kaneka
The Dreamology Company
—Make your dreams come true—

Kaneka
New Medium-Term Management Plan

May 14, 2018

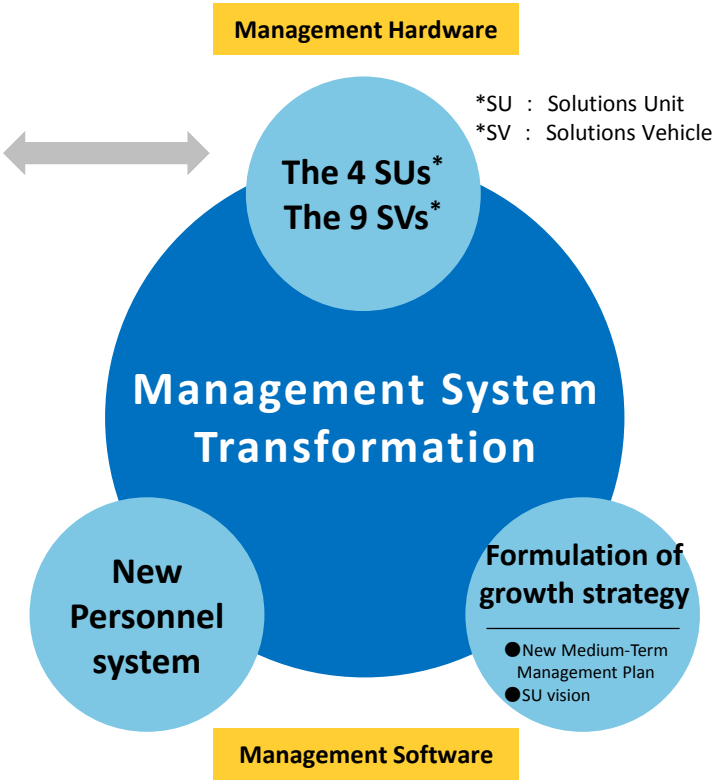
Points of New Medium-Term Management Plan

New Organizational Structure

Under a new management system, we will further accelerate our transformation into a solutions provider

2017.4 Transforming our management system

Previous Business Units	New Organizational Structure
Chemicals	Material SU
Functional Plastics	Vinyls and Chlor-Alkali SV
Expandable Plastics and Products	Performance Polymers SV
Electronic Products / Electronic Materials / Solar Energy	Quality Of Life SU
Synthetic Fibers	Foam & Residential Techs SV
Life Science Products / Medical Devices / QOL	E & I Technology SV
Foodstuffs Products	PV & Energy management SV
	Performance Fibers SV
	Health Care SU
	Medical Devices SV
	Pharma & Supple-mental Nutrition SV
	Foods & Agris SV
	Nutrition SU



2018.4 New Medium-Term Management Plan

- Evolution to ESG Management
- Solutions Unit vision
- Growth strategy
- R&D strategy
- Global strategy
- M&A

Work Culture innovation

Make effective use time, information, and human resource
→ Maximize the productivity of the organization

Solutions Unit vision ～Evolution to ESG Management～

KANEKA'S

ESG

By providing valuable solutions globally, we will continue growing and building a reputation for contributing to the evolution of people's lives and the environment throughout the world.

Contribute to solutions for society's challenges	Environment and energy issues
	Food issues
	Progress in information technology and bioscience

Contribute to the advancement of life and the environment of people world wide through chemistry

Earthology Chemical Solution

Aim to be an innovation leader for the global environment and lifestyles by drawing out the unlimited possibilities of chemical materials and supporting sustainable societies

- Material SU
- QoL SU

Active Human Life Solution

With a central focus on chemistry, treating food and medicine as one, aim to be an innovative solutions provider supporting healthy and active lives

- Nutrition SU
- Health Care SU

Solutions Unit vison

Earthology Chemical Solution
Create a comfortable and sustainable living environment

Active Human Life Solution
Support an energetic and healthy life

Material SU

Our Challenge

To advance to the next stage in global scale material business

Material Value Creator

To support the advancement of life and the environment by drawing out the richness of the materials

Protection of the global environment

IT innovation

Quality of Life SU

Our Challenge

The realization of "Material Comfortamization"

Quality of Life Pathfinder

To produce the leading edge of the enhancement of the quality of life through the power of materials

Energy saving

Achievement of comfortable life

Nutrition SU

Our Challenge

While challenging the issues that surround the production of food, re-innovate the concept of nutrition by merging "healthy" and "tasty" as one

Nutrition Value Chain Innovator

To re-innovate food and health

Increasing population

Health promotion

Health Care SU

Our Challenge

To become a global corporation that leads the implementation of advanced medical treatment

Medical Edge Explorer

To create a world in where advanced medical means are available to as many people as possible

Aging societies

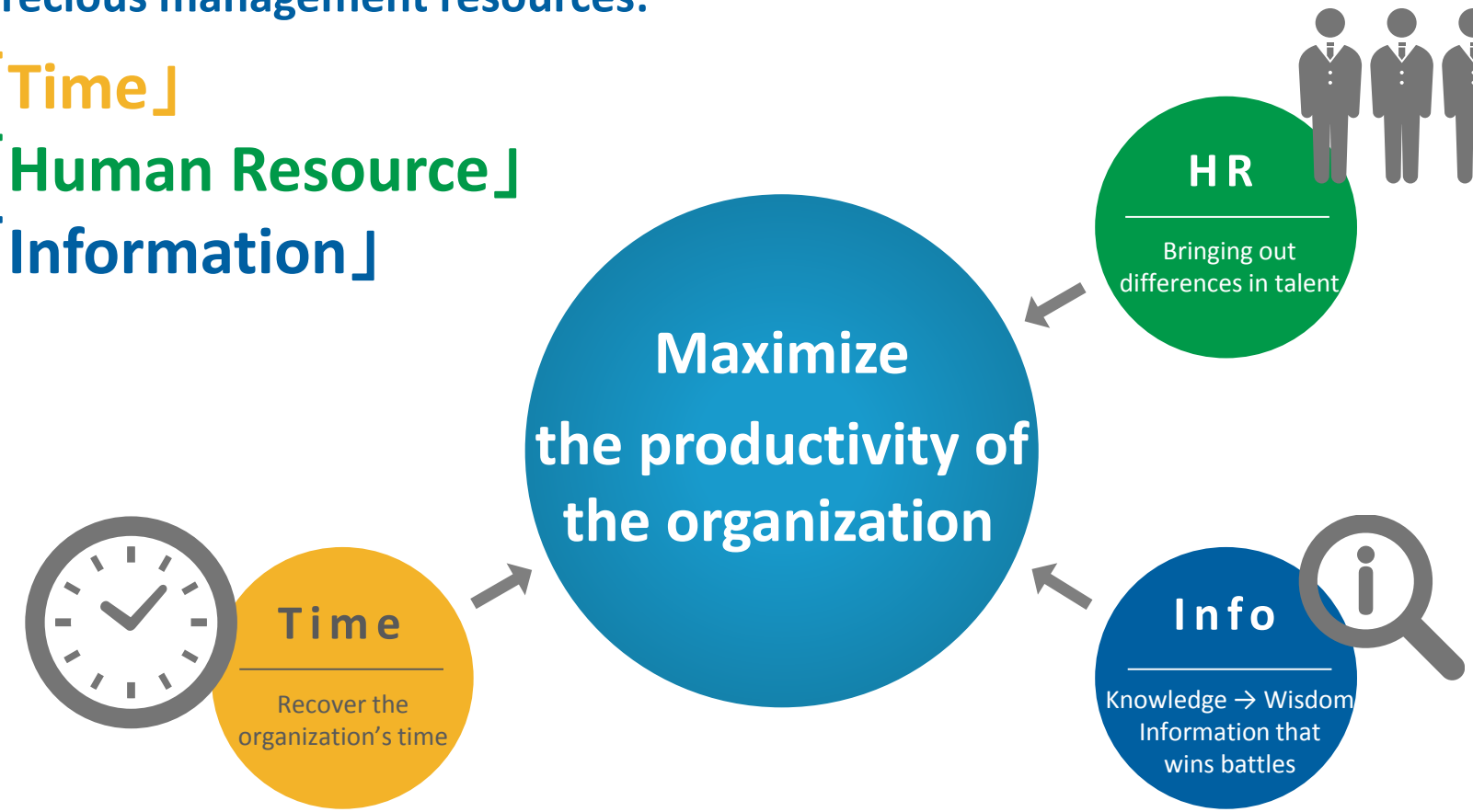
Medical sophistication

Work Culture innovation

- Make effective use time, information, and human resources to maximize the productivity of the organization
- Introduce a new personnel system (target management and evaluation system for promoting personal and professional growth)

Precious management resources:

「Time」
「Human Resource」
「Information」

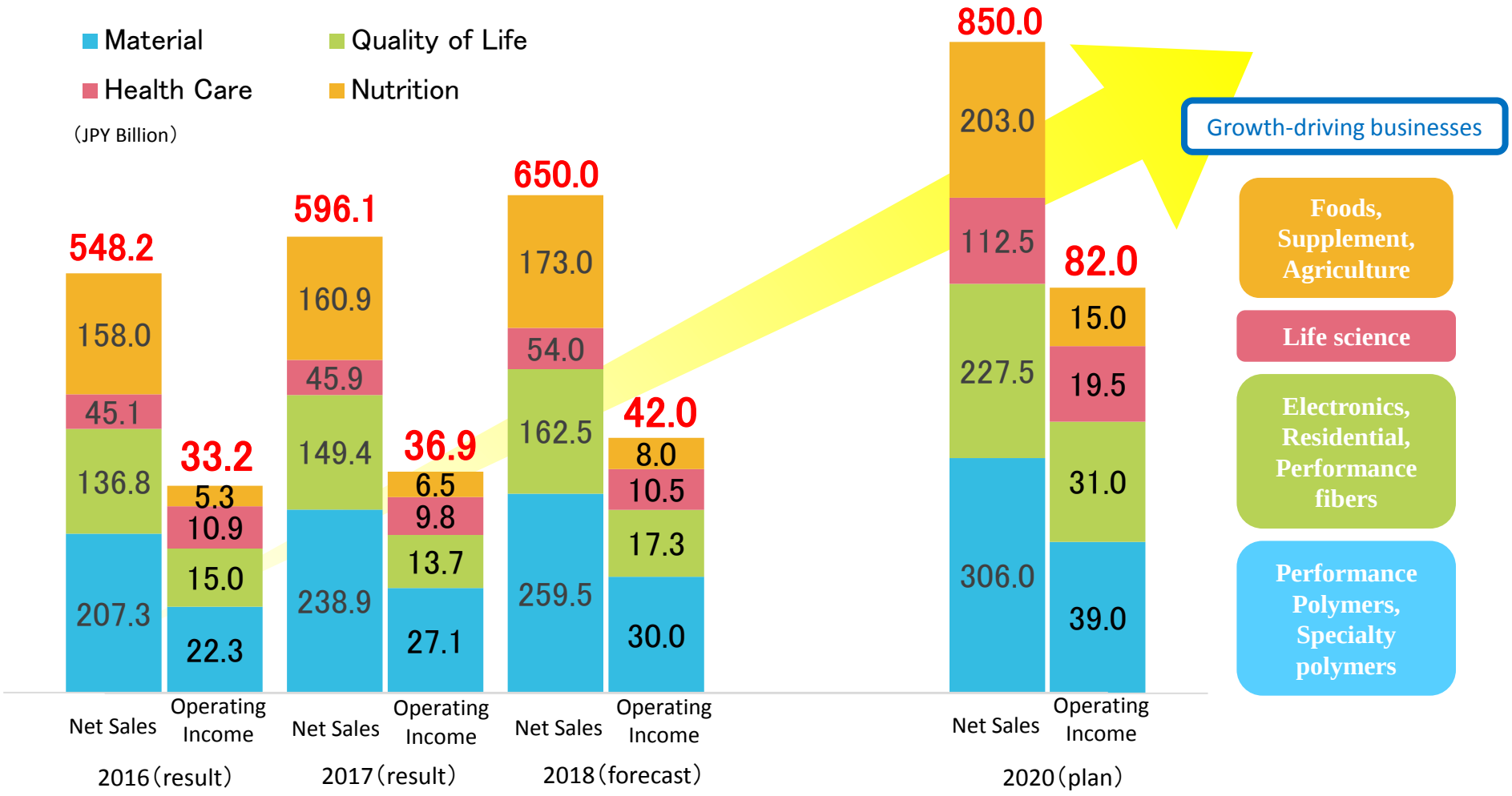


Medium-term major strategy

Growth strategy / R&D strategy / Global strategy / M&A strategy

Growth strategy（Performance Targets by SUs）

● Strengthening global solution development including open innovation



Growth strategy（Create added value）

Create added value

- M&A
- Global system
- Open innovation
- Source-in/Source-out

Leading-edge businesses

E & I Technology, Pharma, Medical Devices,
Supplemental Nutrition, Agris,
PV & Energy management

Multiple business

（JPY Billion）

	FY2017	FY2020
Net Sales	97.9	255.0
（ratio）	（16%）	（30%）

Foundation businesses

Vinyls and Chlor-Alkali,
Performance Polymers,
Foam & Residential Techs,
Performance Fibers, Foods

Strengthen Cash-cow

Net Sales	497.1	570.0
（ratio）	（84%）	（67%）

New large-scale businesses

Organic EL Lighting, Biopolymers,
Opto-Electrochemicals,
Regenerative medicine and cell therapy, etc

Driving-force of business transformation

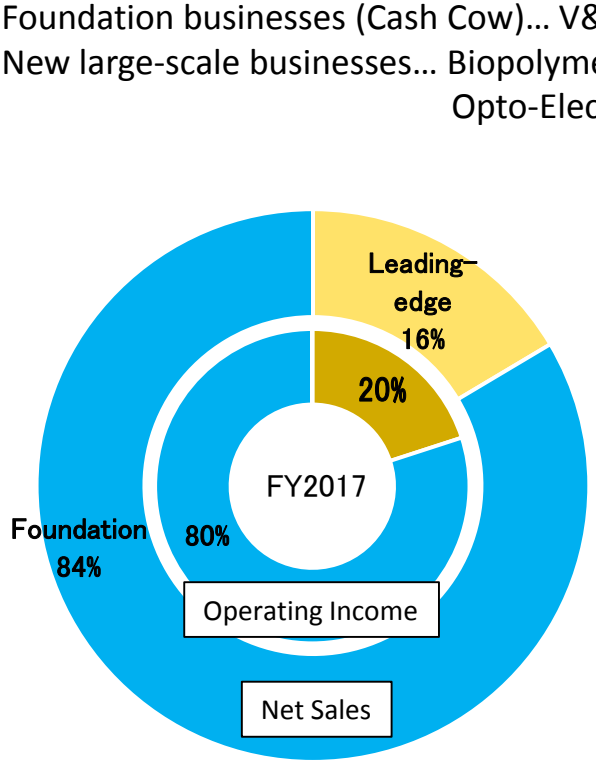
Net Sales	—	25.0
（ratio）	（-%）	（3%）

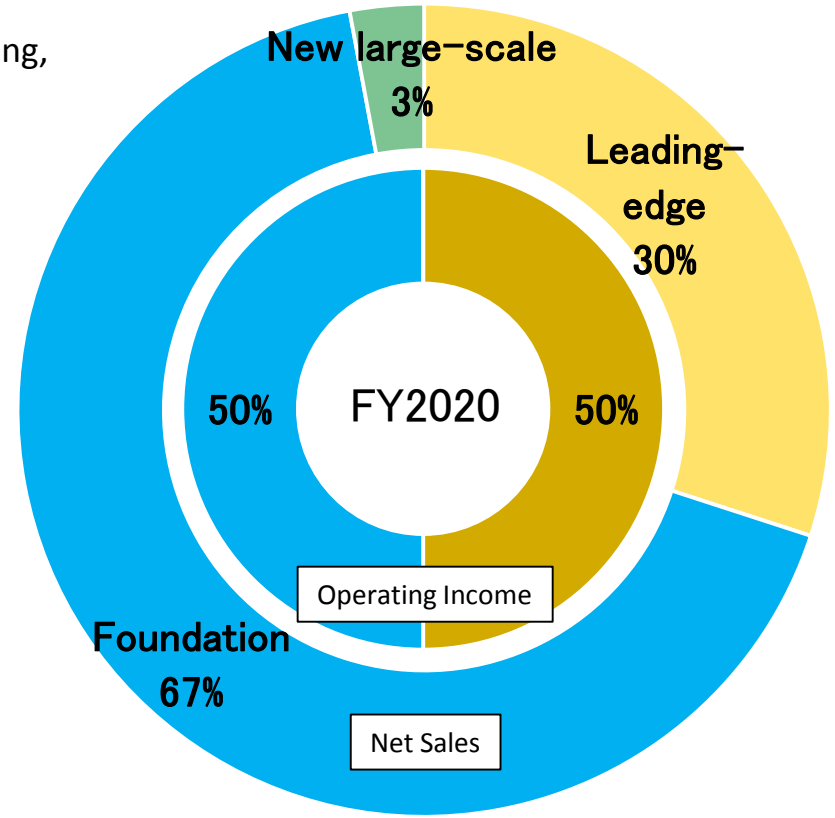
Diverse businesses, diverse technologies, “only-one” products, possession of world-leading technologies and products (Strengths)

Growth strategy（Transformation of Business Portfolio①）

- **Leading-edge businesses' net sales composition ratio to expand from 16→30%**
  operating income composition ratio from 20→50%
- **Leading-edge businesses + New large-scale businesses to make up 33% of total net sales**
  ⇒ Driving-force of growth

Leading-edge businesses… E&I, PV, Medical, Pharma, Supplement
Foundation businesses (Cash Cow)… V&C, PP, F&R, PF, F&A
New large-scale businesses… Biopolymers, Organic EL Lighting,
Opto-Electrochemicals

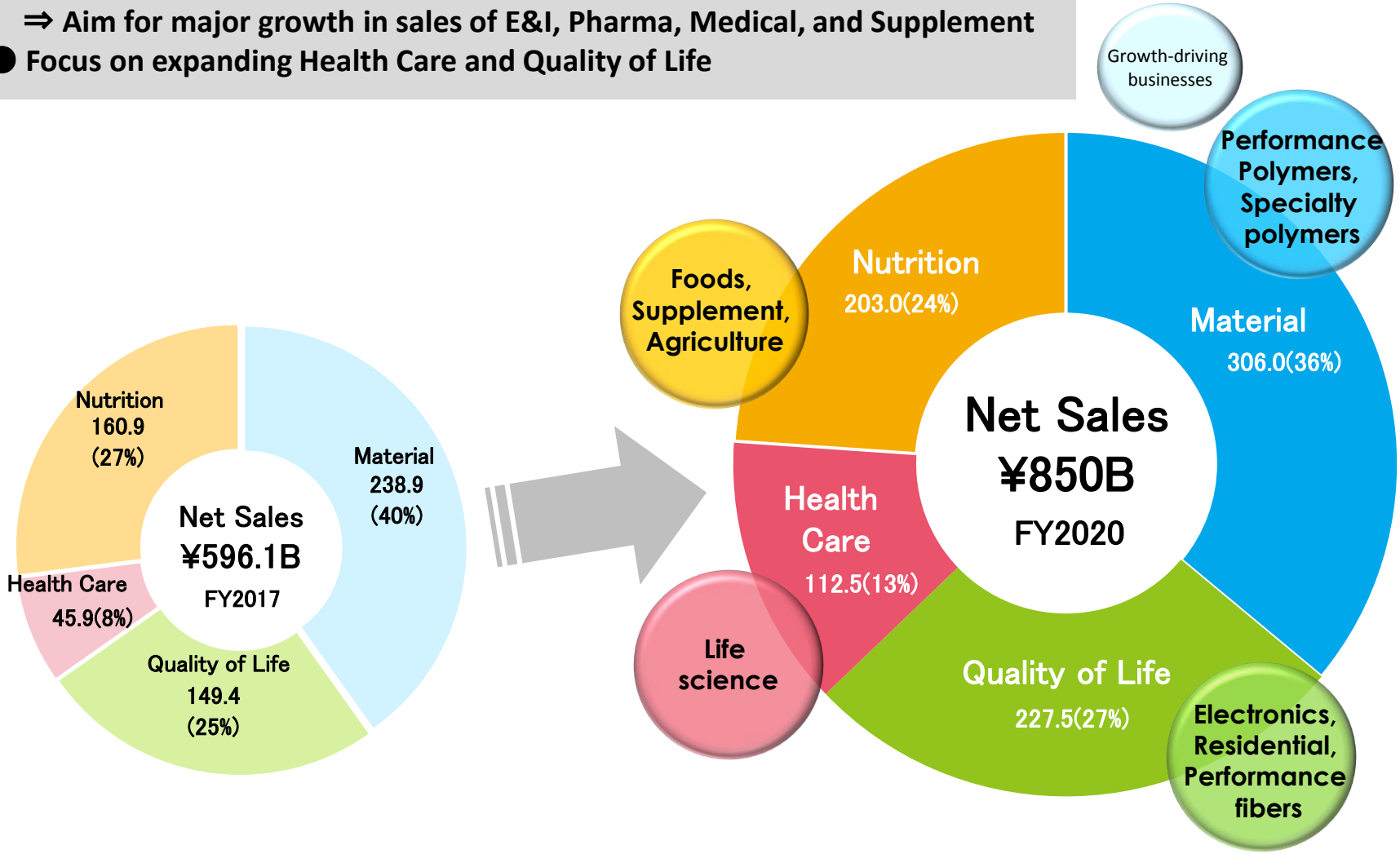




Outside : Net Sales composition ratio
Inside : Operating income composition ratio

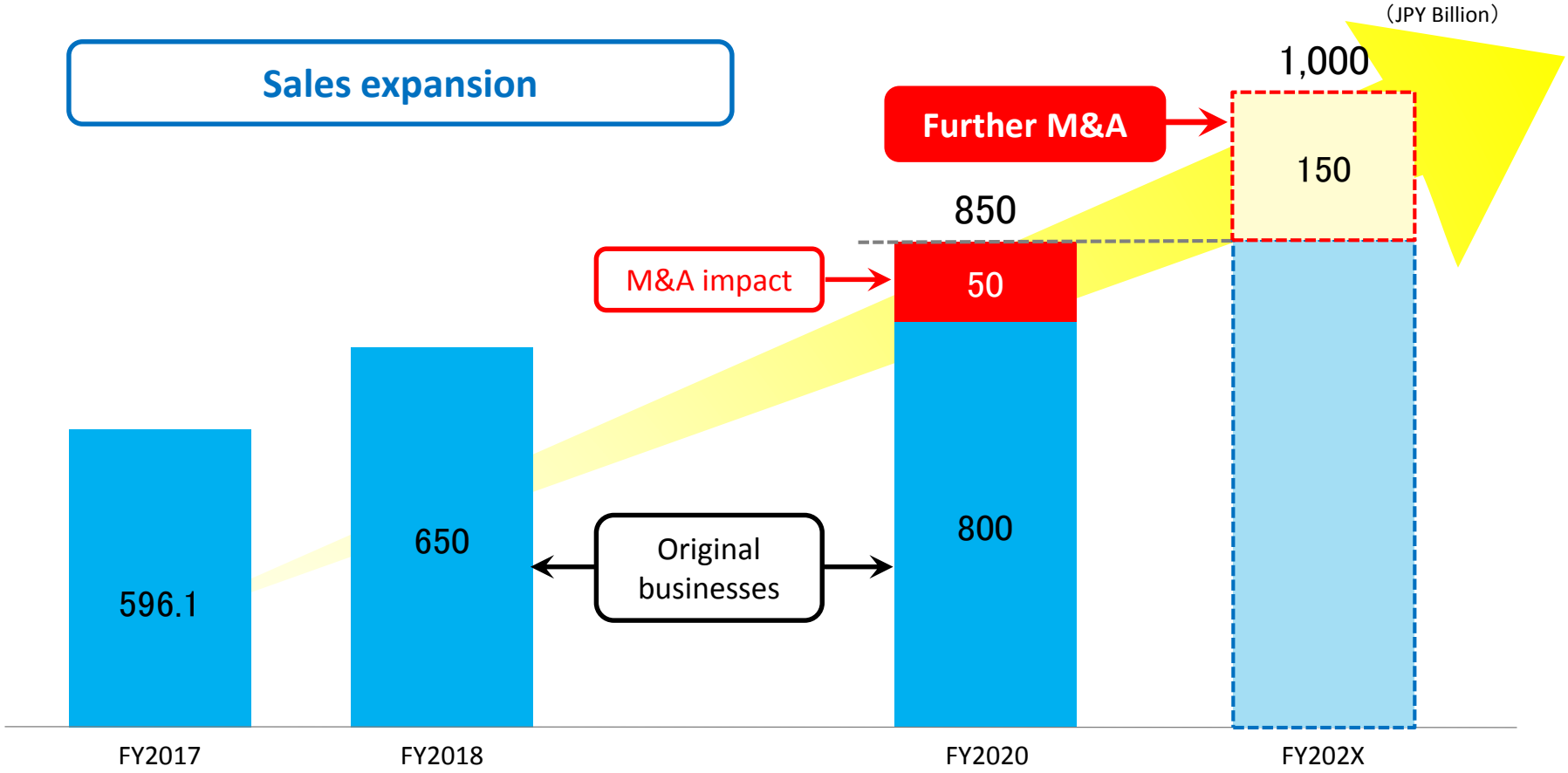
Growth strategy（Transformation of Business Portfolio②）

- Aggressively expand business of all four Solutions Units (SU)
- High-functionality products to drive growth in each SU
  ⇒ Aim for major growth in sales of E&I, Pharma, Medical, and Supplement
- Focus on expanding Health Care and Quality of Life



Growth strategy（M&A・Open innovation）

- Plan for a total of ¥200 billion in M&A investment under the new medium-term management plan
- Sales expansion through M&As ⇒ FY2020 ¥50 billion
- Aim to add a further ¥150 billion or more to sales through aggressive M&A activity.
  Net sales of ¥1 trillion is a milestone.



Strengthen R&D Structure

Identify promising themes that are impactful, innovative, and implementable	Open business innovation

Discover unique, world-leading, high-performance materials

Life science

Regenerative Medicine and Cell Therapy Laboratories
Research wide-ranging solutions in the life science field with Biotechnology Laboratories.

Kaneka Eurogentec S.A.
Promotes research into pharmaceuticals, diagnostic drugs, and research reagents as a technology development base in the life science field.

Electronics

Kaneka Basic Technology Collaborative Research Center
An R&D site for leading-edge new products and production methods in the fields of electronics and functional plastics, situated in Osaka University.

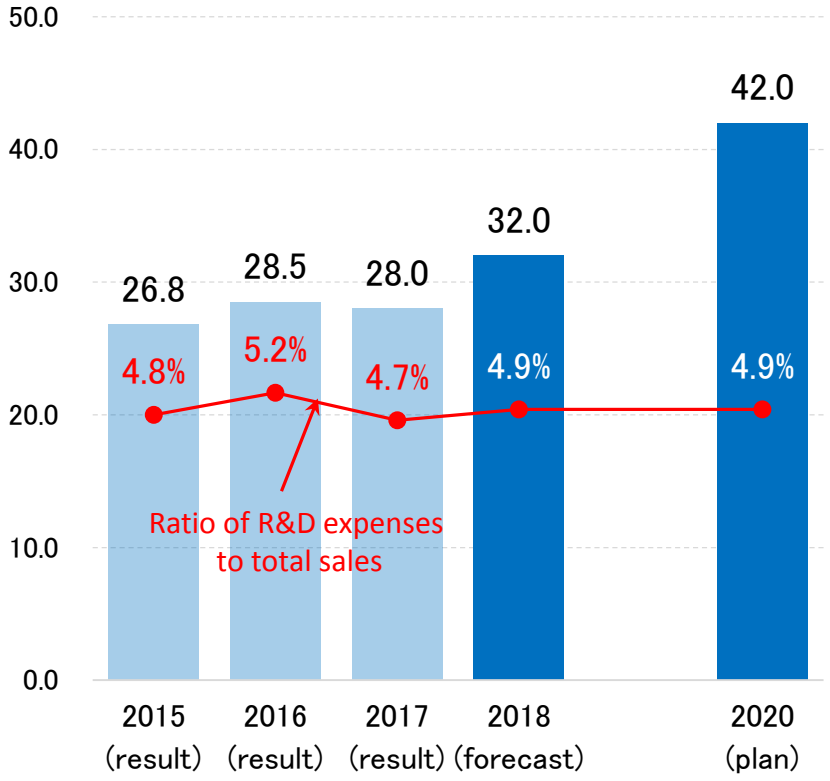
Kaneka US Material Research Center
Established in Texas A&M University.
Promotes R&D in the composite-related business.

Kaneka US innovation center
Promotes research and new business development in the fields of health and information and communications, as well as open innovation including M&As.

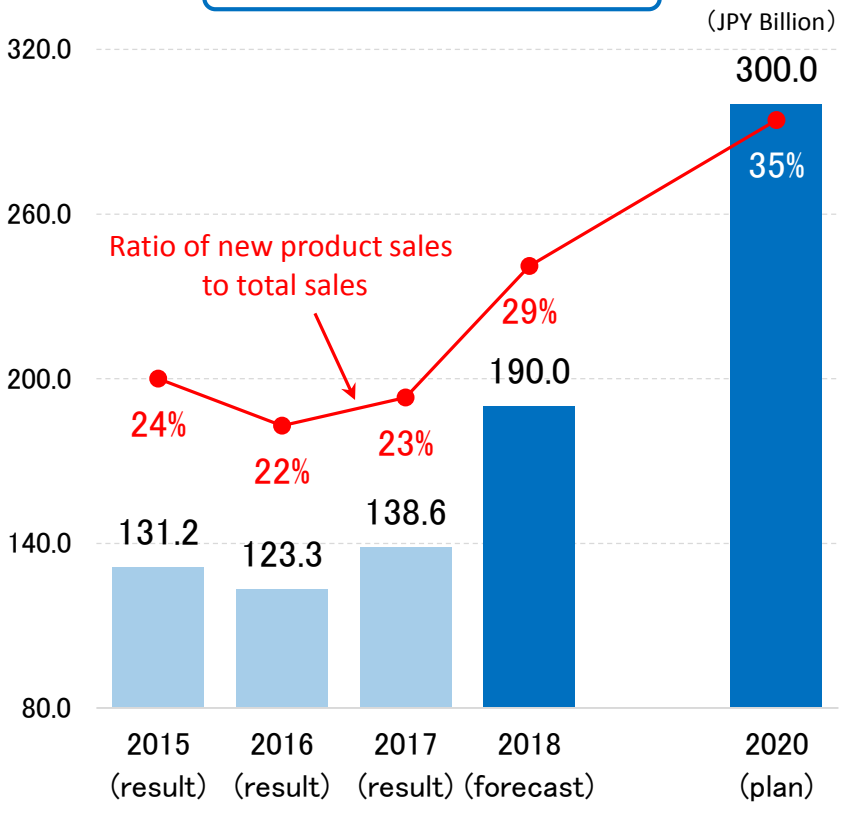
R&D strategy（Investment and Return）

- Aggressively incorporate advanced technologies while strengthening allocation of resources in the life science and electronics fields in pursuit of themes with speed and scale
- Realize high growth in new product sales

R&D Expenses



New Product Sales



Global strategy

- **Swiftly promote regionally distinctive growth strategies from a “Glocal” perspective**
- **New business creation and M&As centered on the life science and electronics fields**
- **Aggressively expand business in Europe and the Americas in addition to Asia**

Lift the overseas sales ratio above 50%

Americas

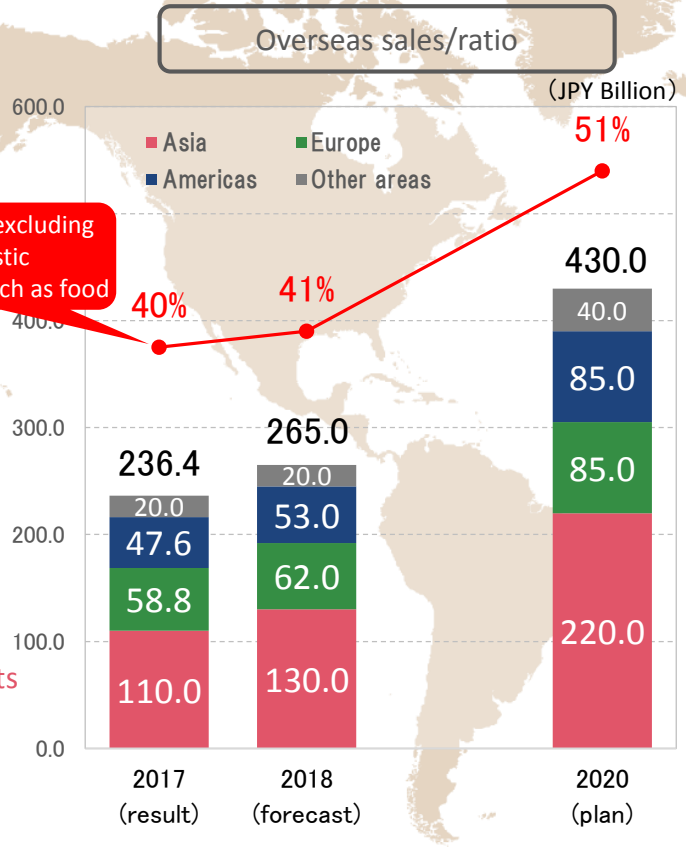
- Create and expand new businesses in the Health Care field and the aerospace field
- Aggressively conduct M&As and open innovations
- Strategically utilize the Kaneka US Innovation Center
- Further strengthen production and sales foundations in existing businesses

Europe

- Expand production capacity in growth fields and conduct M&As（Health Care, Material, QoL）
- Actively expand solutions business into new businesses and fields

Asia

- Maximize returns on large-scale capital expenditure
- Aggressively expand sales in China, ASEAN, and India markets
- Expand business in the Health care and E&I fields



M&A strategy（Open innovation）

FY2017 execution project

Introduction of
Drug coated balloon
technology

Acquiring composite business
for the aerospace area
（Kaneka Aero Space）

Investing a company focusing
on lactic acid bacteria
（Introduction of technology）

New Medium-Term Management Plan

Aggressively conduct M&As aiming to acquire advanced technologies, primarily overseas

Examine M&As with a total value of ¥200 billion during the medium-term management plan period

Focusing on Health Care, Nutrition areas

Investment plan

（JPY Billion）

	2015～2017 (result)	2018～2020 (plan)
Capital expenditure	114.5	200.0

［Major planned projects］

Americas	●Aerospace field／Composite production facility ●Expand epoxy masterbatch capacity ●Healthy foods field／Supplement production facility	
Europe	●Expand bead-method polyolefin foam capacity ●Expand modified silicone polymers capacity ●Expand biopharmaceuticals capacity	
Asia	●Expand polyimide films and graphite sheets capacity ●Construct new bead-method polyolefin foam plant（Thailand） ●Expand modacrylic fiber capacity ●Expand API capacity（Singapore） ●Expand margarine・filling capacity（Indonesia） ●Full-fledged mass-production facility for biopolymers	

Bolster capacity to meet demand expansion in Asia and plan aggressive forward-moving investments such as acquisition of new business commercialization facilities

Business strategy by Solutions Unit

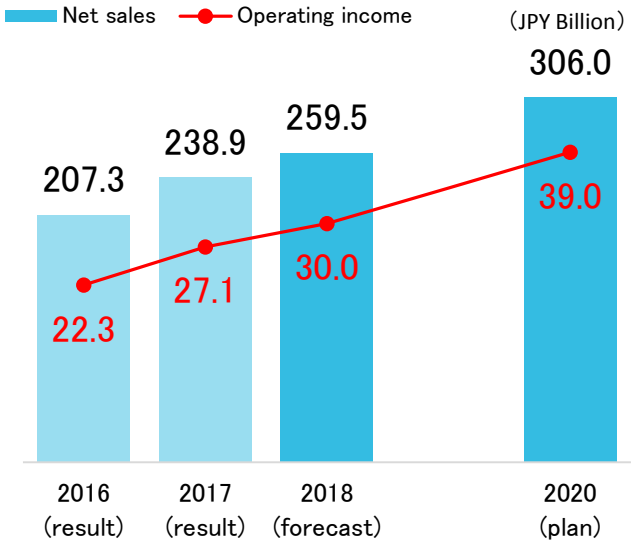
Business strategy by SU（Material）

Vinyls and Chlor-Alkali

- Renew facilities and expand production capacity to build an optimal production system in the chlor-alkali business with an eye on demand expansion in Asia.
- Examine and carry out production capacity increases for chlorinated PVC and paste PVC to meet expanding demand in overseas markets.
- Develop downstream area and strengthen the value chain together with domestic Group companies.

Performance Polymers

- Further global market expansion of non-PVC applications for modifiers.
- Create new demand for modified silicon polymers in the Asian market and meet growing global demand by strengthening production capacity in Belgium and the U.S.
- Accelerate new product development driven by core-shell and oligomer technologies for new application markets such as automobiles, housing, electronics, and social infrastructure.
- Full rollout and aggressive business expansion of next-generation advanced technology materials such as structural adhesives (epoxy masterbatch), composite materials for the aviation and aerospace industry, and biodegradable polymers.
- Global business expansion of CEMEDINE Co., Ltd. through synergies with KANEKA.



Business strategy by SU（Quality of Life）

E & I Technology

- Strengthen production system and fully roll out new products in polyimide materials (films, inks, varnishes, graphite sheets, etc.) to support increased performance of digital devices, telecommunication systems, etc.
- Expand optical film and opto-electronics materials for display sensor applications, etc.

Foam & Residential Techs

- Start operations at a new plant in Thailand and strengthen production capacity in Belgium and Japan for polyolefin foam.
- Provide new lightweight, heat-insulating expandable plastics for use in the housing, health care, automotive, and food production support businesses in response to global spread of products related to the global environment, energy conservation, health, and food.
- Develop housing solutions, etc., centered on “Kaneka-no-Ouchi※”.

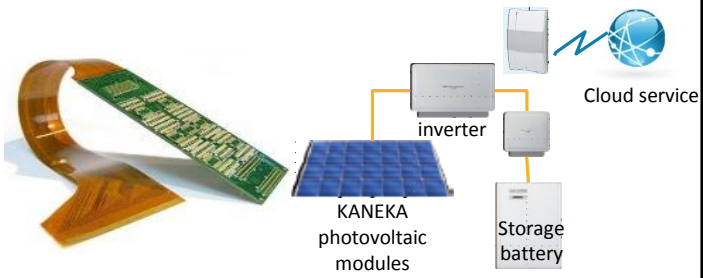
※Comfortable energy-saving housing

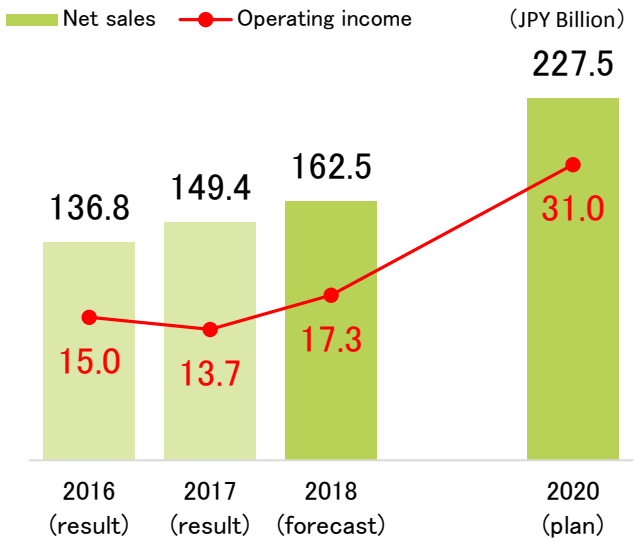
PV & Energy management

- Provide original energy solutions to meet growth in demand for net zero energy management systems for houses and buildings, and develop new vehicle applications.
- Develop differentiated products, such as high-efficiency photovoltaics and see-through solar cells, worldwide
- Use AI and the IoT to innovate processes and strengthen cost competitiveness

Performance Fibers

- Promote demand expansion in the African market and examine and carry out production capacity enhancements for modacrylic fibers.
- Develop and expand market for new functional fibers, etc.





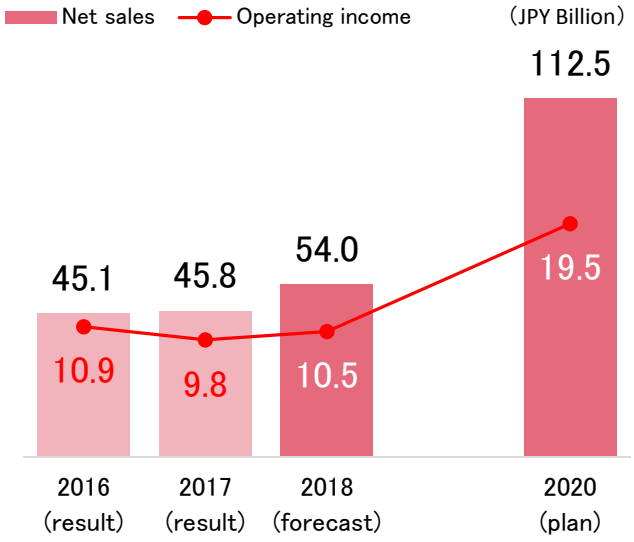
Business strategy by SU（Health Care）

Medical Devices

- Develop new high-value-added products and expand the market in new medical areas such as drug-coated balloon catheters and digestive system catheters, and aggressively pursue M&As and alliances.
- Expand sales in Europe and the U.S., expand applications and therapeutic fields, and develop the market in Asia to accelerate global development.
- Accelerate business expansion, etc., in new fields such as the digestive system and electrophysiology, regenerative and cellular medicine, and testing and diagnostics.

Pharma

- Expand production base and strengthen global development in the low-molecular pharmaceuticals and API field.
- Fully roll out increased production capacity in the biopharmaceutical field.
- Incorporate advanced medical technologies through open innovation, M&As, and so forth, and expand global business, etc.



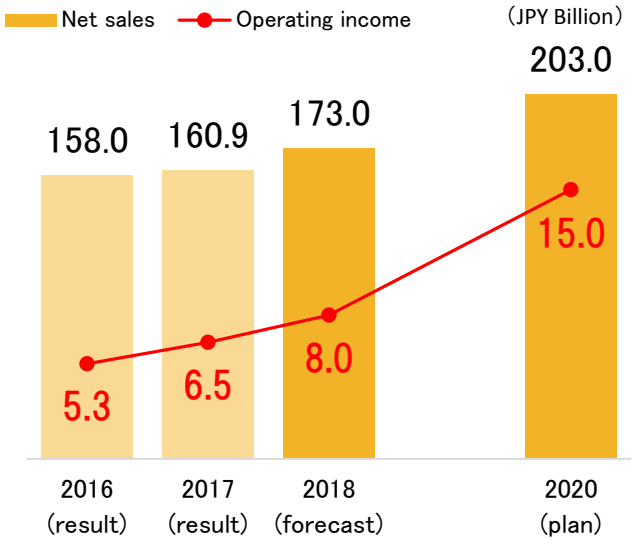
Business strategy by SU（Nutrition）

Supplemental Nutrition

- Expand product lineup through M&As and alliances.
- Expand sales base in the U.S. and China.
- Expand total health care solutions by adding new supplement materials development to health care services.

Foods & Agris

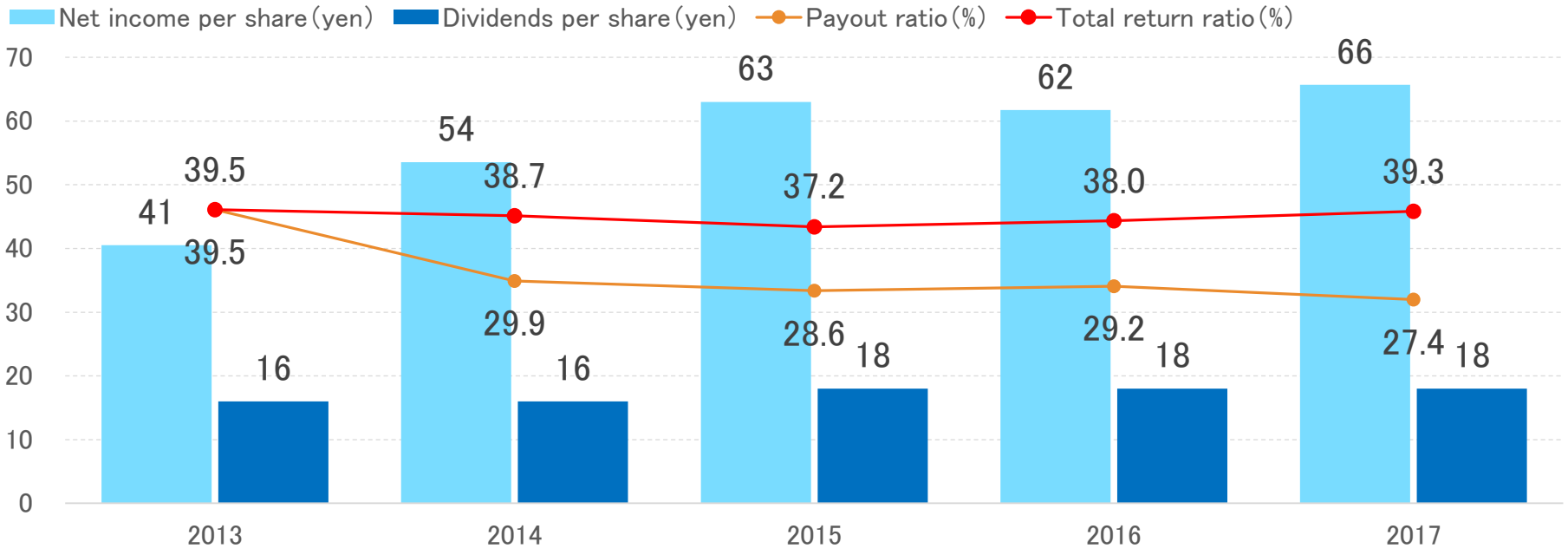
- Enter new businesses involving agriculture and livestock production, such as the dairy product business and agricultural processing.
  →Achieve differentiation through organic dairy and dairy farming support
- Increase added value of agricultural, livestock, and fishery products through functional fertilizers and antifreeze materials and provide solutions to support production.
- Strengthen global development of the processed oils and fats field.
- Increase competitive strength of the overall supply chain using digital technology.



Shareholder return

Shareholder return

《Basic policy》
Targeted payout ratio is 30%.
Stably continue paying dividends and purchasing treasury stock.



	2013	2014	2015	2016	2017
Dividends per share	¥16	¥16	¥18	¥18	¥18
Purchased treasury stock(thousands of shares)	—	2,000	1,964	2,000	3,000
Purchased treasury stock(JPY million)	—	1,594	1,804	1,802	2,561

R&D Topics

Discarded plastic causes

- **Land pollution**
- **Marine pollution** (microplastic problem)

Tighter regulation of plastics in Europe and other regions

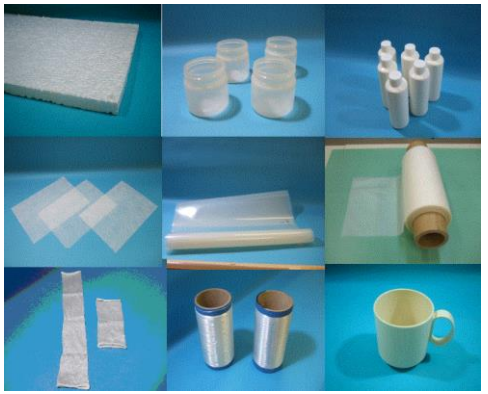
E.g.: Tighter regulation in France

- 2016: Total ban on plastic bags with thickness of 50 µm or less
- 2017: Stipulation of biodegradability and biomass regarding use of plastic bags for fruit and vegetable bulk sales
- 2020 (planned): Total ban on non-biodegradable plastic containers and cutlery

- Developed 100% plant-based biodegradable plastic “KANEKA Biodegradable Polymer PHBH™“ by combining bio, plastic (compound and processing) and other technologies.
- Acquisition of approval for bioplastic.

Biobased	Biodegradable Industrial	Biodegradable Home	Biodegradable Marine
OK biobased, TÜV AUSTRIA ★★★★ S0318	OK compost, TÜV AUSTRIA INDUSTRIAL S0318	OK compost, TÜV AUSTRIA HOME S0318	OK bio-degradable, TÜV AUSTRIA MARINE S0318

- Considering capacity expansion (Current; 1,000t/Y)



Applications of PHBH

Genome editing technology

- **Developed genome editing technology enabling short-term wheat cultivar improvement in a joint effort with the NARO※**
- **Aim to provide solutions for secure, safe, stable food supply**

※The National Agriculture and Food Research Organization

Gene editing technology

"Scissors" that can cut and paste genomes

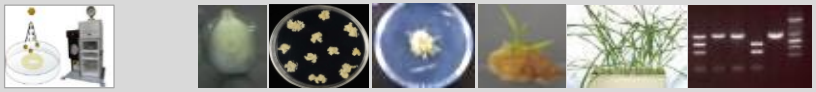
+

Gene introduction technology

DNA RNP Protein

Wild stock **Genome edited crop**

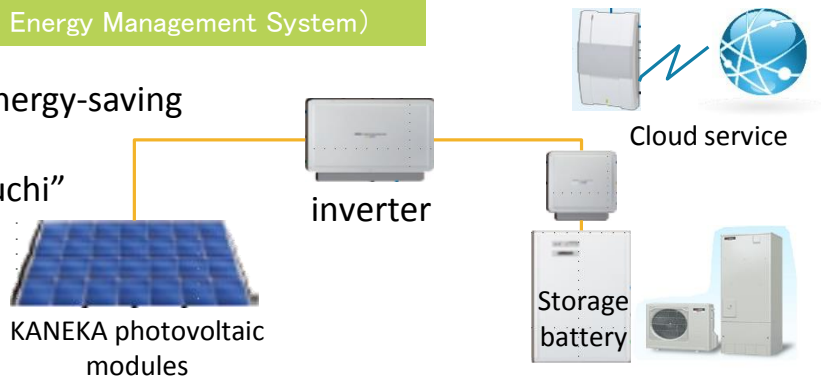
kaneka

Gene introduction technology	Breeding process	Simplicity (tissue cultivation)	Direct introduction in commercial cultivars	Commercial cultivar breeding time
Kaneka technology iPB method	Gene introduction → Confirm plant body breeding introduction 	○ (Tissue cultivation not required)	○	8 months
Conventional technology	Gene introduction → Tissue cultivation process → Confirm plant body breeding introduction 	× (Tissue cultivation required)	×	＞36 months

- **Provide various products as a system for supporting housing and building energy management**
- **BIPV(Building integrated photovoltaics) to contribute to ZEB(net zero energy buildings)**
- **Hetrojunction technology sets a world record for conversion efficiency**

HEMS (Home Energy Management System)

Comfortable energy-saving housing
"Kaneka-no-Ouchi"



Electricity generating windows (See-through PV)

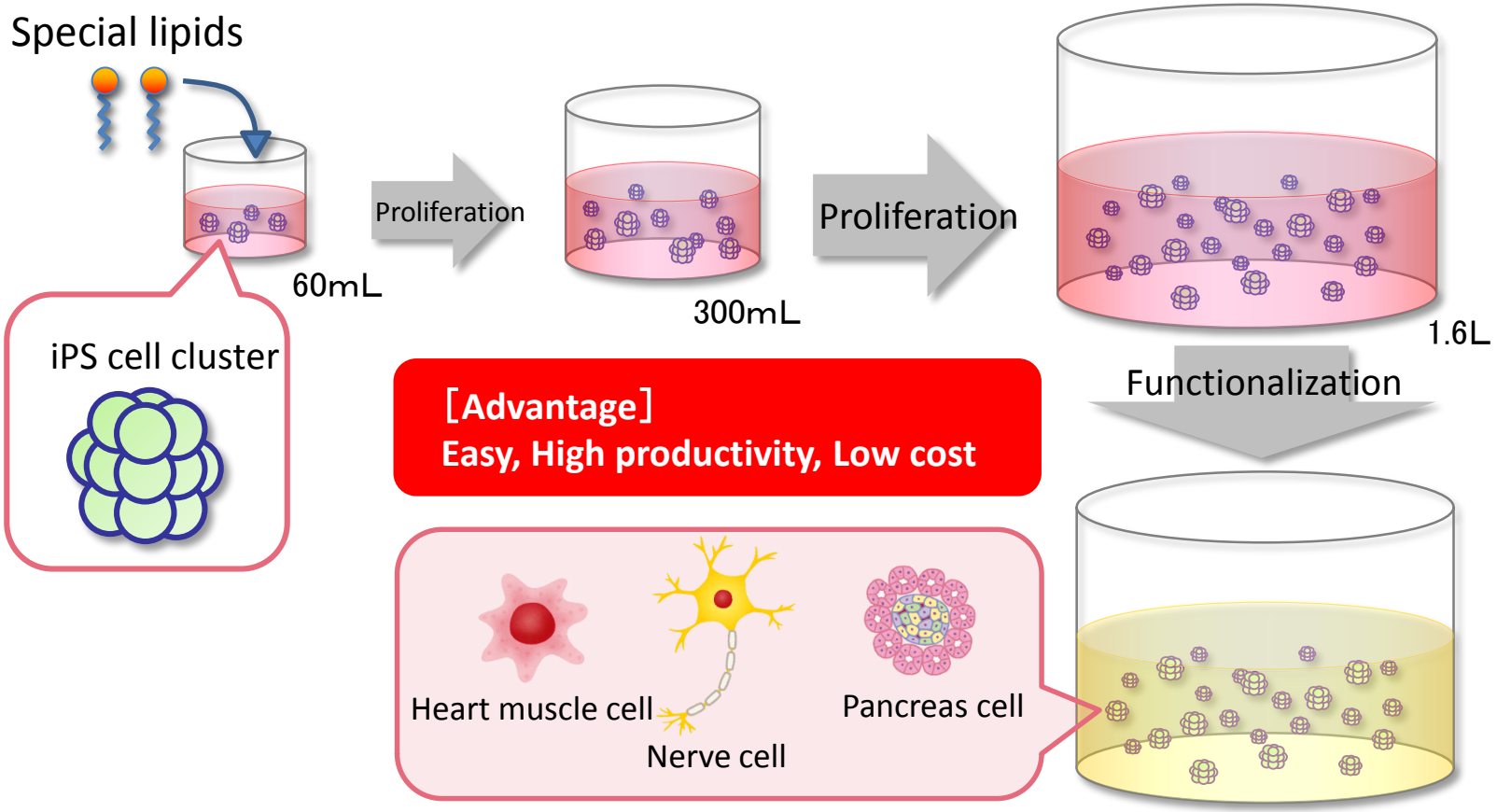
Electricity generating walls (BIPV for ZEB)

World Record for conversion efficiency (26.63%)

Regenerative medicine and cell therapy

（Large-scale culture technique for iPS cells reaches implementation stage）

- Obtained a patent for “a method to mass-culture pluripotent stem cells including iPS cells (induced pluripotent stem cells) and ES cells (embryonic stem cells)”（Joint research with The University of Tokyo）
- Further accelerate R&D by leveraging open innovation, etc.



- **Materials to meet increasing need for weight reduction in the fields of automobiles and aircraft**
- **Promote global sales expansion based on structural adhesives and composite materials**

Epoxy masterbatch

- Changes in automotive component materials are driving a shift from welding to adhesion
  Expansion in parts and vehicle types using structural adhesives
- Provide solutions jointly developed by KANEKA, CEMEDINE and automakers to meet customer needs


Composite

- Enter the high-functionality composite materials business in the aviation and aerospace field
  - ・June 2017: Acquired composite material resin compound manufacturer
  - ・Jan. 2018: Acquired the aircraft composites business from Henkel Corporation
- Aim for net sales of ¥20 billion in 2025

Entering the dairy products business

Nutrition

- Develop a new fully integrated dairy product business ranging from production and sales of dairy products (milk, butter, etc.) to consumer purchases
- Combine with the food production support business to contribute to productivity gains for dairy farmers and recycling-oriented dairy farms

Dairy farmers in Hokkaido

- Dairy farmer support
- Aim for an attractive dairy business together

Eco-friendly dairy farm management with better productivity and improved workplace environments

Pur Natur Invest BVBA

Technical tie-up

KANEKA Group

《B to B》 Commercial use Fermentation butter

《B to B to C》 Household use Milk, yoghurt, butter, cheese etc.

Selling and Marketing activity

Selling and marketing activity (Including sales support)

Sweets

Bakery

CVS and other sales channels (High-end supermarkets, etc.)

Bakery

Communication activity

Consumer

Polyimide related businesses

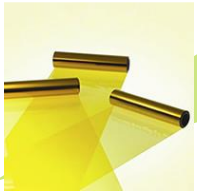
Quality of Life

- **Following IT innovation such as the IoT and AI, demand for high-functionality materials to support the advance of digital equipment is expanding widely**
- **Respond to growth in market demand with a competitive lineup of polyimide products and aim for dramatic business growth**

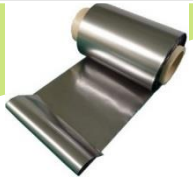
	2017	2018	2019	2020	～2025
【Technical trend】	Wireless charging	High-speed, large-capacity telecommunications High temperature heat transfer Component mounting strength	Multiple synchronized connection of cars and equipment, etc. Increase requirement for insulative properties due to advance in thinner components (expanded PI application) Flexibility		Transparent materials
Phone/Sensor	Increase component numbers and design complexity (miniature, low-profile, wearable)		5G communication		IoT/Trillion Sensor Universe
Information display		High brightness・Thin profile・AR/VR・Smart display			Rapid growth in smart glass market
Automobile			Growth in in-vehicle panels and sensors		Increase in power module output capacity Demand for high temperature heat transfer
Home Electronics			Spread of smart home appliances and robots		Sharp increase in sensors used in homes
Communication 5G communication			Full rollout of 5G infrastructure		Increased complexity of telecommunication designs, higher temperature density
Power Devices/Aerospace Si→SiC			Spread of SiC/GaN chips		Full rollout of heat countermeasures in aviation and aerospace applications

Market expansion

Polyimide film



Graphite sheets



Polyimide varnish

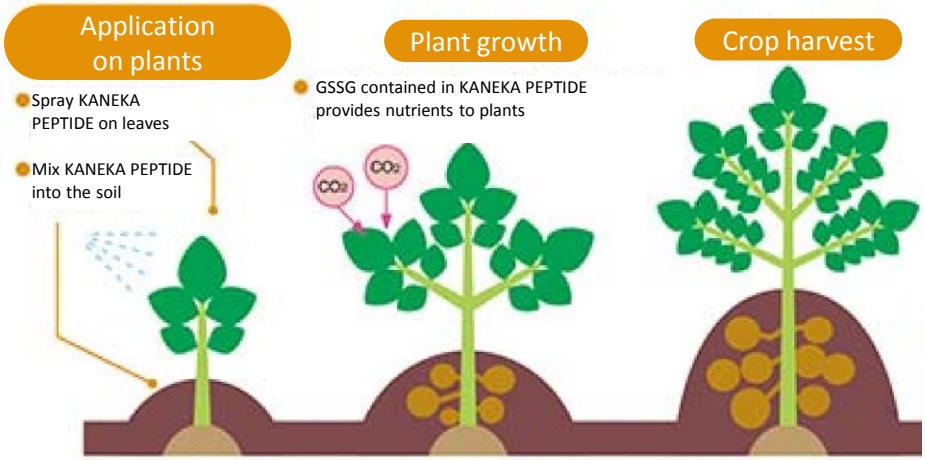
Covercoat ink

● **Contribute to increased production of agricultural products by providing high-performance fertilizers taking advantage of unique biotechnology**

High-performance fertilizers that are different from conventional chemical fertilizers

Inclusion of oxidized glutathione, which promotes photosynthesis
Conducting marketing globally, mainly in Asia
Agricultural trials are underway around the world

KANEKA PEPTIDE



Further promote the research of new materials

(Fertilizers derived from natural products that enhance the original functions of plants)