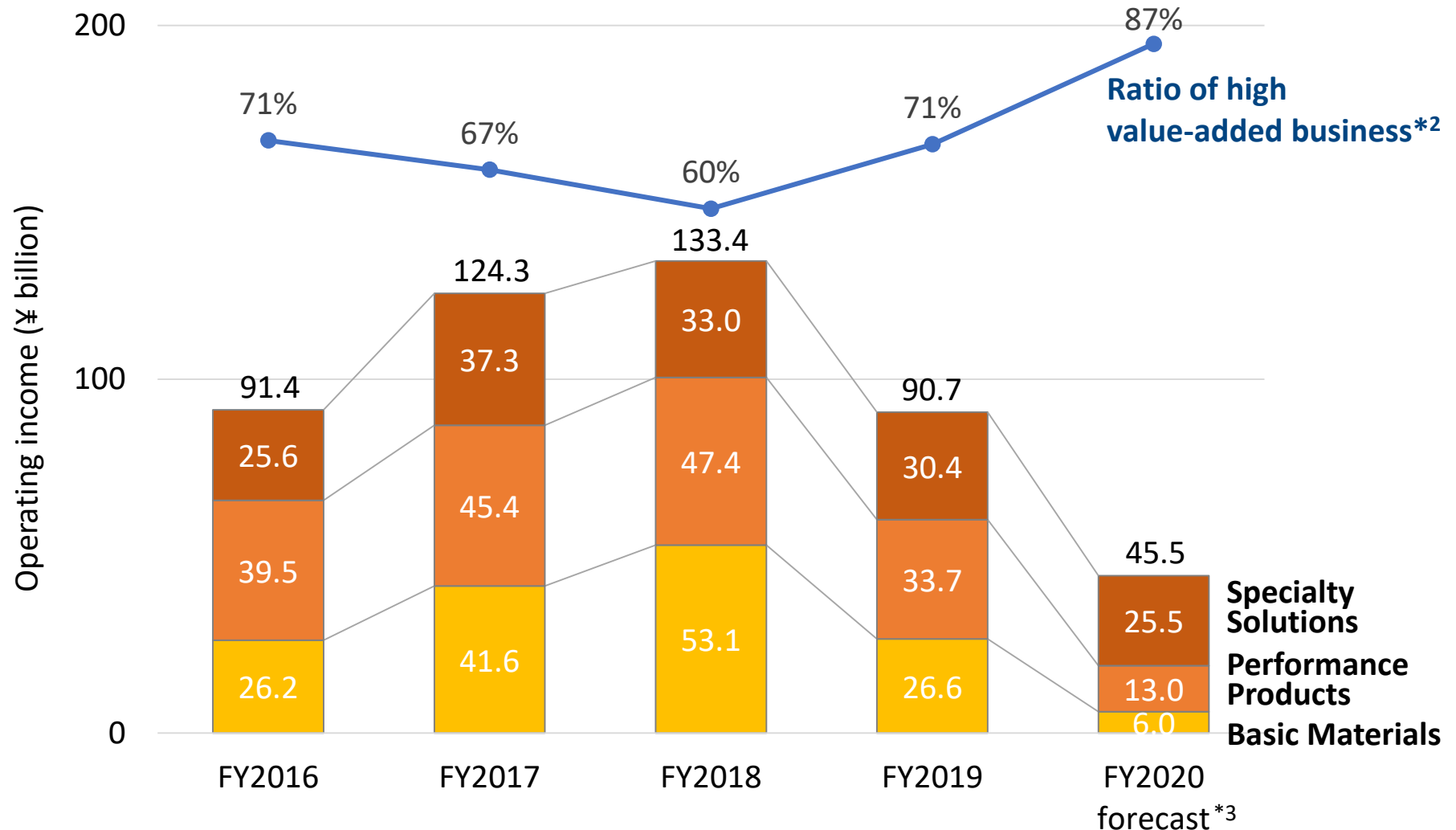
FY2021 target <sup>*3</sup>
2400.0
240.0
10.0%
370.0
15.4%
180.0
130
9.0%
11.1%
≈0.5
110

<sup>1</sup> Operating income, depreciation, and amortization (tangible, intangible, and goodwill)

<sup>2</sup> (Operating income – income taxes) / average annual invested capital

<sup>3</sup> Target announced in May 2019

# Appendix: Operating income of Material segment\*<sup>1</sup>



<sup>1</sup> Beginning with FY2019, the business categories in the Material segment are reclassified. Results from FY2016 through FY2018 are recalculated in accordance with the new classifications. Sums of figures by category differ from Material segment total due to intrasegment expenses and others.

<sup>2</sup> High value-added business: Performance Products and Specialty Solutions

<sup>3</sup> Forecast in November 2020

# Reference

# History of business portfolio transformation

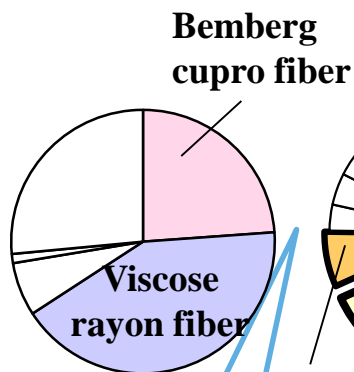
## Change in sales composition

Sufficiency of daily necessities, improvement in quality of homes, development of public infrastructure

Increased comfort and convenience

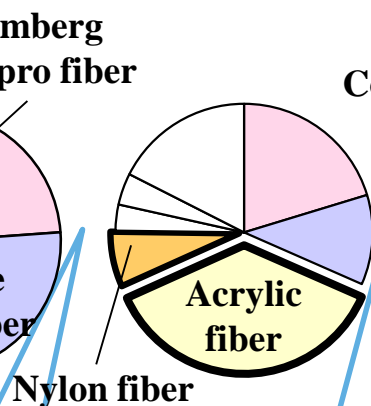
Heightened environmental consciousness, evolution of ICT

1950



Expansion into synthetic fiber businesses

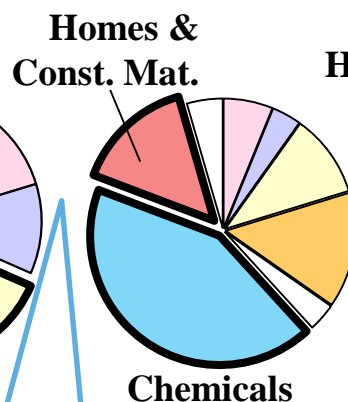
1965



Expansion of petrochemicals; construction of petrochemical complex

Start of housing business

1980

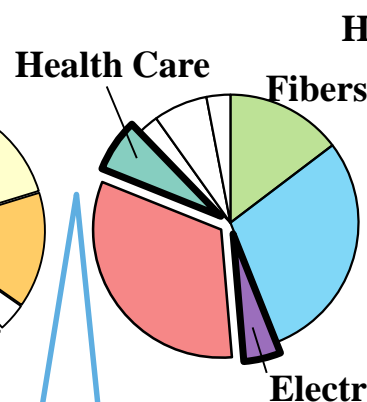


Start of electronics businesses

Start of health care business

Expansion of housing business

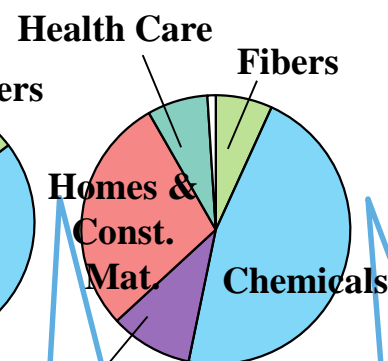
1995



Business portfolio restructuring

Expansion of global businesses

2010

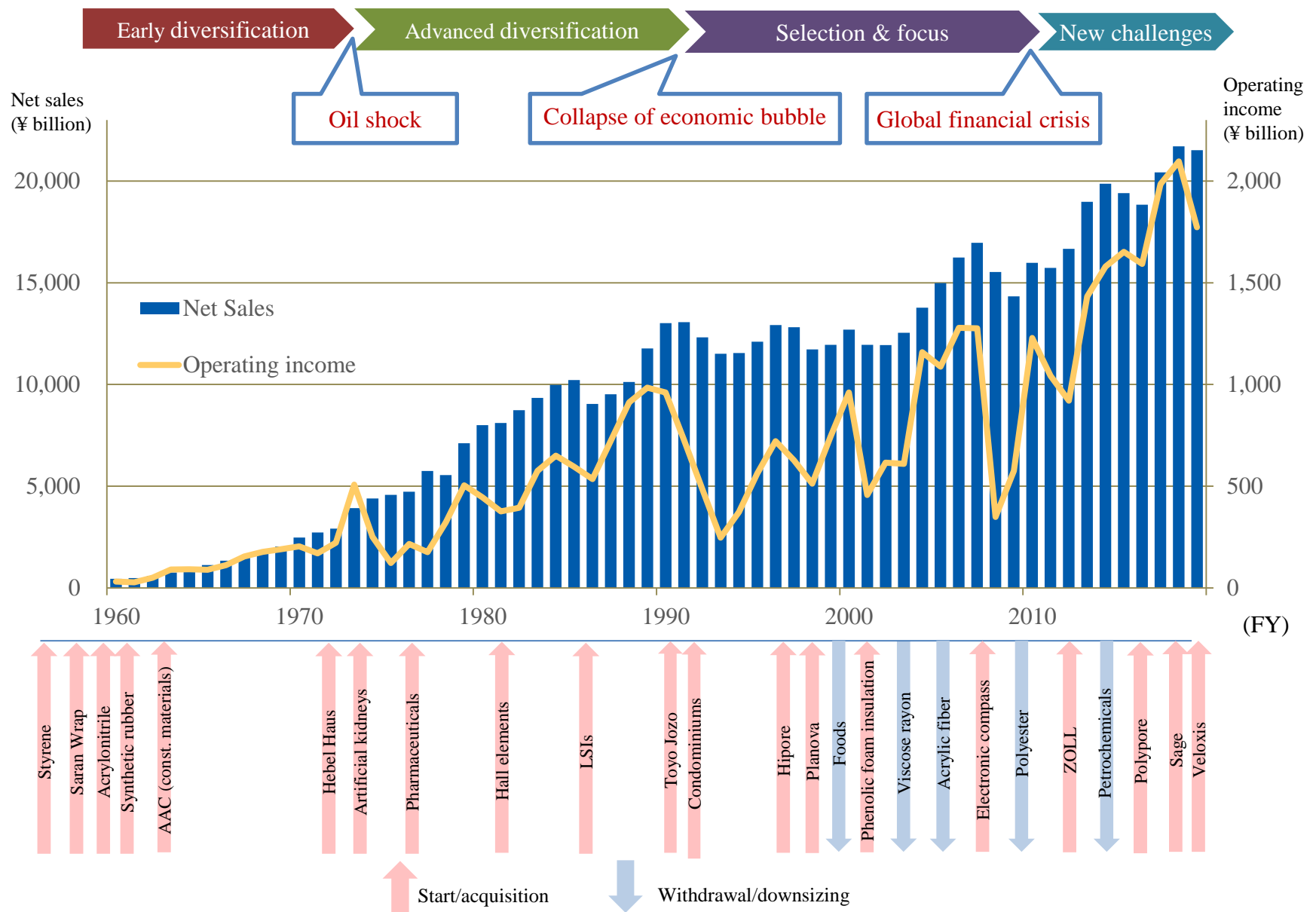


Start of critical care business

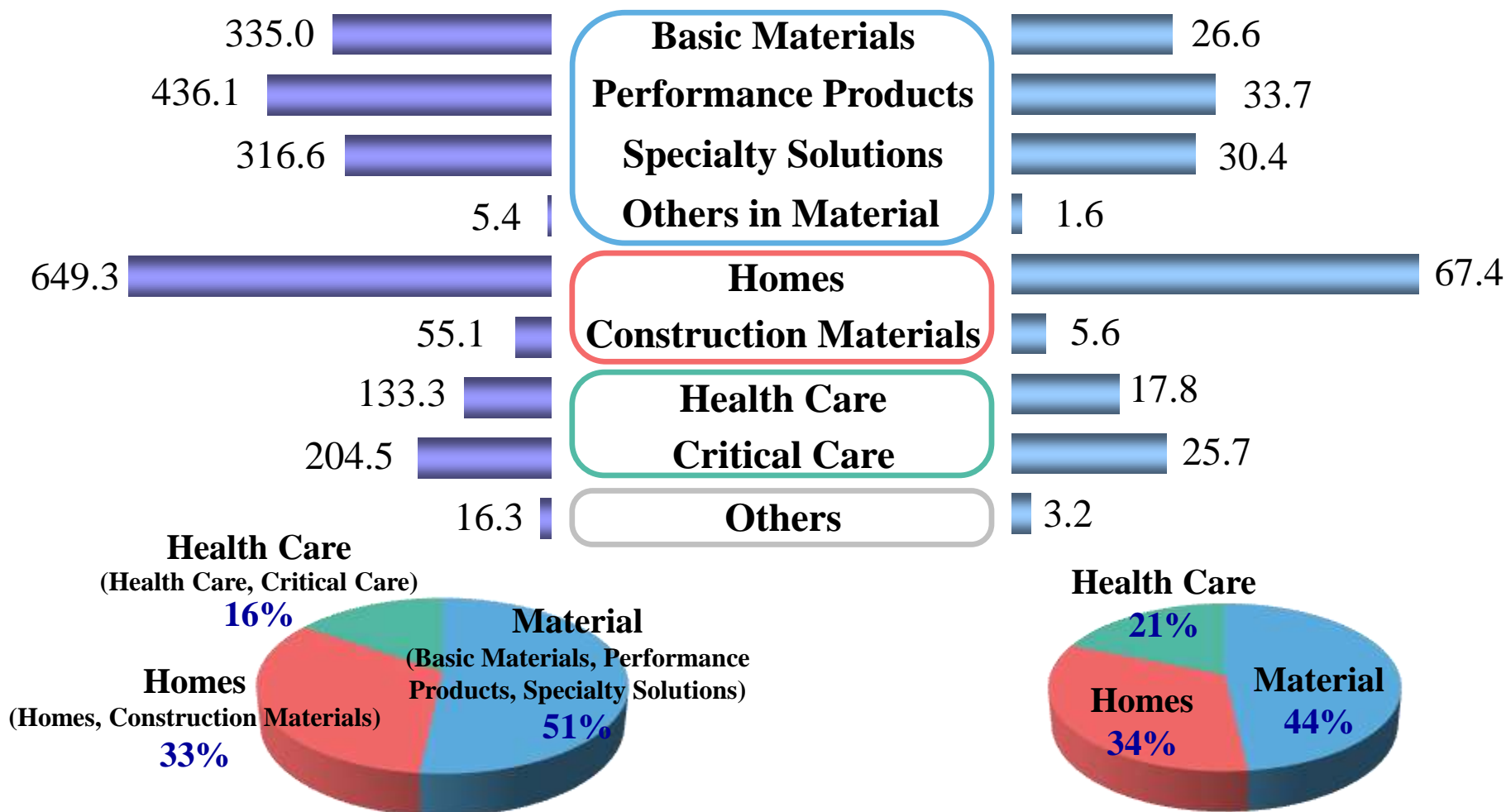
Expansion of separator business

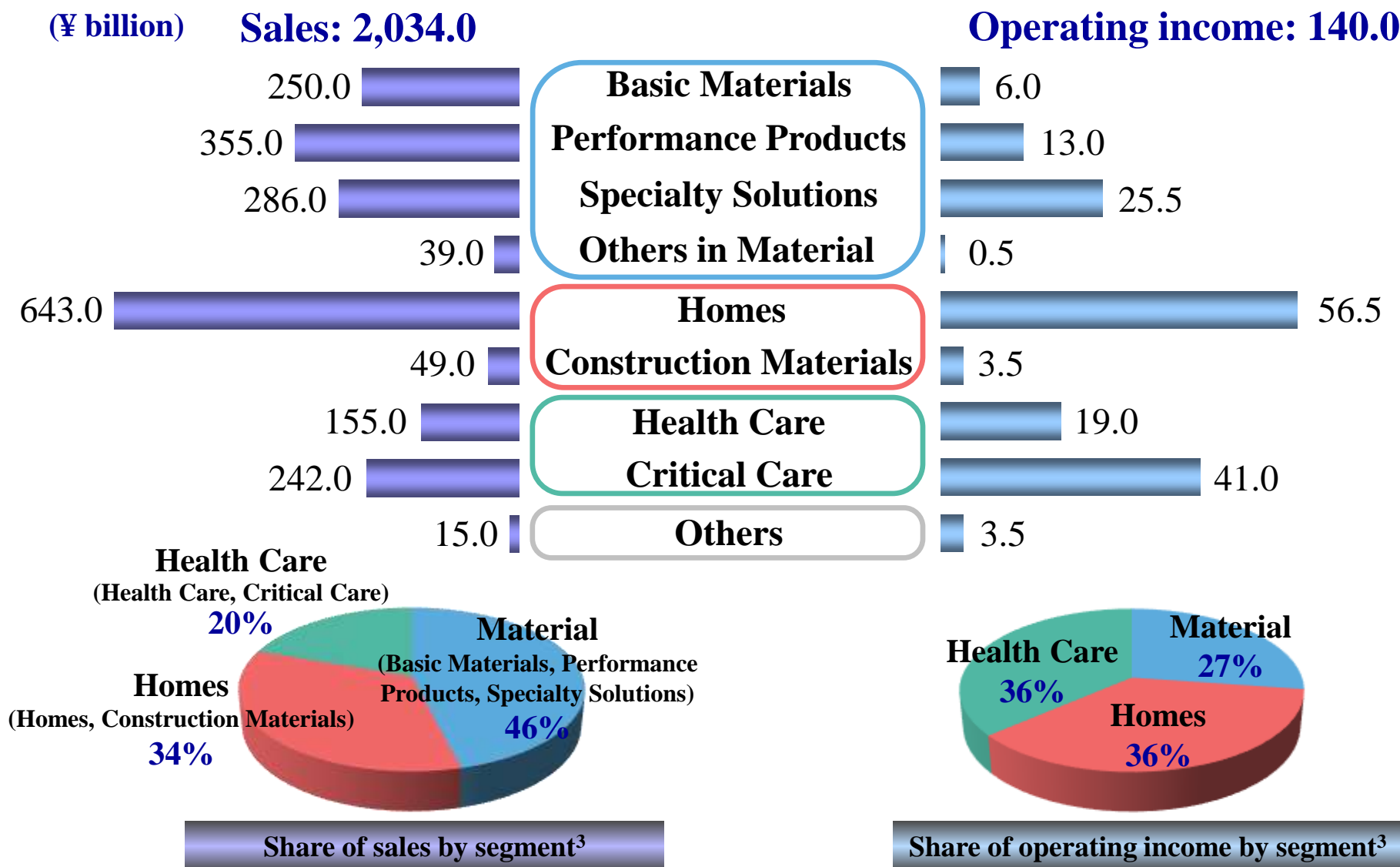
Further expansion of businesses, responding to changes in society

# Growth according to the changing times





FY 2019 sales and operating income results by business category<sup>1</sup>(¥ billion) **Sales: 2,151.6****Operating income: 177.3**Share of sales by segment<sup>2</sup>Share of operating income by segment<sup>2</sup><sup>1</sup> Figures for operating income by business category include intrasegment transactions which are eliminated from the segment totals.<sup>2</sup> Pie charts exclude "Others" category and "corporate expenses and eliminations."

FY 2020 sales and operating income forecast by business category<sup>1 2</sup><sup>1</sup> Forecast in November 2020<sup>2</sup> Figures for operating income by business category include intrasegment transactions which are eliminated from the segment totals.<sup>3</sup> Pie charts exclude "Others" category and "corporate expenses and eliminations."

# Ideal for Asahi Kasei (current & future)

## Mission

**Contributing to life and living for people around the world**

## Vision

**Providing new value to society by enabling “living in health and comfort” and “harmony with the natural environment”**

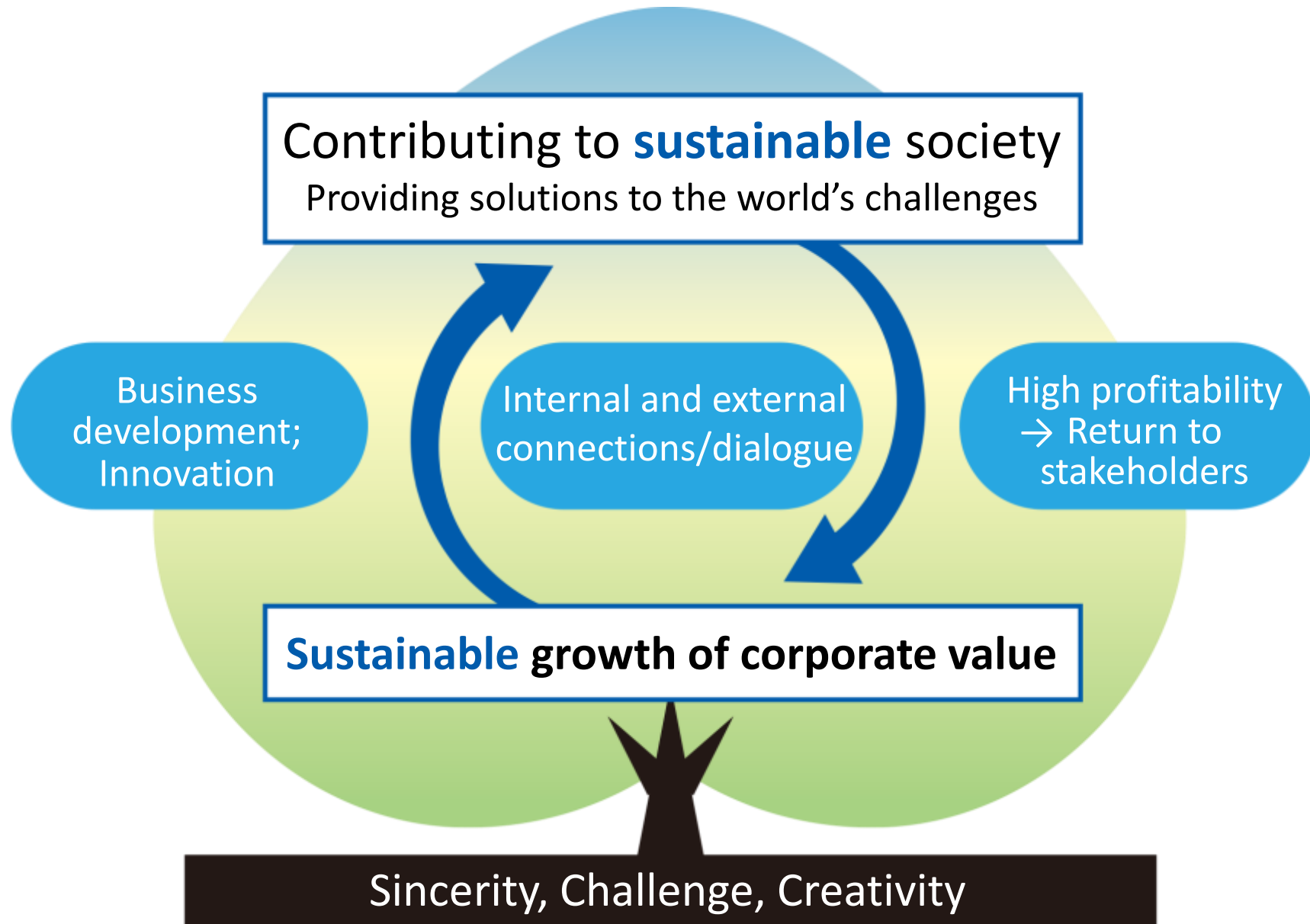
## Values

**“Sincerity,” “Challenge,” “Creativity”**

**“Creating for Tomorrow”**

**Working on ESG issues (Environmental, Social, Governance) based on our Mission, Vision, and Values**

# Sustainability for Asahi Kasei



# Concept

**Contributing to  
sustainable society**

**Contributing to life and living  
for people around the world**

Priority fields for  
provision of value

**Environment  
& Energy**

**Mobility**

**Life  
Material**

**Home  
& Living**

**Health  
Care**

**New “C”**

**Care for People, Care for Earth**

*Employee action principles*

*Creating new value*

“Cs”  
in CT2018

**Compliance**

**Communication**

**Connect**

**Challenge**

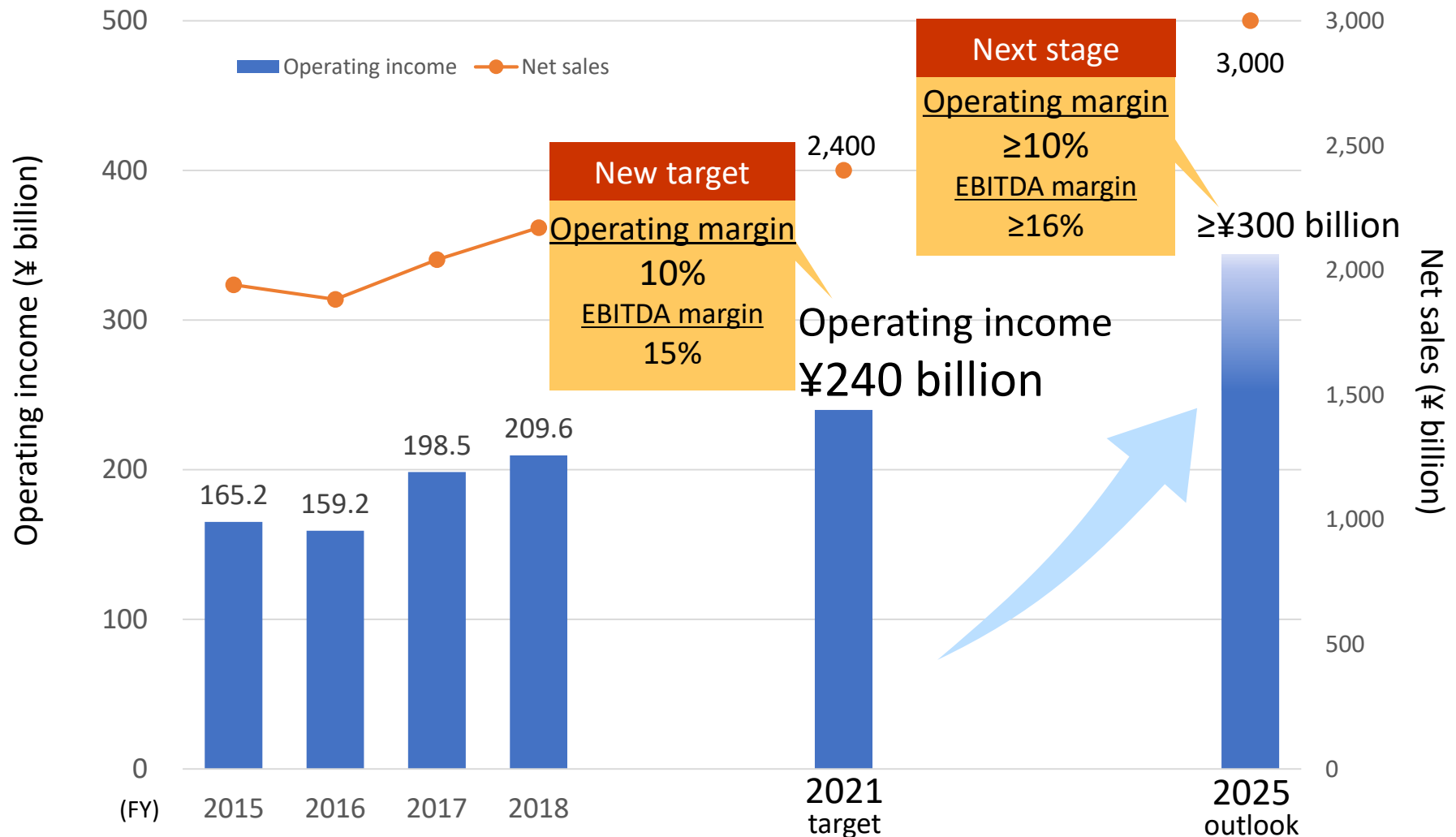
Strengths

**Diversity & Capability to change**

# Financial objectives (as announced in May 2019)

Sustainable profit growth exceeding global GDP growth

→ “Portfolio of high-profitability and high value-added businesses”



Note: Exchange rate assumptions are ¥110/\$ and ¥130/€

# Capital allocation (as announced in May 2019)

## Framework for capital allocation (FY2019–FY2021 3-year period)

Financing for growth  
(while maintaining financial discipline)

### **Borrowing capacity**

D/E ratio around 0.5

Increase in interest-bearing debt  
¥200 to ¥400 billion

Pursuing returns above cost of capital

### **Capital expenditure**

(decision-adopted basis)

3-year total

**≈¥800 billion**

(including M&A)

Share buybacks performed flexibly  
according to circumstances

### **Operating cash flow**

3-year total

**¥600 to ¥700 billion**

### **Shareholder returns**

**Grow dividends per share  
as earnings expand**

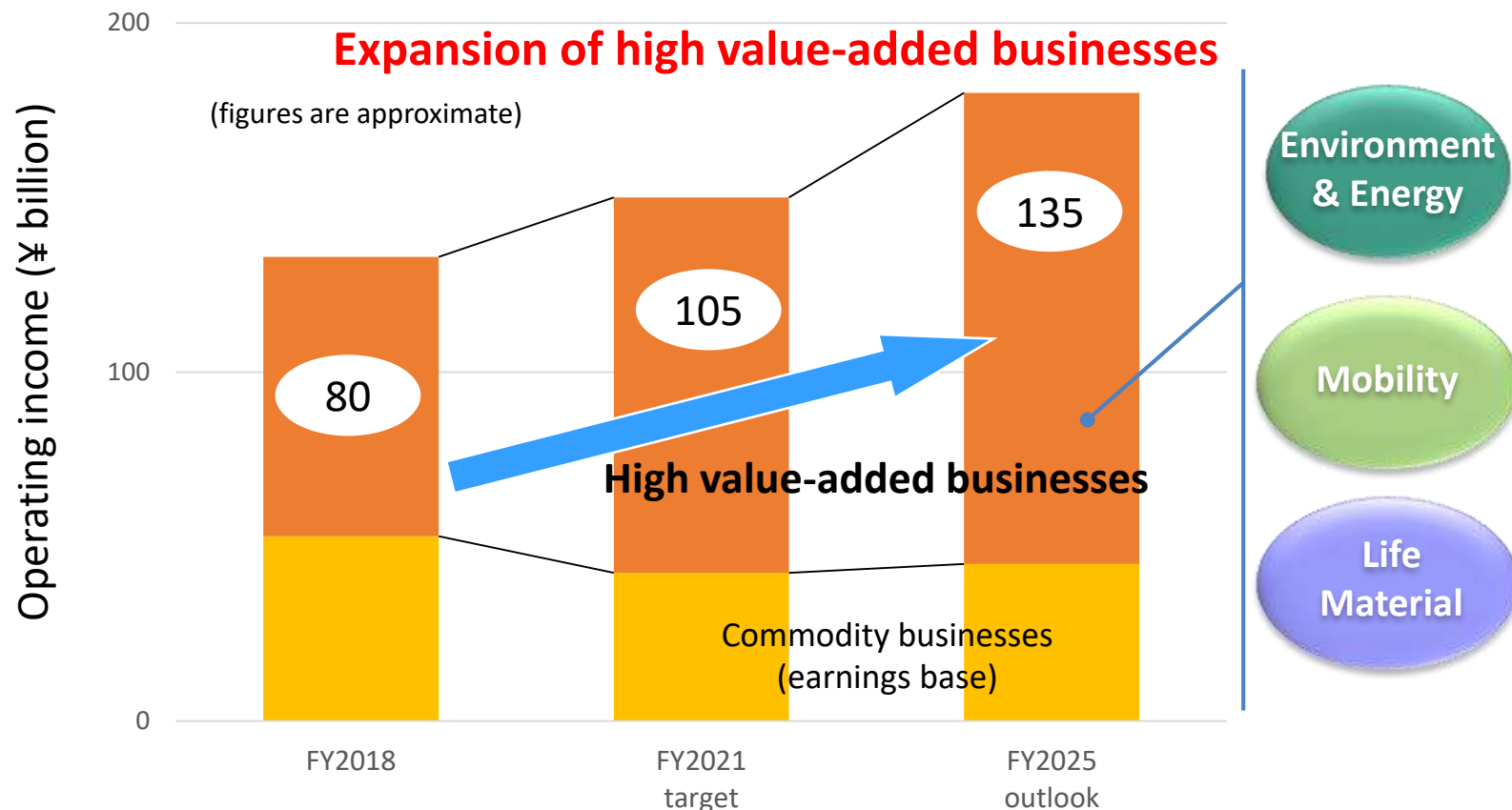
(payout ratio around 30 to 40%)



# Growth Strategy: Material (as announced in May 2019)

## Basic strategy

### Flexible allocation of management resources to priority fields

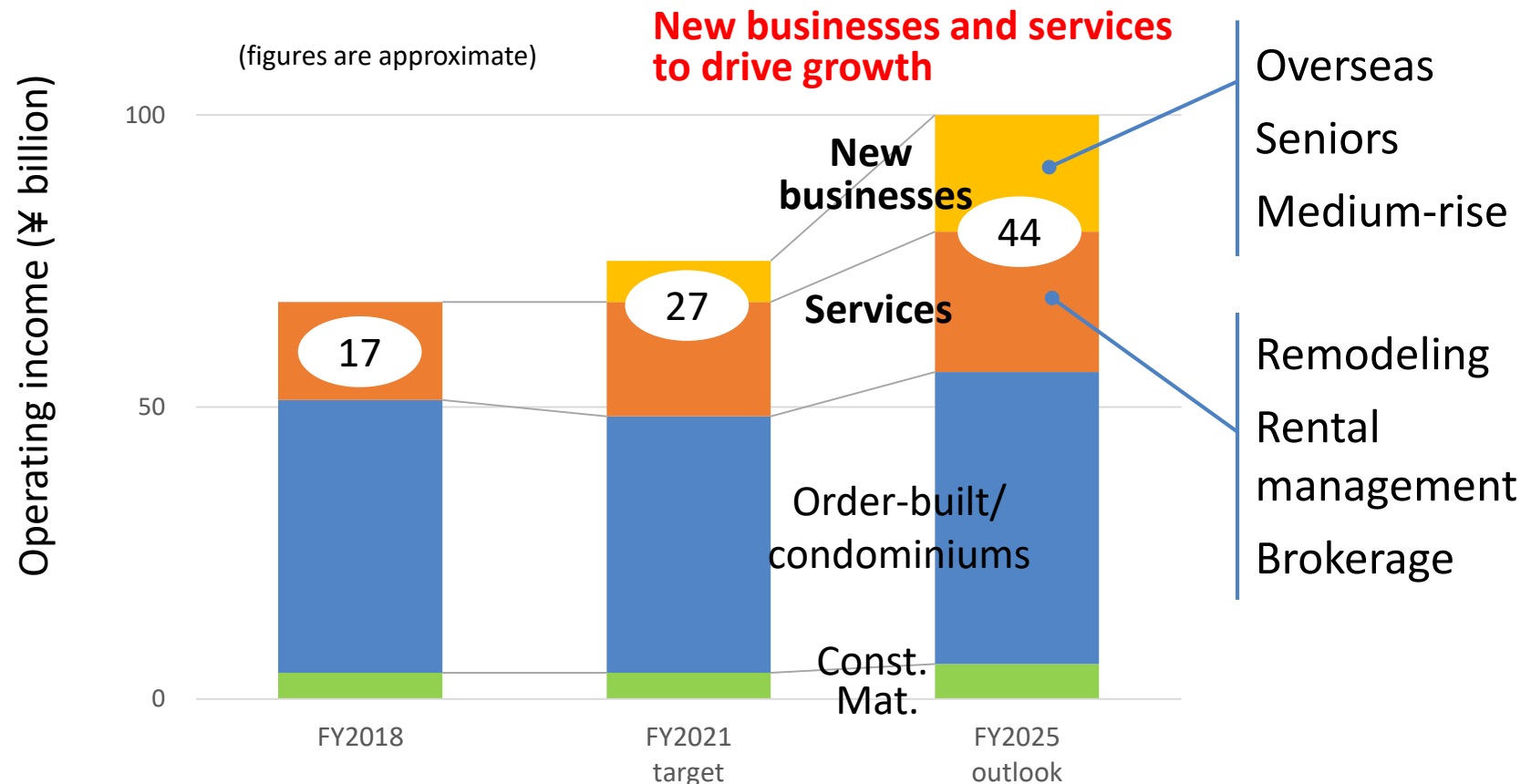


High value-added businesses: Fibers, synthetic rubber, engineering plastics, coating materials, ion-exchange membranes, electronic materials, consumables, battery separators, electronic devices, etc.

# Growth Strategy: Homes (as announced in May 2019)

## Basic strategy

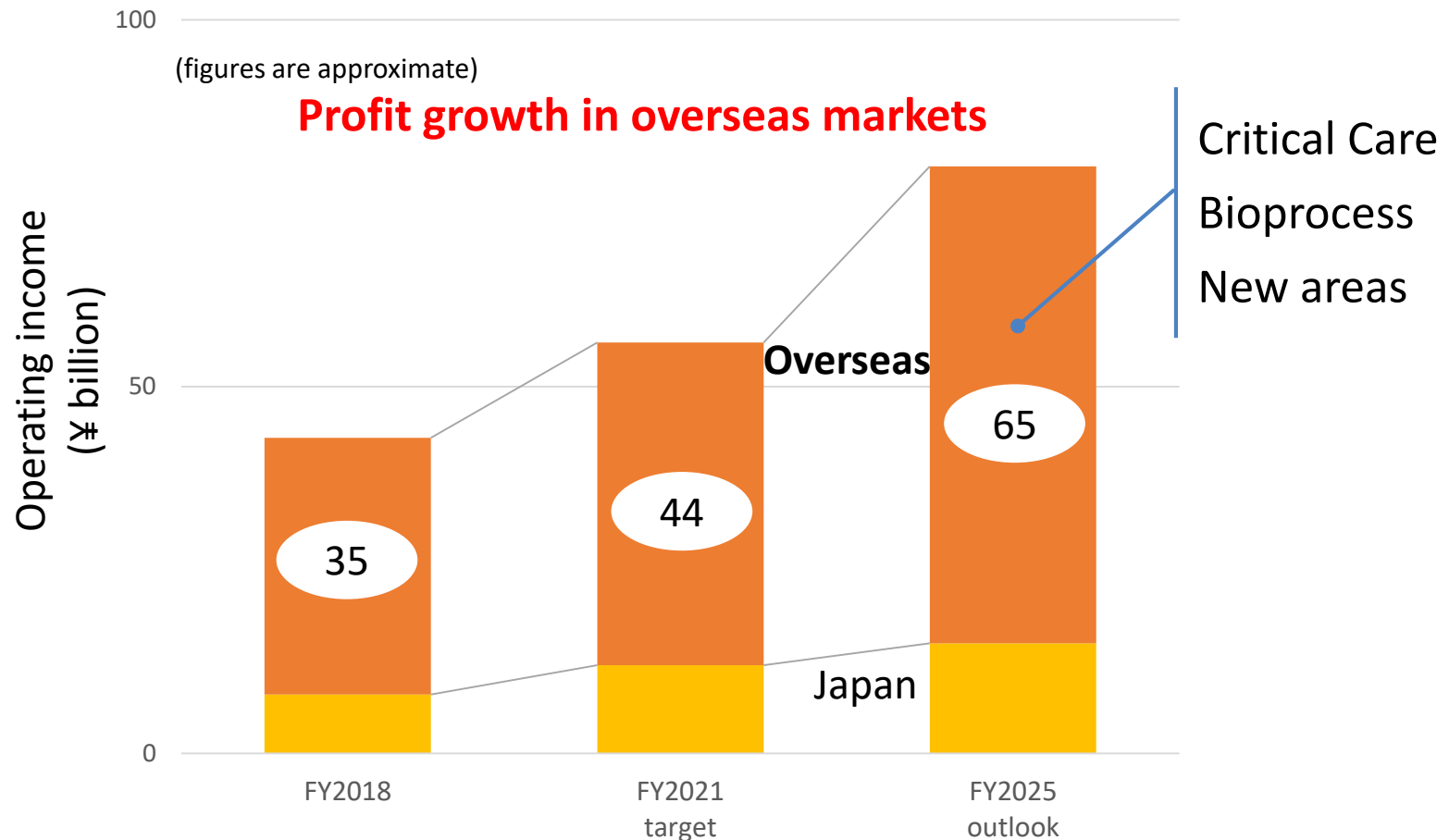
## Reinforcing and extending value chain management



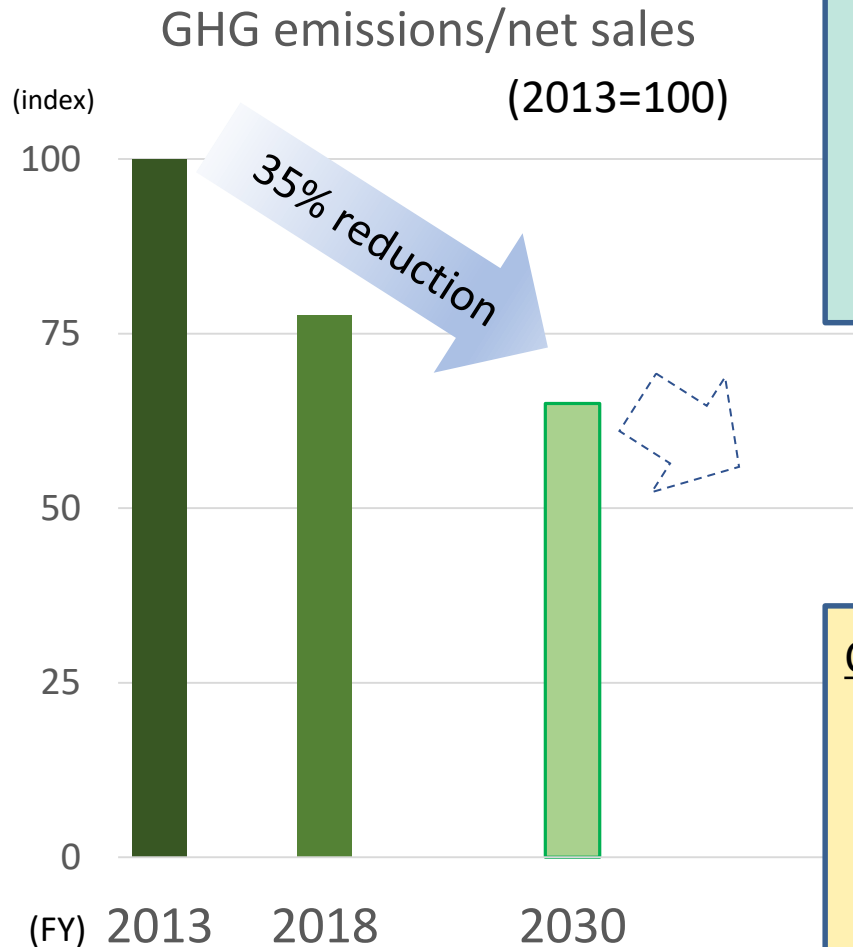
# Growth Strategy: Health Care (as announced in May 2019)

## Basic strategy

**Further accelerating transformation  
to a global health care company**



# Objectives for sustainability



## Reducing our own GHG emissions

### • **Further reduction in GHG emissions**

Installing lower-emission equipment, optimizing plant operation

### • **Greater use of low-carbon energy**

Increasing renewables and LNG

### • **R&D for further GHG reduction**

## Toward a sustainable society

## Contributing to reduce the world's GHG emissions

### • **Businesses that contribute to energy conservation and reduced GHG emissions**

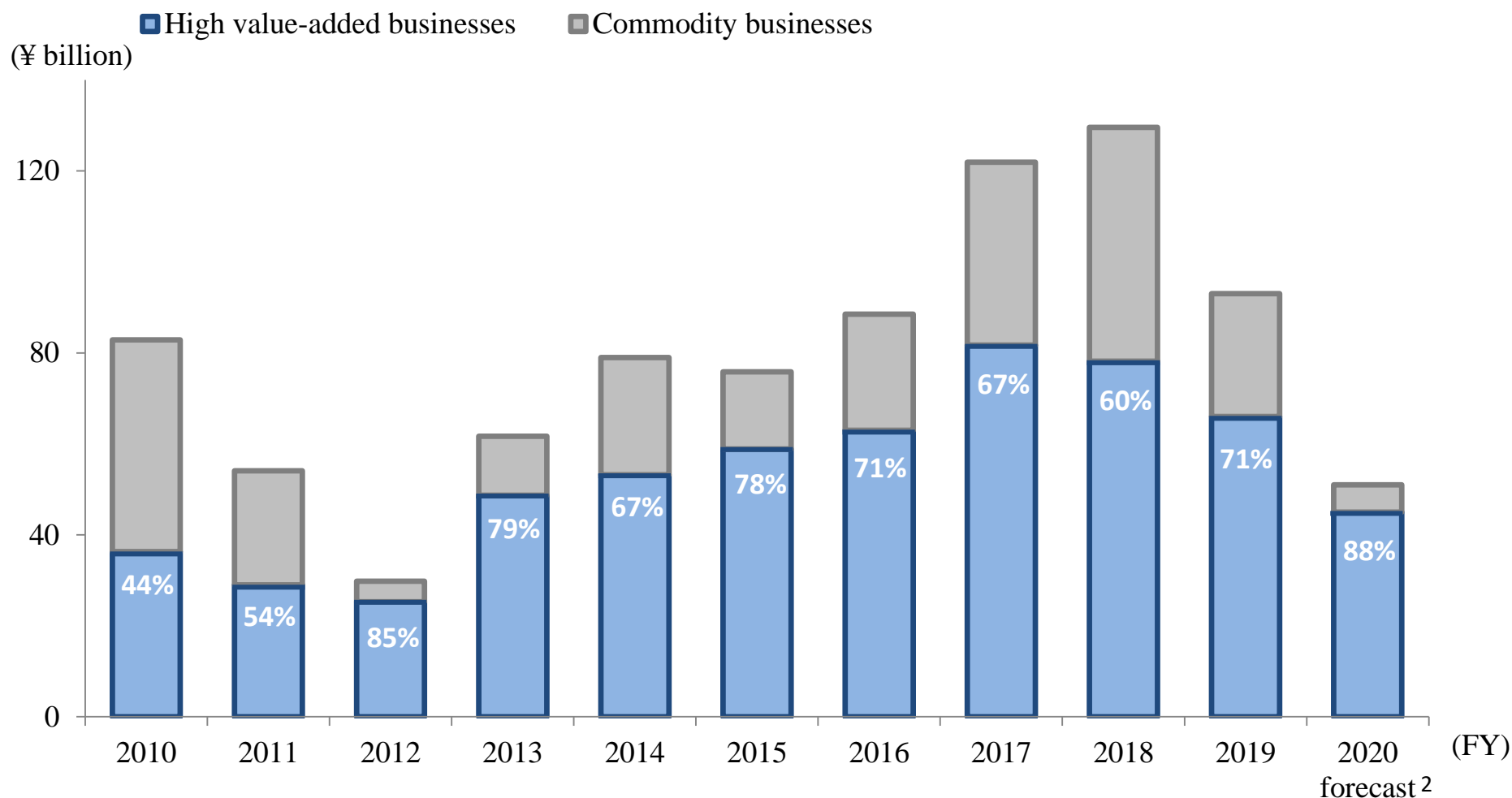
Battery separators, lightweighting resins, net zero energy houses, CO<sub>2</sub> sensors, etc.

### • **Technology development/commercialization for clean environmental energy**

Green hydrogen production, CO<sub>2</sub> chemistry, etc.

# Growth in high value-added businesses<sup>1</sup> (1)

## Operating income of Material segment



<sup>1</sup> High value-added businesses: fibers, synthetic rubber, engineering plastics, coating materials, ion-exchange membranes, electronic materials, consumables, battery separators, electronic devices, etc.

<sup>2</sup> Forecast in November 2020

# Growth in high value-added businesses (2)

	FY 2019 sales (¥ billion)	Commodity business	High-value added business
Basic Materials	335.0	Petrochemicals (AN, etc.)	
Performance Products	436.1	—	Fibers, synthetic rubber, engineering plastics, consumables
Specialty Solutions	316.6	—	Coating materials, ion-exchange membranes, electronic materials, consumables, battery separators, electronic devices, etc.
Others	5.4	—	
Material total	1,093.1		

	Sales (¥ billion)	Commodity business	High-value added business
FY 2010 <sup>1</sup>	966.9	approx. 40%	approx. 60%
		↓	↓
FY 2015	1,004.4	approx. 35%	approx. 65%
		↓	↓
FY 2018	1,176.2	approx. 35%	approx. 65%
		↓	↓
FY 2019	1,093.1	approx. 30%	approx. 70%
		↓	↓
FY 2025 outlook <sup>2</sup>	1,600.0	approx. 25%	approx. 75%

<sup>1</sup> Total of sales in Chemicals, Fibers, and Electronics in FY 2010.

<sup>2</sup> As of April 2016.

# Basic Materials (1) Main products

As of May 2019

	Asahi Kasei Capacity (kt/y)	Main competitors	Main applications	Asahi Kasei's position/strengths
Acrylonitrile	1,002	Ineos Nitriles Ascend	ABS, acrylic fiber, carbon fiber, NB latex; captive use for AS, adiponitrile	Plants in Japan, Korea, and Thailand 2nd largest producer in the world
Styrene	390	Lyondell Basell Ineos Styrolution Shell	PS, EPS, ABS, SB latex, unsaturated polyester, SBR; captive use for PS, AS, SB latex, SBR	After 320 kt/y plant in Mizushima closed in Feb. 2016, business to focus on domestic market and captive use
Methyl methacrylate	180	Mitsubishi Chemical Sumitomo Chemical	MS, MBS, coating materials, cast sheets; captive use for PMMA	Proprietary, cost-competitive C4 process
Cyclohexanol	180	Shandong Haili BASF	Adipic acid; captive use for adipic acid	Proprietary, economically-competitive, environmentally-friendly process with fewer waste Mainly for captive use
Polyethylene	236	(Domestic) Japan Polyethylene Prime Polymer	Films, miscellaneous goods, food containers, injection molding; captive use for LIB separator	Business development taking advantage of unique characteristics based on distinctive catalyst technology, including high density Polyethylene
Polystyrene	315	(Domestic) Toyo Styrene DIC	Food containers, food packaging, foamed polystyrene, toys, miscellaneous goods, construction materials	Production and sales by PS Japan Largest producer in Japan

## Basic Materials (2) Strengthening of operations in Japan

Strengthening petrochemical operations by establishing the optimum production configuration for stable earnings and enhanced competitiveness to cope with contracting domestic demand and price competition from products made overseas based on low-priced feedstock

Business	Location	Capacity (thousand tons)	Major applications	Closure schedule
Naphtha cracker	Mizushima	500 (unified with Mitsubishi Chemical's facility)	Production of basic petrochemical products such as ethylene and propylene	February 2016
AN	Mizushima Kawasaki Korea Thailand	200 100 150 560 <sup>1</sup> 200	ABS, acrylic fiber, carbon fiber, acrylamide, adiponitrile	August 2014
Styrene	Mizushima	320 390	Polystyrene, ABS, synthetic rubber	February 2016
ABS resin	Mizushima	65	Automotive, home electronics, office equipment	December 2015
SB latex	Mizushima Kawasaki	24 36	Paper coating, adhesives, paint	December 2015
Epoxy resin	Mizushima Fuji	37 (undisclosed)	Coatings, adhesives, electronics	May 2015

<sup>1</sup> Capacity as of February 2014, at the time of announcement of the strengthening of petrochemical operations; currently 602 thousand tons after debottlenecking.



Closure



Dedication to another product



# Performance Products (1) Main products: Fibers

## Bemberg cupro fiber

- Only manufacturer in the world; global development for applications such as linings, innerwear, and ethnic garments

## Roica premium stretch fiber

- High-function products manufactured at our global sites in Japan, Taiwan, China, Thailand, and Germany

## Leona nylon 66 filament

- Expansion in automotive airbag application in addition to tire cord application with superior strength and heat resistance

## Nonwovens

### Eltas spunbond

Increased demand in diaper application for Asian market

### Bemliese continuous-filament cellulose nonwoven

Increased demand in applications for facial mask, medical use, and industrial wiper towel

### Lamous artificial suede

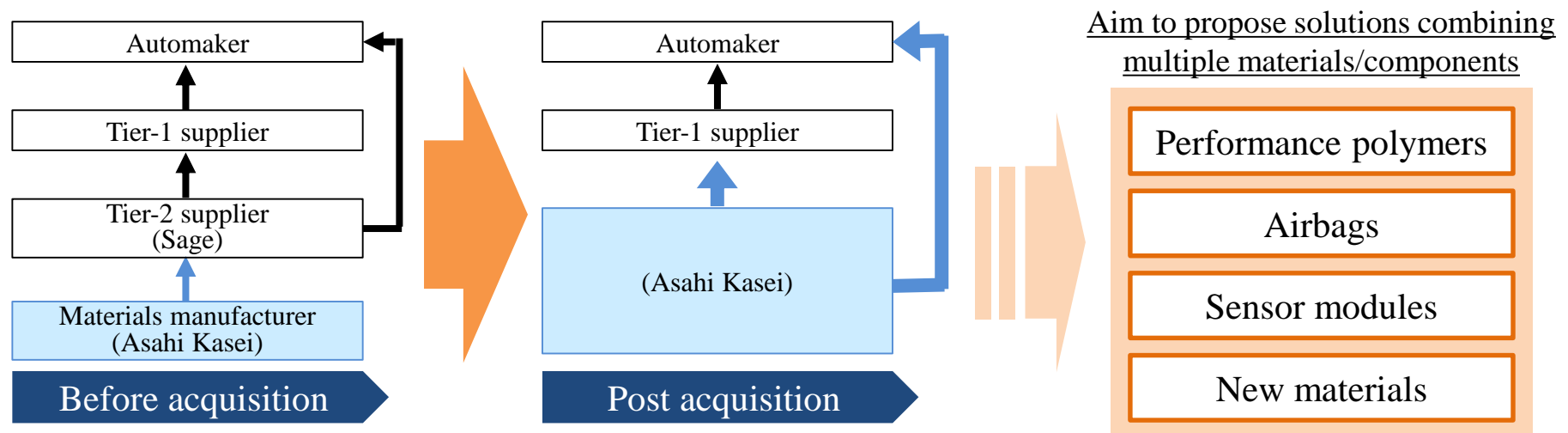
- Sales expansion centered on automotive upholstery application; Decision to expand capacity; start-up in second half of FY 2021
- Acquisition of Sage Automotive Interiors, Inc., manufacturing and selling vehicle seat fabric using Lamous, in September 2018



## Performance Products (2) Acquisition of Sage

### Acquisition of Sage Automotive Interiors, a US-based manufacturer of automotive interior material, in September 2018

- ✓ Enhanced access to vehicle manufacturers and Tier-1 suppliers, in order to swiftly and accurately ascertain trends and needs in the automotive industry, by expansion of supply chain from upstream to midstream.
- ✓ Proposal and provision of comprehensive solutions for vehicle interior leveraging Sage's design and marketing capabilities in combination with various Asahi Kasei products and technologies, such as fibers, plastics, and sensors, in response to new trends including CASE<sup>1</sup>.
- ✓ No. 1 global share for vehicle seat fabric<sup>2</sup>; marketing Dinamica brand using Lamous microfiber suede of Asahi Kasei, centered on US and Europe.
- ✓ Acquisition of automotive fabrics business of Adient, US, in September 2020.



<sup>1</sup> Connected, Autonomous, Shared & Service, Electric.

<sup>2</sup> Woven and knitted fabric for vehicle seats (not including natural and synthetic leather)

## Performance Products (3) Engineering plastics, synthetic rubber

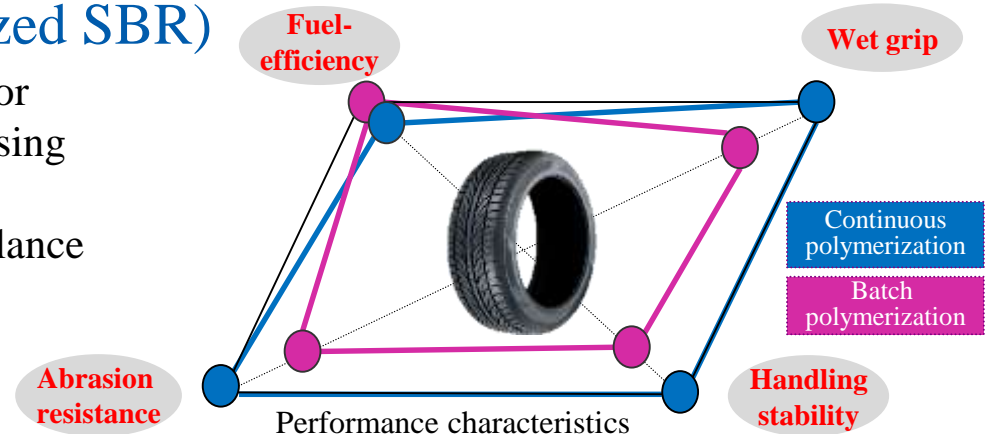
### Engineering plastics

- Leveraging computer-aided engineering (CAE) technology with weight-saving proposals for automotive parts
- Development of materials based on sophisticated technologies for polymer design, alloys, and compounding
- Global operations for production, sales, and technical service centered on automotive applications

Product	Features/strategy	Main applications
Leona polyamide 66	Specialty polyamide with superior heat resistance and durability	Automobiles (engine compartment parts, electrical parts)
Tenac polyacetal	Production of low-VOC products in Mizushima, Japan, and Zhangjiagang, China	Automobiles (interior parts, fuel-system parts, electric motor parts), office equipment
Xyron modified polyphenylene ether	Global development of superior grades	Photovoltaics, automobile battery parts, relay blocks, office equipment

### Synthetic rubber (solution-polymerized SBR)

- Developing solution-polymerized SBR (S-SBR) for fuel-efficient tires centered on Asian market, focusing on differentiation with cutting-edge grades
- Enhancing overall tire performance, with good balance of fuel efficiency and wet grip
- Technology for both continuous and batch polymerization processes



## Performance Products (4) Foamed engineering plastics

**Develop our unique high value-added products to respond to the increasing environmental needs in mobility society, aiming at achieving long-term growth**

Our technologies accumulated over time

Polymer processing technology  
• Foaming technology



Application development technology

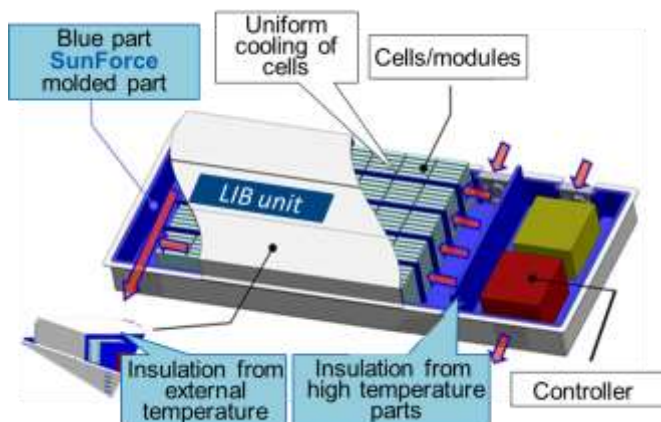


**Unique, high value-added products**

**Modified-PPE foamed beads**

### Application example

Heat management of a Li-ion battery case for vehicles:  
Contributes to higher output in a safer and more efficient way









**Foamed polyamide (PA)**

### Application example

- (1) Sound absorbing parts, particularly in engine room, to comply with restrictions on accelerated running noise
- (2) Exterior parts leveraging lightweight, rigidity, heat resistance, and heat insulation properties



## Specialty Solutions (1) Main products (i) Performance materials

Product		Main applications	Asahi Kasei's position
Aciplex ion-exchange membranes, membrane-process electrolyzers		Chlor-alkali electrolysis	Membranes: No. 1 world share Electrolyzers: No. 2 world share
Glass fabric		Electrical insulation for printed circuit boards in portable devices such as smartphones and equipment for telecommunications infrastructure	Top-tier world share in super thin fabric and low dielectric fabric
Sunfort dry film photoresist		Forming copper circuit patterns on printed wiring boards and semiconductor packaging	World top-3 share: 30%
Ceolus microcrystalline cellulose		Additives for pharmaceuticals and foods	No. 1 domestic share
Duranate HDI-based polyisocyanate		Non-yellowing polyurethane curing (coatings, inks, adhesives, cast molding, etc.)	World top-3 share No. 1 domestic share
APR and AFP photopolymers and platemaking systems		Printing plates for packaging such as cardboard, labels, and film	No. 1 domestic share

## Specialty Solutions (2) Main products (ii) Battery separators

**Integrate technology and marketing, deliver value to customers**

- Utilize Asahi Kasei Group technology for materials, analysis, and manufacturing
- Optimum global manufacturing, marketing, and development configuration to meet customer needs



### HIPORE

Wet-process Li-ion  
battery separator

- Presence and development strength in consumer electronics
- Expansion in automotive applications in developed countries

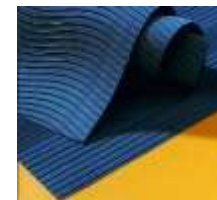
Solidify leading position in the market through unique solution proposal ability having both wet and dry processes, with global manufacturing, marketing, and development configuration, meeting various customer needs



### CELGARD

Dry-process Li-ion  
battery separator

- Presence in automotive applications
- Adoption in ESS<sup>1</sup> applications



### DARAMIC

Lead-acid battery  
separator

- World-leading presence
- Stable market growth centering in emerging countries
- Market inflection with spread of ISS<sup>2</sup> vehicles

Strengthen customer support, capture demand in emerging markets, develop new products with group technology

**Pursue synergy between lead-acid and Li-ion battery separators**

<sup>1</sup> Energy storage systems

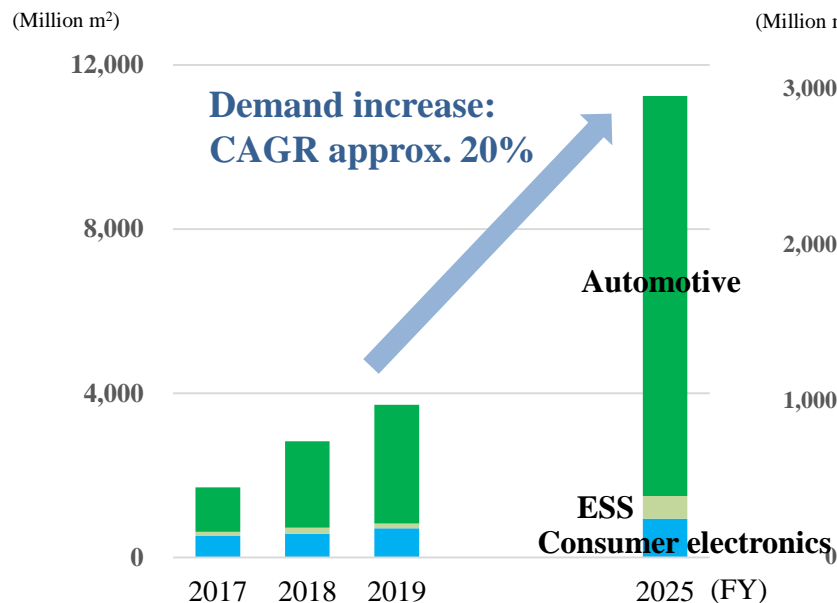
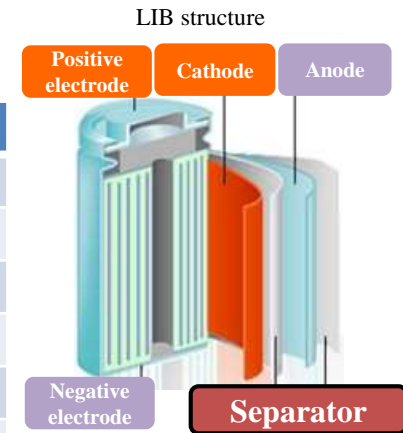
<sup>2</sup> Idling stop and start



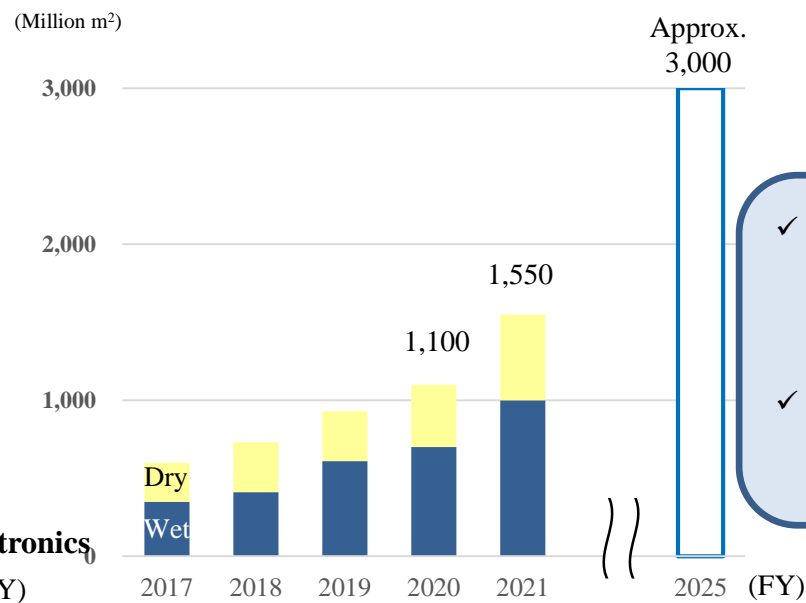
## Specialty Solutions (3) Capacity expansions for LIB separator

**Capacity expansions for LIB separator to prepare for upcoming EV market growth**

Process	Location	Capacity	Start-up schedule
Wet	Moriyama, Shiga, Japan	Approx. 60 million m <sup>2</sup> /year	First half of FY 2018
Dry	North Carolina, the US	Approx. 150 million m <sup>2</sup> /year	Second half of FY 2018
Wet	Moriyama, Shiga, Japan	Approx. 200 million m <sup>2</sup> /year	First half of FY 2019
Wet	Moriyama, Shiga, Japan	Approx. 90 million m <sup>2</sup> /year	First half of FY 2020
Wet	Moriyama, Shiga, Japan	Approx. 300 million m <sup>2</sup> /year	First half of FY 2021
Dry	North Carolina, the US	Approx. 150 million m <sup>2</sup> /year	FY 2021 or later



**Demand forecast for LIB separator**



**Asahi Kasei production capacity for LIB separator**

- ✓ Swiftly meeting various market needs with both wet-process and dry-process separators
- ✓ Further expand capacity to meet rising global demand

# Specialty Solutions (4) Main products (iii) Electronic devices

## Core technologies

Analog/digital signal conversion technology (LSIs); sensing technology using compound semiconductors for high sensitivity and fast response

### For consumer electronics



Identifying direction you are facing on the map

#### Electronic compass

World's No. 1

Optical autofocus/image stabilization for higher-quality pictures

#### High-precision position control IC for camera module

Top tier in the world (magnetic sensors)

Higher-quality sound with smartphones

#### Signal processing IC for audio equipment

Top tier in the world

### For automotive



Quieter and more comfortable space

#### Signal processing IC for noise and echo cancellation

Top tier in Japan

Power window anti-pinch function, windshield wiper control, etc.

#### Motor control sensor

Top tier in Japan

Millimeter wave radar

#### Signal processing IC

Monitoring EV charge

#### Current sensor

### For industrial equipment



Precision control of robots

#### Magnetic rotational angle sensor

### For residential



Detecting presence of people

#### Infrared sensor



## Homes (1) Order-built homes

### Hebel Haus and Hebel Maison high-end homes

- Exceptional resistance to earthquake and fire, and full-fledged after-sale service (60-year inspection system)
- Top-tier market share in urban areas; No. 1 share in Tokyo area with strengths in medium-rise homes (3–4 story), expanding into 5+ story homes



Hebel Haus  
unit homes

### Innovative proposals for urban lifestyle

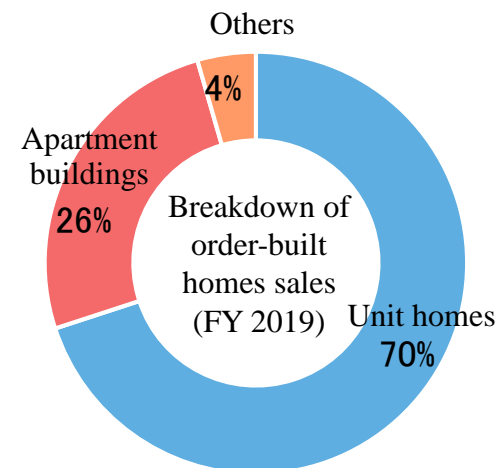
- A pioneer of two-generation homes, and apartments for dual-income families and pet owners
- Developing business in homes for seniors; Hebel Village apartments for healthy active seniors



Hebel Maison  
apartment buildings

### Development of urban markets and focus on order-built homes

- Most of sales in order-built homes coming from 3 major areas in Japan (Tokyo area, Nagoya area, Osaka area)
- Rebuilding accounts for approximately half of order-built homes
- Not purchasing large tracts of land, building houses, and selling parcels; specializing in order-built homes



# Homes (2) Housing-related businesses

## Real estate

### Atlas condominium buildings

- Leading position in rebuilding of older condominiums based on obtaining accord among owners



### Rental management

- Management of Hebel Maison rental units, amounting to approx. 100,000 units, mainly in buildings subject to 30-year all-unit leaseback system

## Remodeling

Targeting the 280,000 Hebel Haus and Hebel Maison buildings sold to date

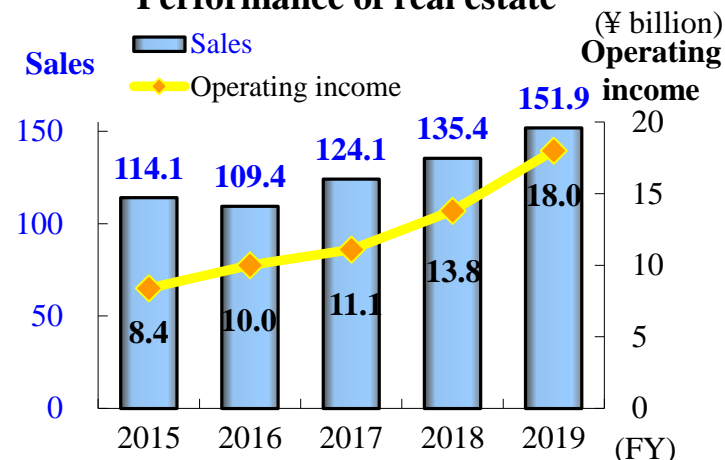


## Overseas businesses

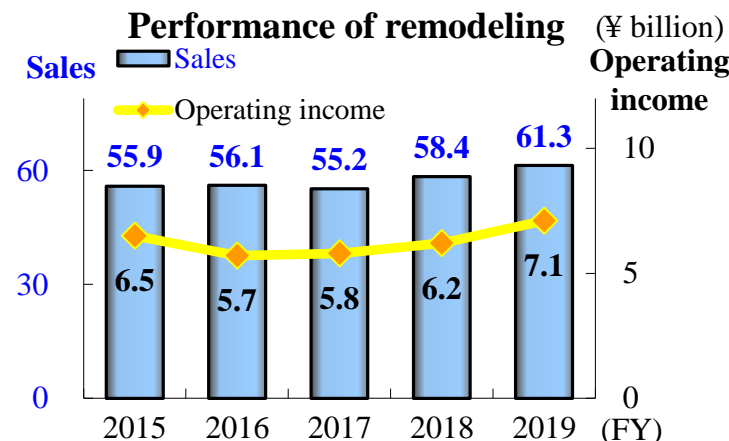
Development centered on the US and Australia.

- Capital alliance with McDonald Jones Homes Pty Ltd, an Australian company which constructs and sells unit homes, in 2017.
- Acquisition of Erickson Framing Operations LLC, a US-based supplier of pre-fabricated building products, in 2018.
- Acquisition of Austin Companies providing electric, foundation, and HVAC work for home construction in the US, in September 2020.

Performance of real estate



Performance of remodeling



## Construction Materials: Main products

### Hebel autoclaved aerated concrete (AAC)

- No. 1 share in Japan
- Lightweight and highly durable with outstanding flame-resistance and thermal insulation



### Neoma Foam phenolic foam insulation panels

- Long-lasting, world-leading insulation performance

Neoma Zeus launched in January 2018 with the highest level of performance among insulation materials

- Eco-friendly material with no CFCs used during production
- High flame resistance; carbonizes without spreading flame



# Homes (3) Sales and order trends

(¥ billion, % indicates year-on-year comparison)

		Value of new orders during the term	Sales of order-built homes, etc. <sup>1</sup>	Sales of real estate <sup>1</sup>				Sales of remodeling	Other sales <sup>2</sup>	Consolidated	Order backlog
				Pre-built homes	Rental housing	Other	Total				
FY16	H1	206.6 (-4.9%)	183.5 (-0.1%)	11.8	41.2	1.8	54.8	27.0	(0.5)	264.8 (+2.6%)	538.8
	H2	194.3 (+6.1%)	220.8 (-3.1%)	9.5	43.5	1.6	54.6	29.1	0.8	305.3 (-6.1%)	515.8
	annual	400.9 (+0.1%)	404.3 (-1.8%)	21.3	84.7	3.4	109.4	56.1	0.4	570.2 (-2.2%)	
FY17	H1	193.1 (-6.5%)	182.7 (-0.4%)	12.0	45.3	1.6	59.0	26.8	1.1	269.6 (+1.8%)	528.9
	H2	212.5 (+9.4%)	224.1 (+1.5%)	14.7	47.8	2.5	65.1	28.4	1.1	318.7 (+4.4%)	520.9
	annual	405.6 (+1.2%)	406.8 (+0.6%)	26.8	93.2	4.2	124.1	55.2	2.2	588.3 (+3.2%)	
FY18	H1	210.1 (+8.8%)	175.5 (-4.0%)	16.8	49.7	1.6	68.1	27.2	1.0	271.8 (+0.8%)	557.8
	H2	241.5 (+13.6%)	228.2 (+1.8%)	13.2	52.1	2.1	67.4	31.2	6.1	332.9 (+4.5%)	575.0
	annual	451.6 (+11.3%)	403.7 (-0.8%)	29.9	101.8	3.7	135.4	58.4	7.1	604.7 (+2.8%)	
FY19	H1	201.9 (-3.9%)	197.3 (+12.4%)	7.6	54.4	2.3	64.3	32.0	11.3	304.9 (+12.2%)	589.0
	H2	198.4 (-17.8%)	218.4 (-4.3%)	28.0	56.8	2.8	87.6	29.4	9.0	344.4 (+3.4%)	578.2
	annual	400.3 (-11.3%)	415.7 (+3.0%)	35.5	111.2	5.1	151.9	61.3	20.4	649.3 (+7.4%)	
FY20	H1	145.3 (-28.1%)	187.8 (-4.8%)	30.9	58.1	2.1	91.0	25.8	9.8	314.4 (+3.1%)	543.8
	H2 forecast	178.5 (-10.0%)	203.2 (-7.0%)	16.6	62.4	3.4	82.5	27.7	15.3	328.6 (-4.6%)	528.8
	annual forecast	323.8 (-19.1%)	391.0 (-6.0%)	47.5	120.5	5.5	173.5	53.5	25.0	643.0 (-1.0%)	

<sup>1</sup> Income from maintenance service which was previously included in SG&A is included in sales beginning with FY 2019.

<sup>2</sup> Results of Erickson Framing Operations LLC and its consolidated subsidiaries, acquired on November 30, 2018 (US Eastern time), are included from Q4 2018.

# Pharmaceuticals (1) Main products

	Generic name	Mechanism/ substance class	Indication	Formulation	Sales (¥ billion)			
					FY16	FY17	FY18	FY19
Teribone	Teriparatide acetate	Synthetic human parathyroid hormone (PTH)	Osteoporosis with high risk of fracture	Injection	23.9	26.8	28.3	27.5
Recomodulin	Recombinant thrombomodulin alfa	Anticoagulant	Disseminated intravascular coagulation	Injection	12.6	11.8	11.8	10.9
Flivas	Naftopidil	Dysuria treatment	Benign prostatic hyperplasia	Tablet	5.9	4.6	3.3	2.5
Bredinin	Mizoribine	Immunosuppressant	Rheumatoid arthritis, kidney transplantation, nephrotic syndrome, lupus nephritis	Tablet	4.2	3.6	3.0	2.5
Elcitonin	Elcatonin	Eel calcitonin derivative	Osteoporosis pain	Injection	4.4	3.4	2.3	1.9
Reclast	Zoledronic acid	Osteoporosis drug	Osteoporosis	Injection	0.4	1.1	1.4	1.4
Kevzara	Sarilumab (rDNA origin)	Interleukin-6 inhibitor	Rheumatoid arthritis not responding well to conventional treatments	Injection	—	0.0	1.3	4.3

# Pharmaceuticals (2) Product pipeline

Development stage	Code name, form, generic name	Classification	Indication	Region	Origin	Remarks
Phase III	AK1820, injection/ capsule, isavuconazole	Antifungal agent	Invasive fungal infections	Japan	Licensed	
Phase II	ART-123, injection, recombinant thrombomodulin alfa	Anticoagulant	Chemotherapy- induced peripheral neuropathy (CIPN)	Japan	In-house	Additional indication
Phase II	AK1830, oral	Analgesic	Pain associated with osteoarthritis	Japan	Licensed	
Phase II			Chronic low back pain			
Pending approval (overseas)	HE-69, tablet, mizoribine	Immunosuppressant	Lupus nephritis, nephrotic syndrome	China	In-house	Additional indication
Phase III (overseas)	ART-123, injection, recombinant thrombomodulin alfa	Anticoagulant	Severe sepsis with coagulopathy	United States, Europe, etc.	In-house	

## Pharmaceuticals (3) Acquisition of Veloxis (i)

- ✓ Acquisition of US-based Veloxis Pharmaceuticals Inc. in March 2020; total acquisition price approx. DKK 9 billion, JPY 147.2 billion
- ✓ Accelerating global expansion of Health Care business by obtaining platform in the US pharmaceuticals market

### ● Overview of Veloxis

Business overview	Sale of Envarsus XR, an immunosuppressant drug used following kidney transplant which uses a proprietary drug delivery technology <sup>1</sup>			
Location	Cary, North Carolina, the United States			
Revenue (million \$, fiscal year ends at December)	2016	2017	2018	2019 forecast <sup>2</sup>
	9	30	39	75–82
Strengths	<ul style="list-style-type: none"> <li>▪ Excellent management team having a history of growing pharmaceutical companies specializing in advanced medical care</li> <li>▪ Efficient sales team focused on approx. 200 transplant centers in US</li> <li>▪ High growth potential of Envarsus XR</li> <li>▪ Growth potential including possibility to in-license transplant-related products</li> </ul>			

<sup>1</sup> Technology to enhance oral bioavailability and control the release of a drug to improve efficacy and/or reduce side effects.

<sup>2</sup> Forecast at the announcement of acquisition in November 2019. Earnings of Veloxis is consolidated into the Asahi Kasei Group beginning with FY 2020 and included in the Health Care business category of the Health Care segment

### ● Envarsus XR

- Proprietary extended-release technology suppresses the rise in maximum blood concentration after administration and extends the duration that effective blood concentration is maintained
- This enables once-daily administration and reduces side-effects



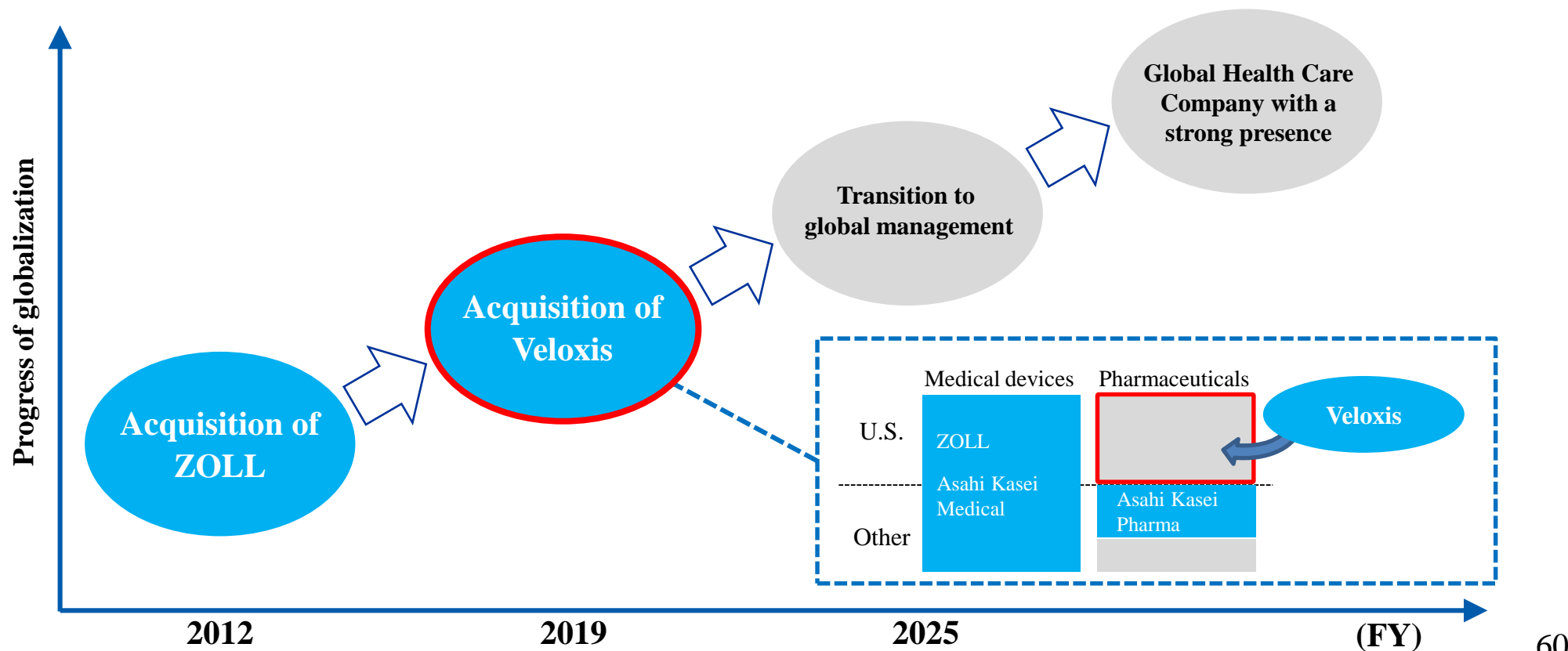
(extended-release formulation of tacrolimus)



## Pharmaceuticals (4) Acquisition of Veloxis (ii)

✓ **Expansion of Health Care business by accelerating globalization and obtaining diverse sources of growth and competitiveness in both pharmaceutical and medical device businesses**

- Obtaining overseas business platform for medical device business by acquisition of ZOLL in 2012
- Accelerating global growth in pharmaceutical business by acquisition of Veloxis, obtaining business platform in US pharmaceuticals market that is world's largest and fastest-growing





# Medical devices: Main products

## Dialysis-related products

- Leading position in hemodialysis-related products market in Japan
- Accelerated overseas development to meet needs in different countries and different regions



## Planova virus removal filters

- World's No. 1 share; contributing to improved viral safety and productivity in manufacturing processes for biopharmaceuticals and plasma derivatives<sup>2</sup>
- Medium-to-long-term market growth for biopharmaceuticals and plasma derivatives approx. 10% per year
- Tightening regulations for virus removal, proliferation of biosimilar products
- Growth in emerging markets (China, India, South America) in addition to main markets of Europe and US
- Construction of a new plant for the spinning of cellulose hollow-fiber membranes for Planova virus removal filters (completed in September 2019)
- Acquisition of ViruSure, an Austrian provider of biosafety testing services in October 2019



<sup>1</sup> Mainly monoclonal antibodies and immunoglobulins.

# Critical Care (1)

## Resuscitation

### ✓ Wide lineup of resuscitation-related products

- Defibrillators for hospitals and EMS
- AEDs (automated external defibrillators)
- Automated CPR
- Ventilators, etc.



Defibrillators for hospitals and EMS

No. 1 share in the world



AED



AutoPulse non-invasive cardiac support pump



Ventilator

## Circulation

- ✓ Intravascular temperature management system
- ✓ Expanding into area of acute myocardial infarction through acquisition of TherOx, Inc.

Thermogard temperature management system



## Cardiac Management Solutions

### ✓ The only product of its kind to receive regulatory approval

- Wearable defibrillator for patients at risk of sudden cardiac arrest—provides protection during high-risk periods such as while waiting for an ICD<sup>1</sup> implant (average usage duration 3 months; rented to patients)
- Recommended in both Europe and US clinical guidelines; has been used by almost 600,000 patients worldwide



LifeVest wearable defibrillator

## Data

### ✓ Software for EMS & fire

- Managing operations from dispatching and tracking emergency vehicles to transmitting patient data from ambulance to hospital

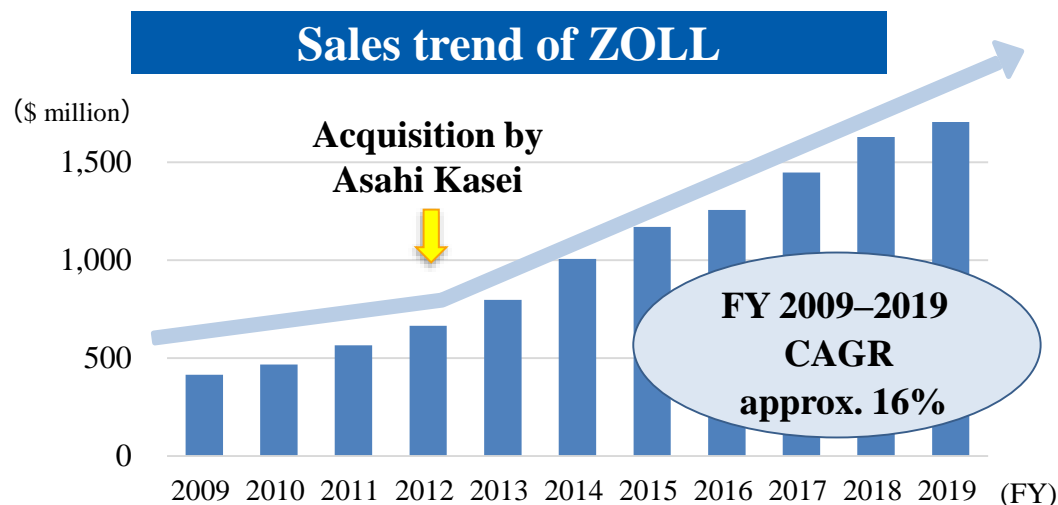
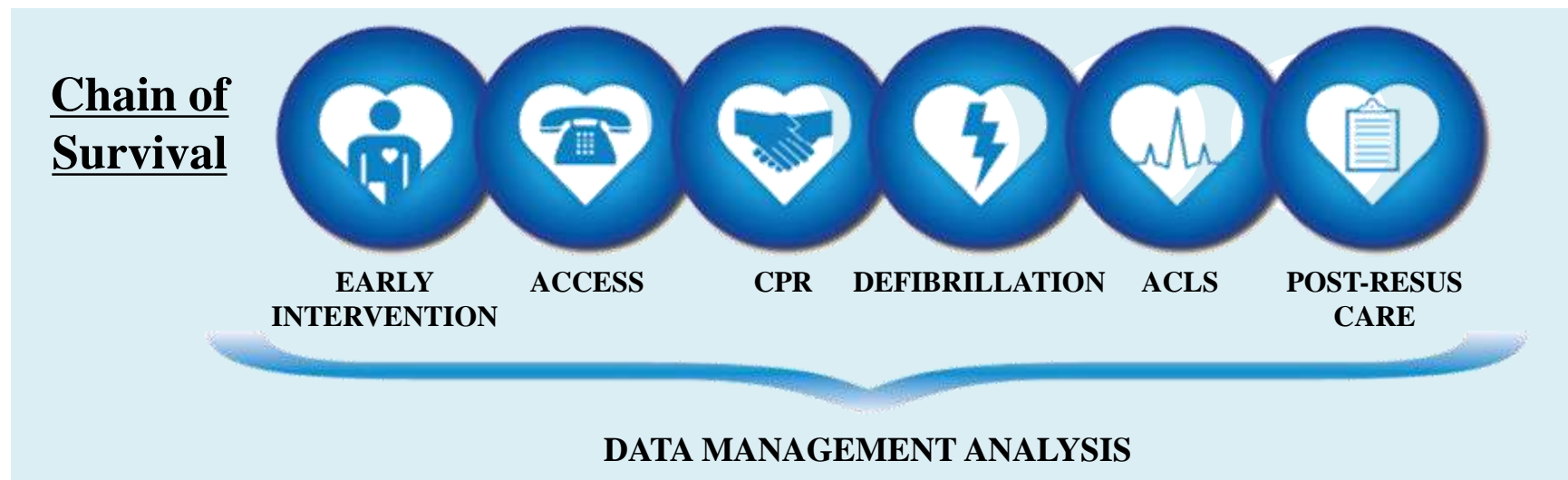


RescueNet ePCR

<sup>1</sup> Implantable cardioverter defibrillator

## Critical Care (2)

- ✓ Product lineup addressing every link in the Chain of Survival
- ✓ Strengthening the acute critical care product portfolio by M&A



### Recent M&A activity



Golden Hour  
Data Systems, Inc.  
(US)



TherOx, Inc.  
(US)



Cardiac Science  
Corporation  
(US)

# Example (1) CO<sub>2</sub> gas sensor business

Clean environmental energy

Healthy/comfortable longevity  
with peace of mind

## Air quality

Human health  
Productivity

Well-sealed buildings  
(increased CO<sub>2</sub> concentration)

## Energy saving

Efficient ventilation

Global warming

CO<sub>2</sub>  
refrigerant

### CO<sub>2</sub> gas sensor

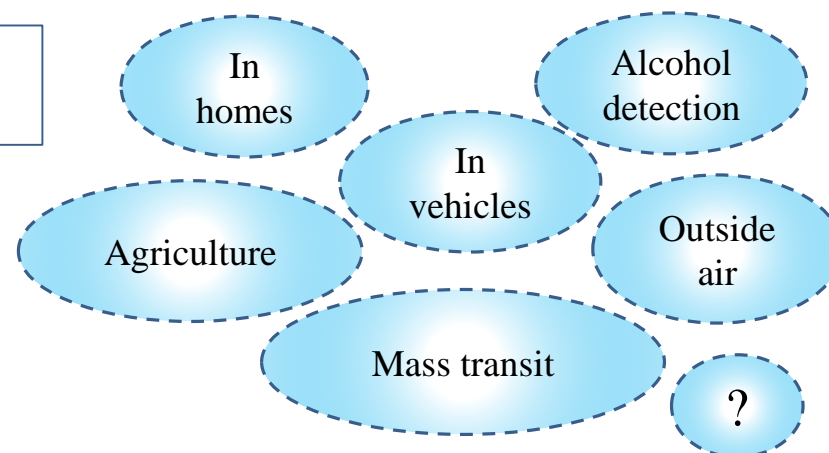
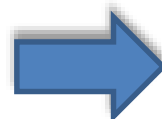
Application for invisible optics sensing  
technology



Potential use for different gases and  
various purposes

Compound semiconductors (Asahi Kasei)  
+  
CO<sub>2</sub> sensor modules (Senseair AB)

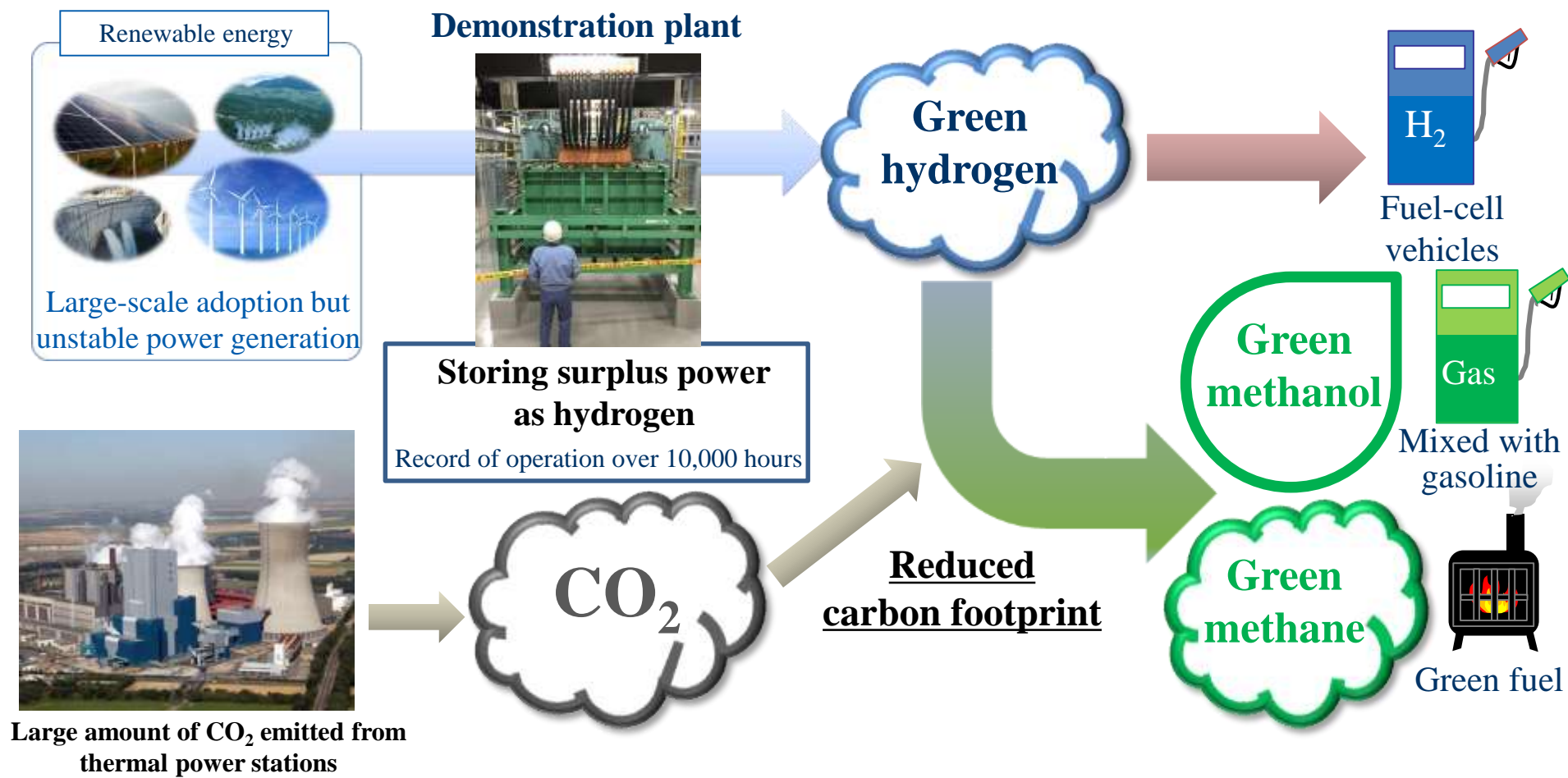
Small size  
High sensitivity  
Low power consumption  
Long life  
Fast response



## Example (2) Alkaline water electrolysis system

### Addressing challenges in a growth market by combining electrolysis, catalyst, and membrane technology

- World's highest energy efficiency with demonstration plant anticipating 10 MW capacity
- Accelerating commercialization with demonstration plant in Europe, the market with the greatest potential
- Selected for the Fukushima Hydrogen Research Field, the world's largest-scale system of 10 MW

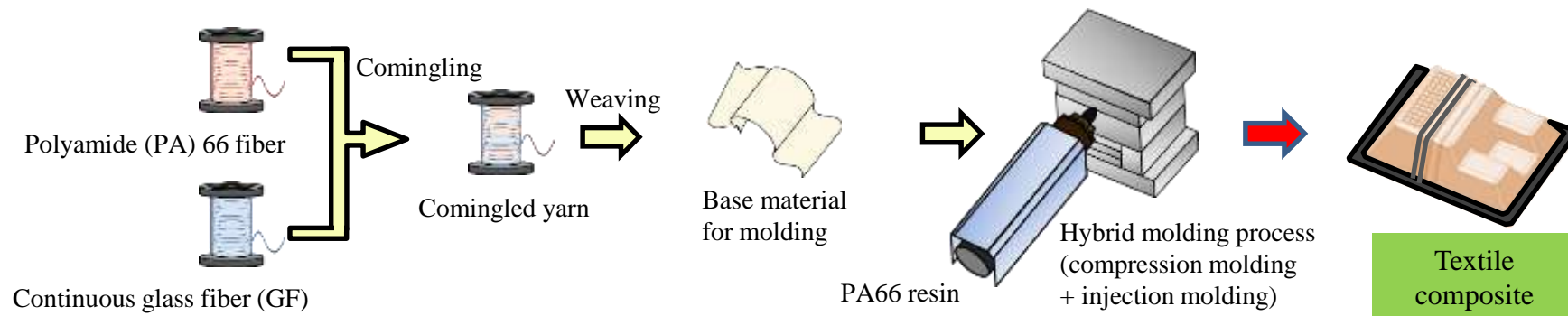




## Example (3) High-performance composite materials

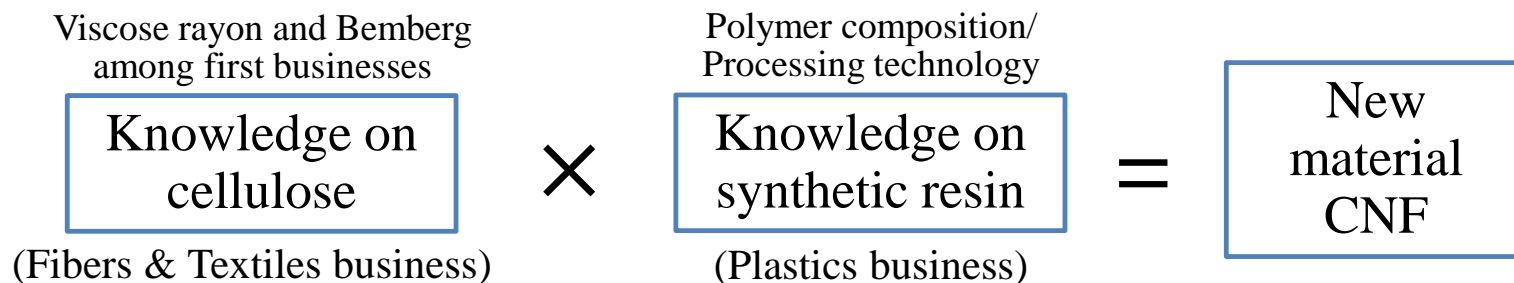
### Connecting fiber, resin, and processing technology

#### 1) Material to replace metal for weight reduction in automotive structural parts



- ✓ High degree of design freedom: Able to create parts that have complex shapes
- ✓ Outstanding strength-to-weight ratio: Improved strength and rigidity compared with conventional GF reinforced PA66 resin

#### 2) Development of cellulose nanofiber (CNF) composite



## Example (4) UVC LED

### Business expansion based on core technology in compound semiconductors

Hall elements (world-leading share)→ IR sensor, CO<sub>2</sub> sensor, etc.→ UVC LED using aluminum nitride (AlN)

#### Mass production of UVC LEDs using the world's only 2-inch single-crystal AlN substrate

High-quality  
Single-crystal AlN



Klaran

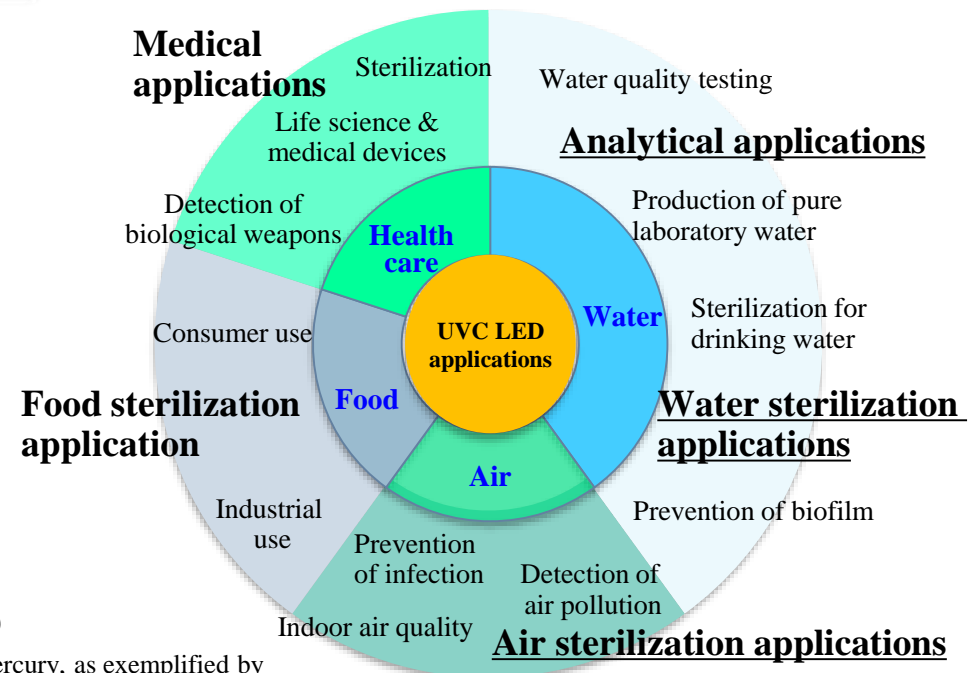
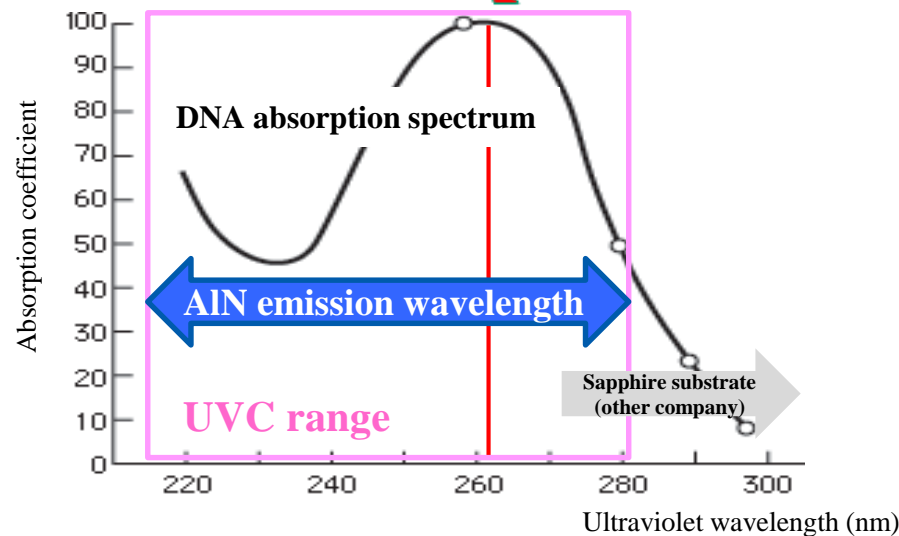


Klaran-AKR  
a small UVC LED  
running water sterilizer



- High sterilization efficiency
- Small size, low power consumption
- Long service life
- Safety (mercury-free<sup>1</sup>)

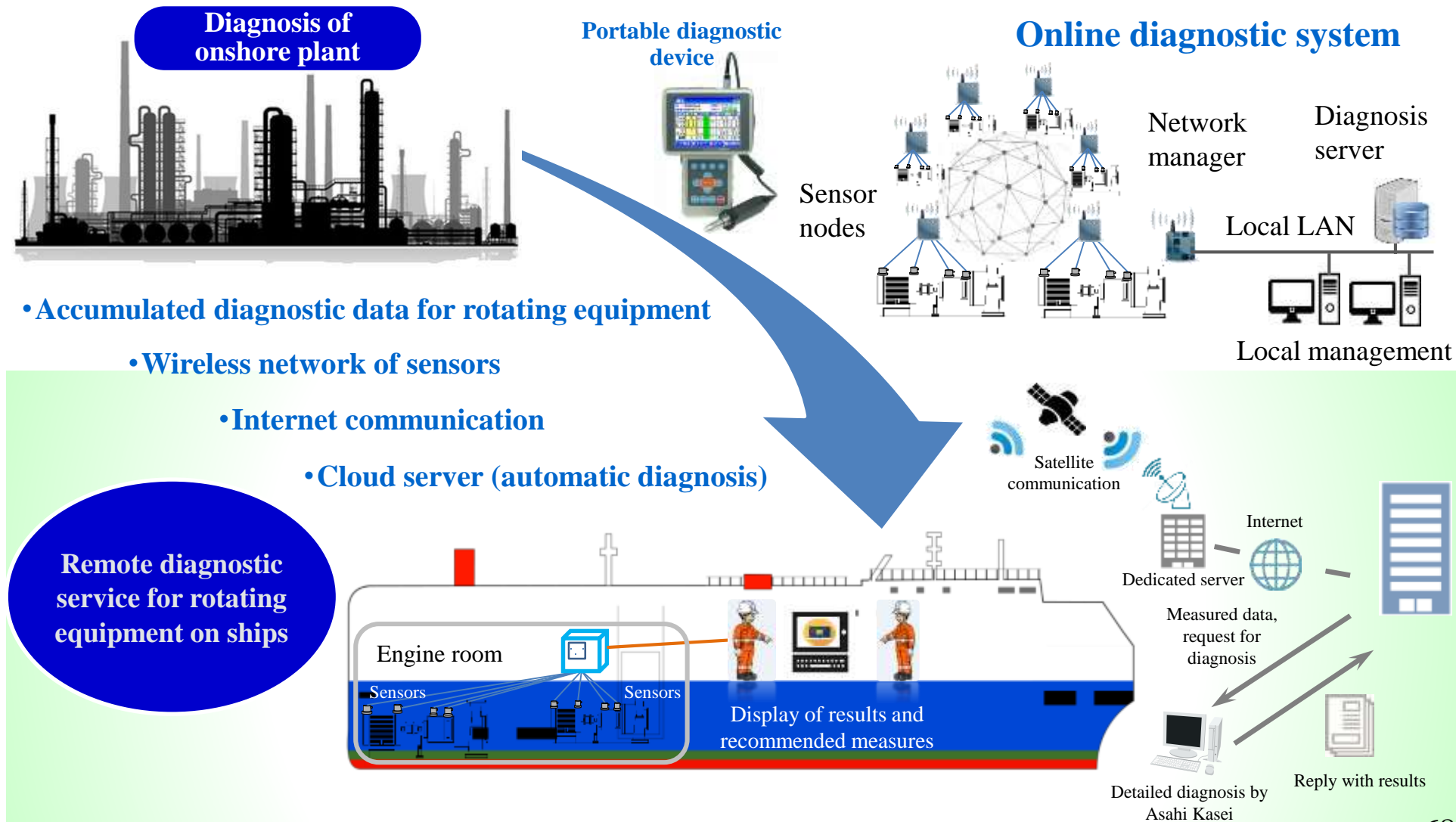
Optimum wavelength  
for disinfection



<sup>1</sup> With increasing global awareness of environmental risks associated with the use of mercury, as exemplified by the Minamata Convention on Mercury which came into force in August 2017, there has been a heightening need for a UV light source to replace mercury lamps that are currently used to disinfect drinking water, etc.

## Example (5) IoT for plant diagnosis—applied to solutions for shipping industry

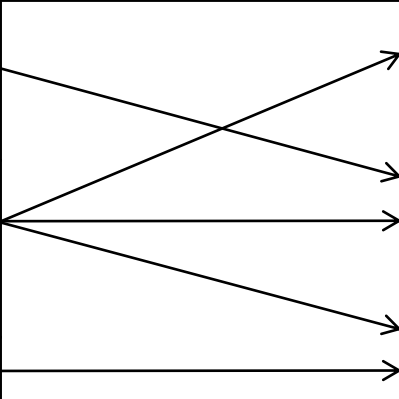
### Providing remote diagnostic service for rotating equipment on ships leveraging onshore plant diagnostic technology





# Revision of business categories

Beginning with FY 2019, the business categories in the Material segment are reclassified from the former Fibers, Chemicals, and Electronics into Basic Materials, Performance Products, and Specialty Solutions.

Segments	Business categories		
	Former		New
Material	Fibers		Basic Materials (Former petrochemicals)
			Performance Products (Former Fibers, performance polymers, consumables)
	Chemicals (Petrochemicals, performance polymers, performance materials and consumables)		Specialty Solutions (Former performance materials, separators, electronic devices)
	Electronics (Separators, electronic devices)		Others
Homes	No change		
Health Care			
Others			
Corporate expenses and eliminations			

## Disclaimer

The forecasts and estimates shown in this document are dependent on a variety of assumptions and economic conditions. Plans and figures depicting the future do not imply a guarantee of actual outcomes.

# Creating for Tomorrow

The commitment of the Asahi Kasei Group:

To do all that we can in every era to help the people of the world make the most of life and attain fulfillment in living.

Since our founding, we have always been deeply committed to contributing to the development of society, boldly anticipating the emergence of new needs.

This is what we mean by “Creating for Tomorrow.”

**AsahiKASEI**