

THE KAITEKI COMPANY

APTSIS 20

Presentation to Investors

November 28, 2017

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 **Mitsubishi Chemical Holdings Corporation**



The forward-looking statements are based largely on information available as of the date hereof, and are subject to risks and uncertainties which may be beyond Company control. Actual results could differ largely, due to numerous factors, including but not limited to the following: Group companies execute businesses in many different fields, such as information and electronics, displays, advanced moldings and composites, advanced polymers, MMA, petrochemicals, carbon products, industrial gases, pharmaceuticals, etc. and these business results are subjected to influences of world demands, exchange rates, price and procurement volume of crude oil and naphtha, trends in market prices, speed in technology innovation, National Health Insurance price revision, product liabilities, lawsuits, laws, and regulations.

List of Abbreviations

MCHC: Mitsubishi Chemical Holdings Corporation

MCC: Mitsubishi Chemical Corporation

MTPC: Mitsubishi Tanabe Pharma Corporation

LSII: Life Science Institute, Inc.

TNSC: Taiyo Nippon Sanso Corporation

APIC: API Corporation

JPP: Japan Polyethylene Corporation

NKC: Nippon Kasei Chemical Company Limited

NSCI: The Nippon Synthetic Chemical Industry Co., Ltd.

QKK: Qualicaps Co., Ltd.

NEDO: New Energy and Industrial Technology Development
Organization

SAMAC: The Saudi Methacrylates Company

SHARQ: Eastern Petrochemical Company

AI: Artificial intelligence

ALS: Amyotrophic lateral sclerosis

ASU: Air separation unit

CF: Carbon fiber

CFRP: Carbon fiber reinforced plastic

CMP: Chemical mechanical polishing

EV: Electric vehicle

ICT: Information and communication technology

IoT: Internet of things

LCD: liquid crystal display

LIB: Lithium-ion battery

MMA: Methyl methacrylate

MOE: Management of Economics

MOS: Management of Sustainability

MOT: Management of Technology

OCA: Optical clear adhesive

OLED: Organic light emitting diode

PMMA: Polymethyl methacrylate

PO: Polyolefin

PP: Polypropylene

PPS: Power producer and supplier

PTA: Terephthalic acid

RHQs: Regional headquarters

SMC: Sheet molding compound

VLP: virus-like particles

CHO: Chief Health Officer

CIO: Chief Innovation Officer

FY2017: April 1, 2017 – March 31, 2018

Note:

Product names, brand names, service names, and technology names used in this presentation material are denoted in italics and are trademarks or registered trademarks of the MCHC Group in Japan and/or overseas. Other product names, brand names, and service names may also be protected.

Agenda



1. Progress in *APTSIS 20*, Medium-term Management Plan

- Operating Results and Forecasts
- Action Plans

2. Toward Fiscal 2020

- Intensifying Business Portfolio Management
- Basic Policies on Growth Strategies
- Focus Markets
- Synergy, Growth, and Rationalization through Integration of Three Chemical Companies
- Early Commercialization of Seeds of Next-generation Businesses
- Digital Transformation
- Fiscal 2020 Profit Level

3. Further Deepening *KAITEKI* Management

- Strengthening Management with MOT
- Improving ESG Evaluation by MOS

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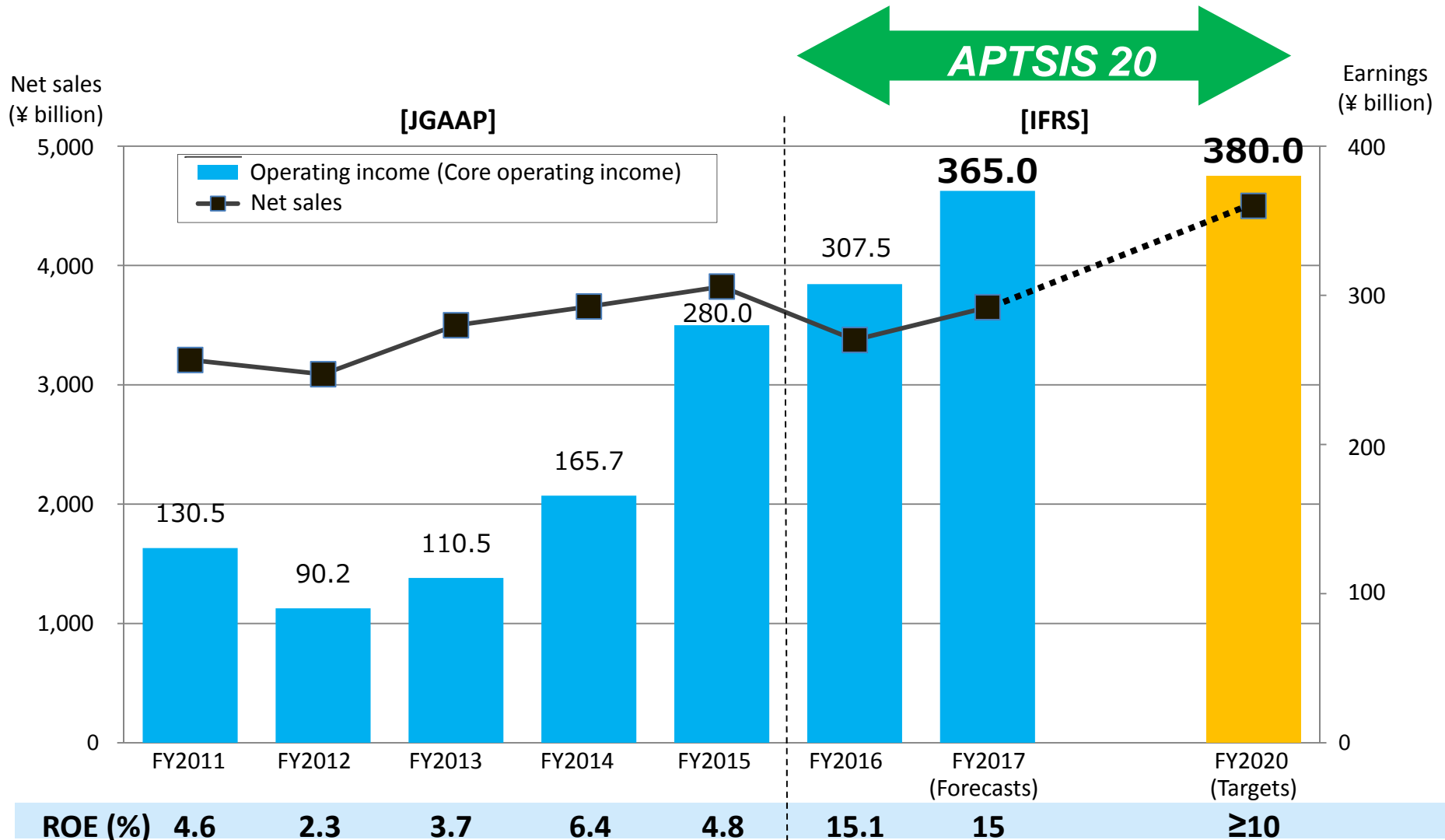
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Operating Results and Forecasts

■ Business Results with APTSIS 20 show steady improvement.



Operating Results and Forecasts: MOE

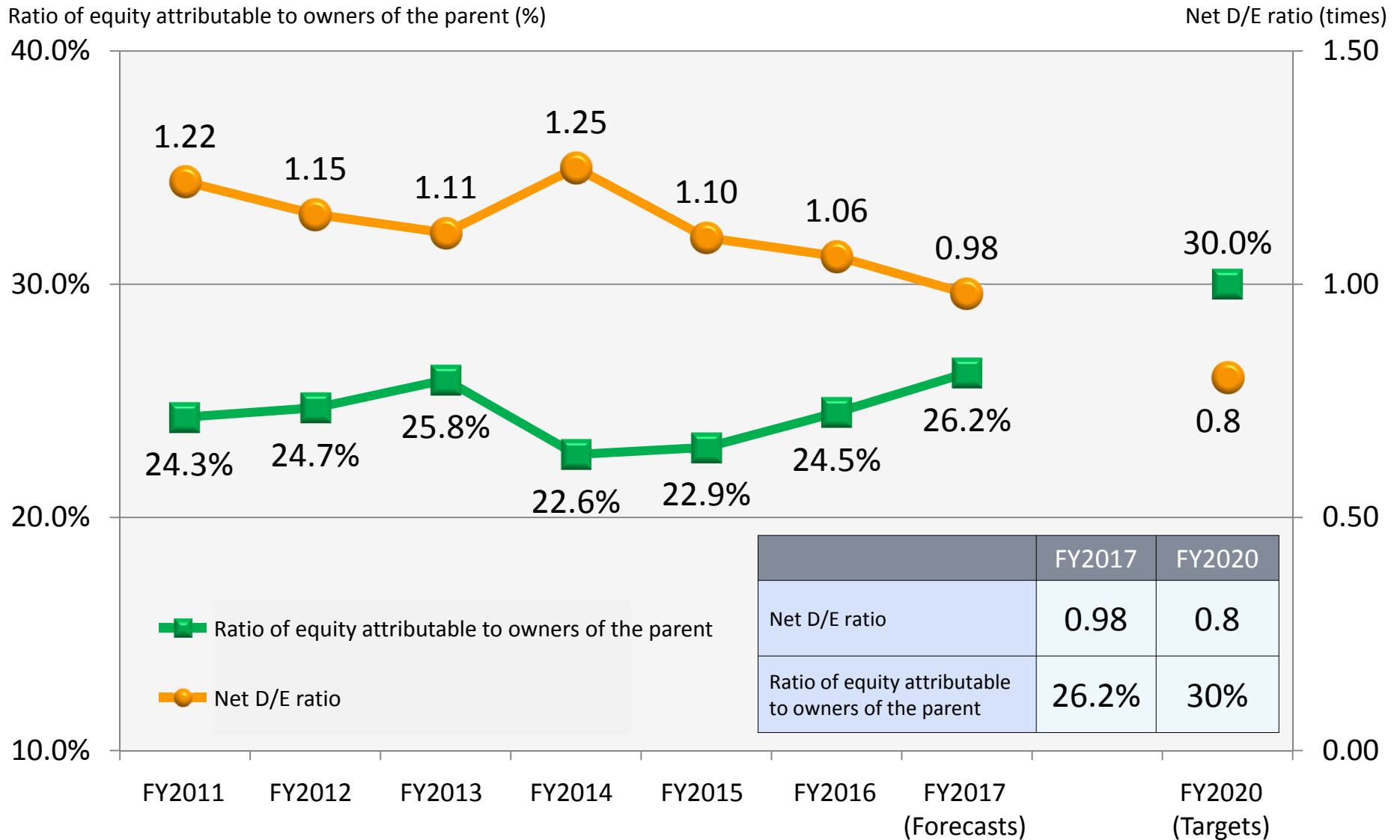
- Numerical targets (ROS, net income, and ROE) of *APTSIS 20* are expected to be achieved ahead of schedule.

		FY2020 Targets	FY2017 Forecasts*
Financial Index (MOE)	Core operating income	¥380 billion	¥365 billion
	ROS (Core operating income)	8%	10%
	Net income attributable to owners of the parent	¥180 billion	¥180 billion
	ROE	12%	15%
	Net D/E ratio	0.8	0.98

* Announced on Oct. 26, 2017

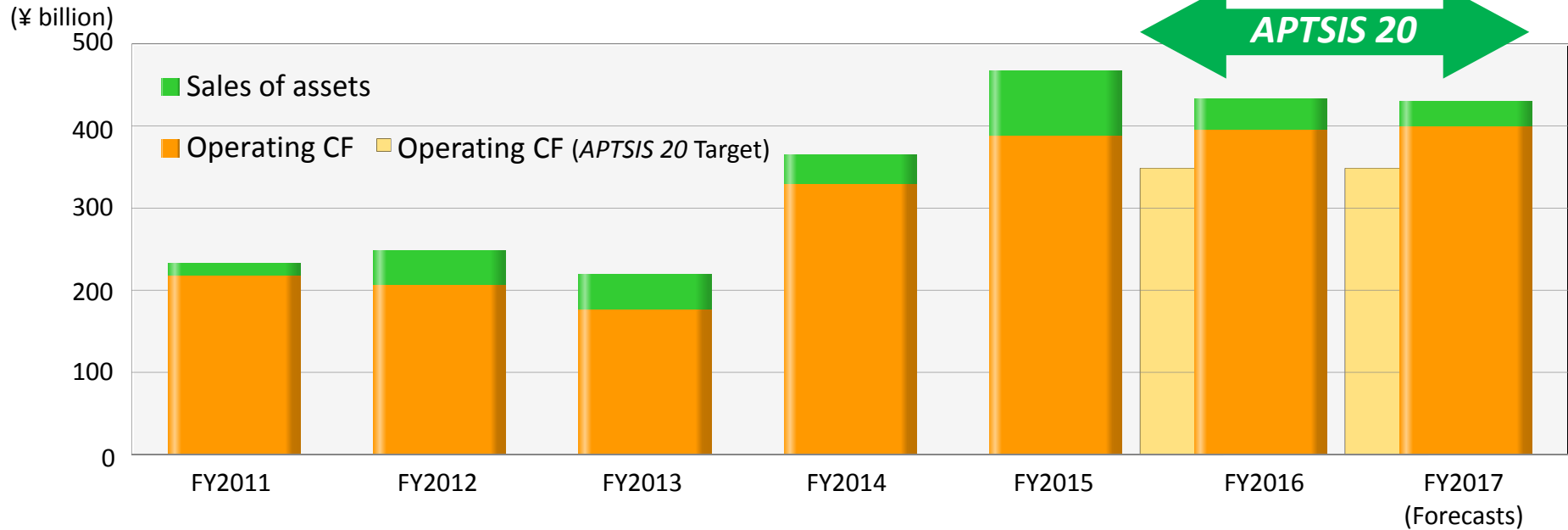
Operating Results and Forecasts: Strengthening Financial Base (1)

■ Along with improving performance, the financial base is also steadily improving.



Operating Results and Forecasts: Strengthening Financial Base (2)

■ Higher cash-generating capability due mainly to improved performance and asset reduction

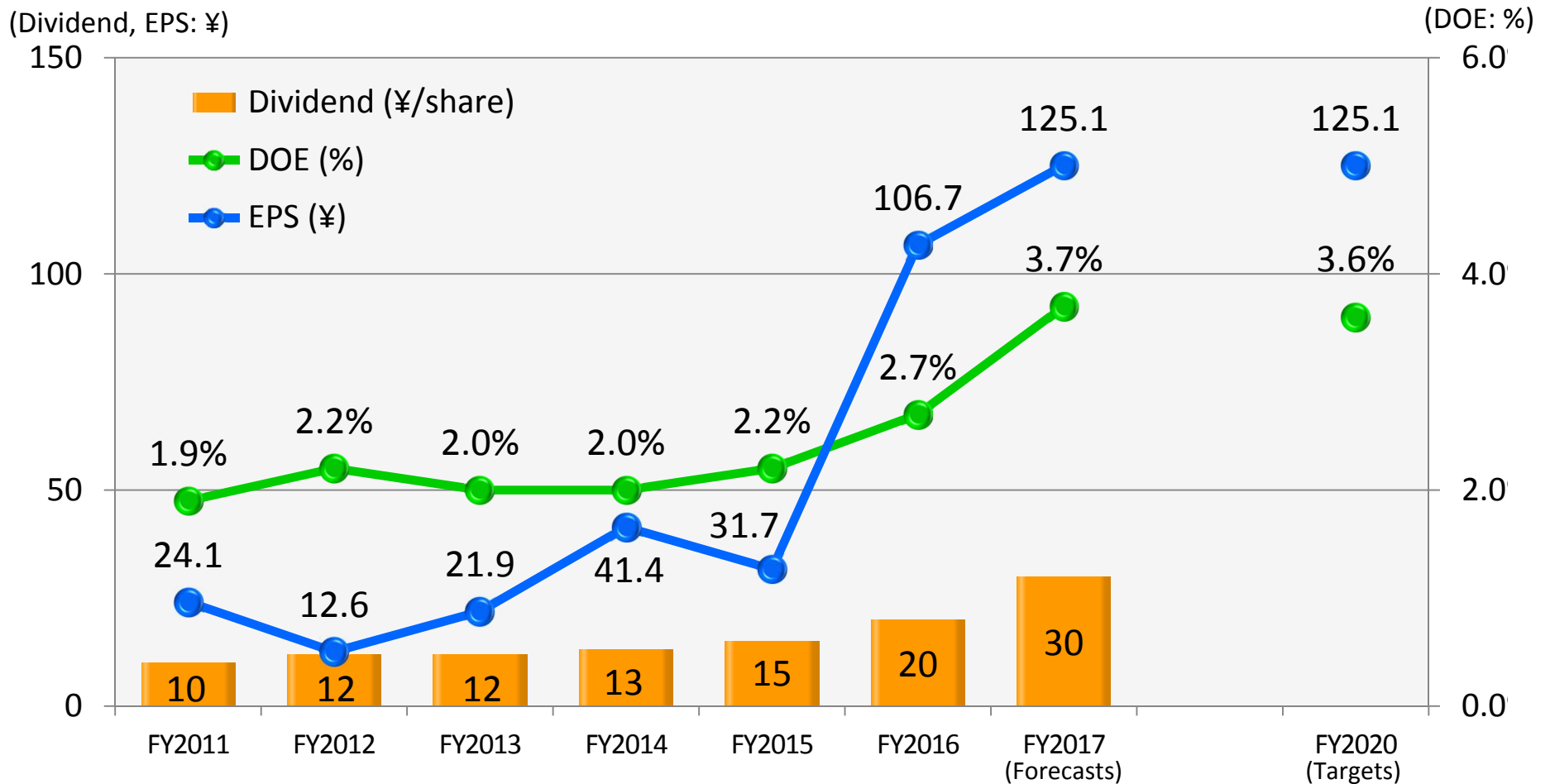


	Targets	Estimates	Forecasts	
	FY2016 – FY2020	FY2016 – FY2017	FY2016 – FY2020	
Financial structure reforms	Reduction of cross-held shares	100	80	100
	Working capital reduction	100	30	100
	Reduction of cashes and deposits	100	150	220
	Sales of assets	—	40	—
	Improvement of profits and others	—	80	80+α
Total of capital efficiency and others	300	380	500+α	

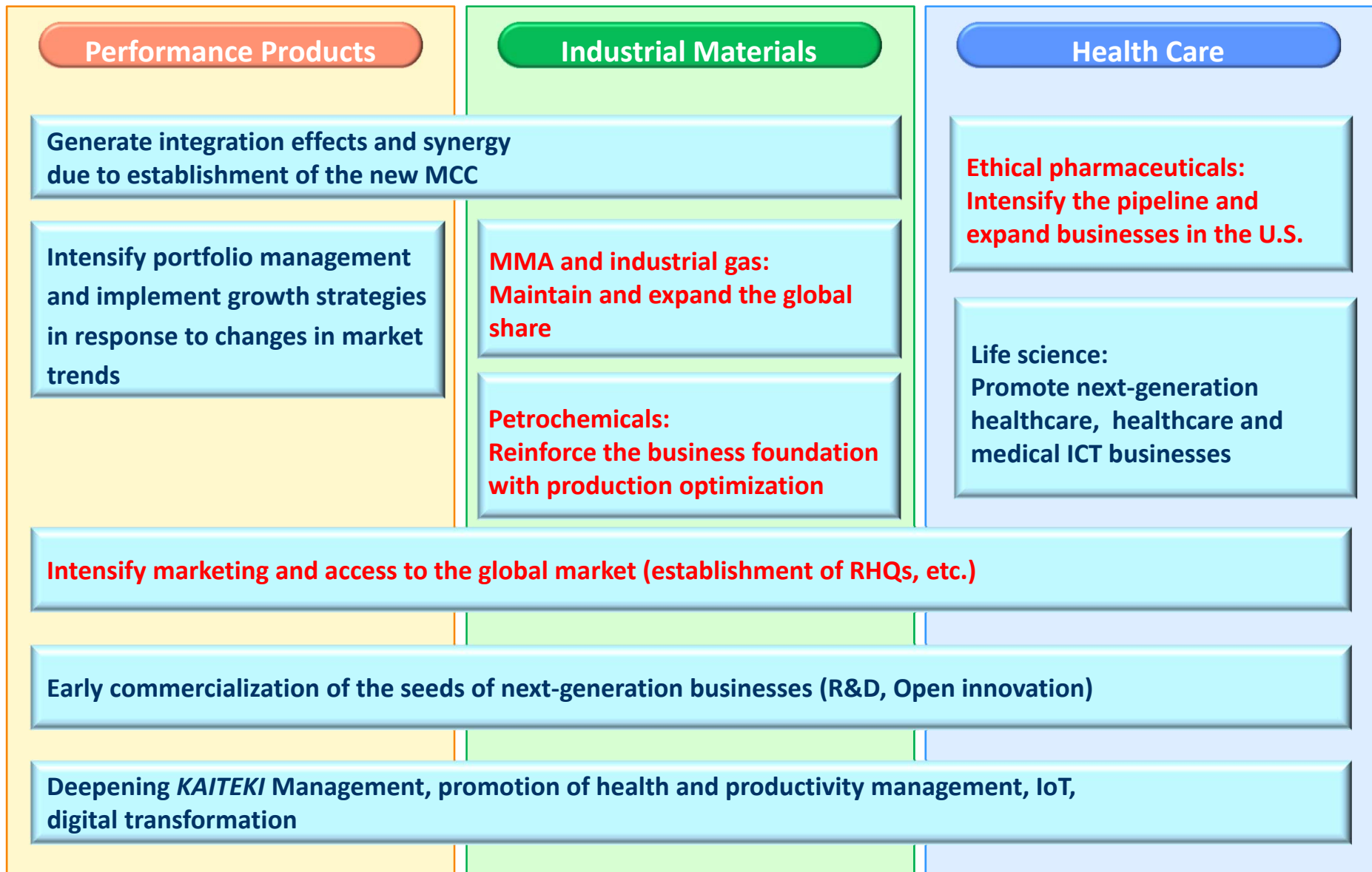
(¥ billion)

Operating Results and Forecasts: Shareholder Return

- Aim to enhance shareholder value by improving corporate value
- Balance dividend policy with growth investment and financial structure improvement
 - Set 30% of the medium-term profit level as a guideline for the consolidated dividend payout ratio
 - Implement a stable dividend



Action Plans: Priority Measures for Accelerating Growth



Action Plans: Measures by Business Domain

■ Implementing measures steadily in each business domain based on each basic policy

Performance Products

- **Promotion of generating synergy in the MCHC Group**
 - Conversion of NSCI to a wholly owned subsidiary
 - Conversion of NKC to a wholly owned subsidiary
 - **Integration of synthetic resin emulsion businesses**
- **Increasing profitability of overseas businesses**
 - **Expansion of polyester film production line in the U.S.: Under construction**
 - QKK: Acquisition of Piper Plastics, Inc. in the U.S.
 - Carbon Fiber
 - **Expansion of production line and commencement of commercial operation in the U.S.**
 - **Acquisition of SGL Carbon Fibers LLC in the U.S.**
 - **Investment in C.P.C. SRL**
- **Making new energy businesses competitive more quickly**
 - **Continued improvement of profitability in battery material business**
 - **Electrolyte business alliance with Ube Industries, Ltd. in China (Obtained approval from Chinese authorities)**

Industrial Materials

- **Implementing fundamental measures for unprofitable and low-profit businesses**
 - Transfer of PTA businesses in India and China
- **Increasing profitability of overseas businesses**
 - **SAMAC's MMA plant in the Middle East: Undergoing trial operation**
 - Industrial gases
 - Acquisition of Air Liquide's industrial gas business and related business assets in the U.S.
 - Acquisition of Supagas Australia
 - **Constructed ASUs in the U.S.**
 - **Invested in a 3D printer maker**
- **Realization of high-productivity corporate structure**
 - Unification of ethylene production facilities in Mizushima
 - **PP production facility at the Goi Plant of JPP (capacity: 150kt/y): Under construction**
 - Utility alliances at the petrochemical complex

Health Care

- **Establishing solid business foundation in the U.S.**
 - **Launch of Radicava in the U.S.**
 - **Acquisition of NeuroDerm Ltd.**
 - **Acquisition of Stelic Institute & Co., Inc.**
- **Sustainable growth and enhancing profitability**
 - **Established BIKEN Co., Ltd., a JV for vaccine manufacturing**
- **Realization of high-productivity corporate structure**
 - Transfer of the Fukuroi Plant of APIC
 - **Transfer of generic drug business**
 - **Review of business structure for a recombinant human serum albumin preparation**
- **Initiative to regenerative medicine**
 - **Planning to start development and clinical trials of regenerative medical products using Muse cells during fiscal 2017**

Action Plans: Strengthening Access and Marketing to Global Markets

- Actively investing in domestic and overseas production sites and strengthening global marketing capabilities

Construction of new polyester film production line

- Increased production of high-performance film products in the U.S. (capacity : 25kt/y)
Operations scheduled to start in April 2018



New polyester film production line in the U.S.

Expansion of carbon fiber business

- Acquired SGL Carbon Fibers (U.S. production site) to produce lightweight materials for wind power generation blades (wings) and automobiles, etc.
- Invested in CFRP production and sales company for automotive market (C.P.C.) (44%)
- North America: Expansion and operation of carbonization line (2kt/y) [2017]
- Otake Plant (Japan): Large tow carbonization line enhancement (2.7kt/y → 3.9kt/y) [2017]



C.P.C. World's largest composite material press facility

Establishment of RHQs

- Established RHQs in the U.S. Europe, Asia Pacific, and China
- Implemented marketing for focus markets including mobility and packaging, etc., and formulated each regional strategy

Action Plans: MMA

■ Building solid global supply networks

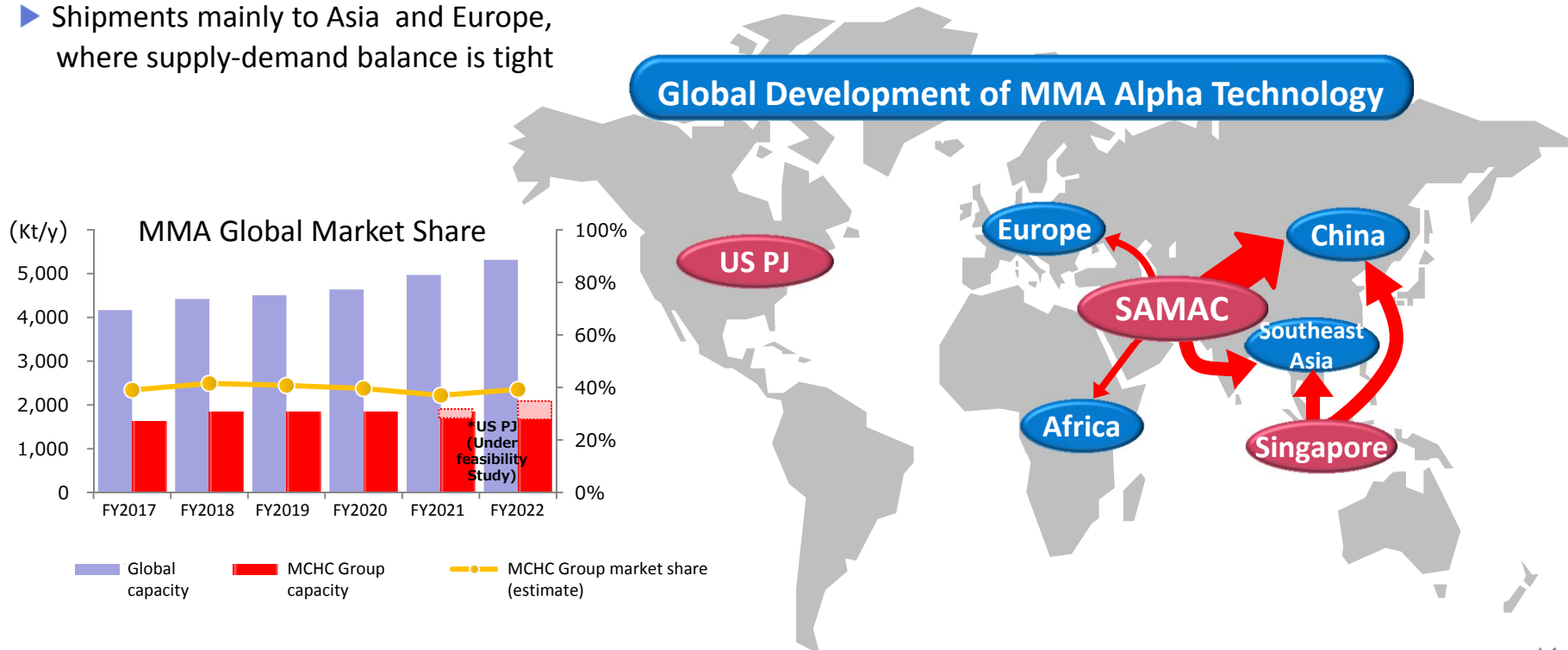
- Optimize regional strategies in Europe, Asia Pacific, and China due to commencement of operations at SAMAC, which has the world's most competitiveness
- Reconstruct the U.S. business via the MMA plant construction project using Alpha technology

▶ SAMAC

MMA capacity: 250kt/y; Technology: Alpha technology (raw material: ethylene)

PMMA capacity: 40kt/y

- ▶ Currently undergoing trial operations, with full-scale operation slated for the beginning of 2018
- ▶ Shipments mainly to Asia and Europe, where supply-demand balance is tight



Action Plans: Industrial Gases

■ Enlarge global market share through acquisition of businesses in the U.S. and Australia

Strengthening business foundation in Japan

- Maximization of group synergies and improvement of productivity efficiency
- Integrated management with major domestic subsidiaries through "Total TNSC"

Enlarge market share in the U.S.

- Acquisition of part of Air Liquide's industrial gas business and related business assets in the U.S. (Sep. 2016)
- Expansion of business area through promotion of capital expenditures and M&A (Building ASUs and CO₂ production facilities)
- Securement of helium new source and formulation and execution of global strategies

Enlarge market share in Asia Pacific

- Australia: Acquisition of Supagas Australia (Dec. 2016), Building CO₂ production facilities
- Acceleration of entry into Southeast Asian and Indian markets
- Expansion of electronics material gas businesses: Establishment of the "Total Electronics" function in Shanghai (Apr. 2017)

Action Plans: Strengthening Petrochemical Businesses Foundation

- Enhancement of cost competitiveness and shift to high-performance products:
Respond to shale gas or other resource-derived cheap PO and polymers

Enhancement of cost competitiveness

- Unification of naphtha cracker in Mizushima
Completion of 1.5 unit operation system in Japan
- Execute utility alliances at petrochemical complexes
Overall optimization via electric power liberalization system
(new power PPS company)



Mizushima Plant, MCC

Shift to high-performance and high-quality products

- Construct PP production facility at the Goi Plant of JPP
(scheduled to begin operation in 2019)
Shift to higher quality and efficiency through conversion of
production method
(liquid phase method → gas phase method)
Production capacity: 150kt/y



Goi Plant, JPP

Action Plans: Ethical Pharmaceuticals – Business Development in the U.S. (1)

- Target ¥80 billion in sales revenue in the U.S. by 2020, by expanding *Radicava* and launching ND0612 to the market

Radicava

Treatment option for ALS (*Radicut* in Japan)
1st drug for ALS approved by the FDA in 20 years
(Approval: May 2017, Launch: August 8, 2017)

Expected to be the 1st step in new ALS treatment,
which will offer new hope for patients with ALS

- Build a sales operation of some 50 members
- Already given to 1,000 ALS patients



Radicava[™]
(edaravone) IV infusion
30mg/100mL

ALS: Amyotrophic lateral sclerosis

- ALS is an intractable neurological disease that deforms and degenerates motor neurons, inducing muscle atrophy/weakness.
- 5,000 to 6,000 people* are diagnosed with ALS in the U.S. annually.

*Source: ALS Association Website

Action Plans: Ethical Pharmaceuticals – Business Development in the U.S. (2)

- Strengthening the neurological disorder area pipeline by acquiring NeuroDerm

ND0612

World's first product of liquid Levodopa and Carbidopa (LD/CD)
Enables continuous 24-hour LD/CD administration

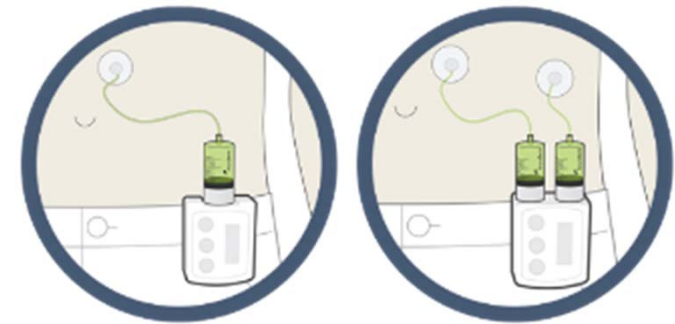
Promoting development, aiming to launch in 2020

Pipeline

*As of Nov. 1, 2017

Product	Generic name	Indication	Stage*
ND0612	Levodopa/Carbidopa subcutaneous infusion pump/patch	Parkinson's Disease (Moderate to severe)	P2
ND0701	Apomorphine subcutaneous infusion pump	Parkinson's Disease (Severe)	P1
ND0801	Nicotine and Opipramol transdermal patch	Cognitive impairment associated with central nervous system diseases	P2

ND0612 pump

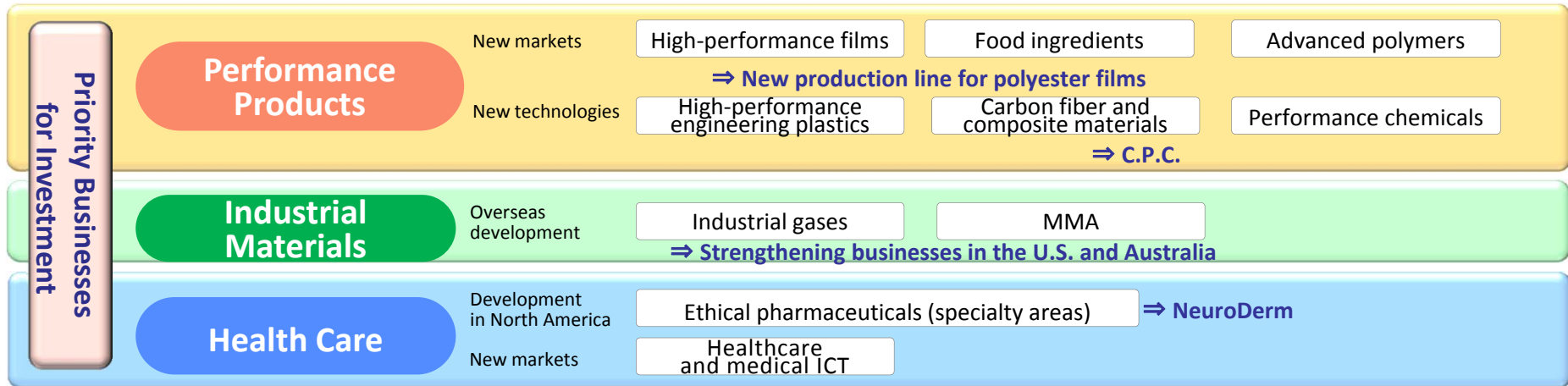


ND0612 patch
(Device in development)

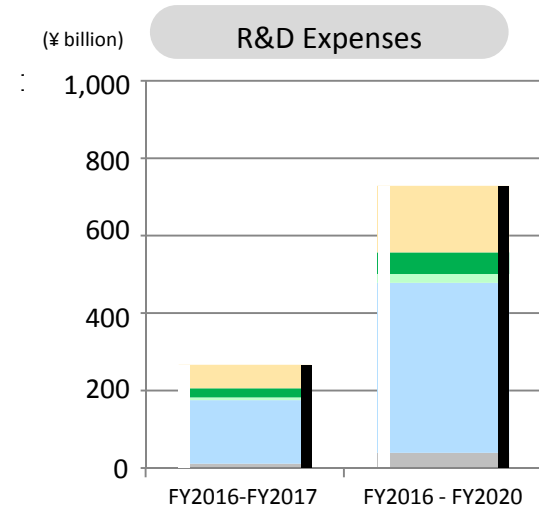
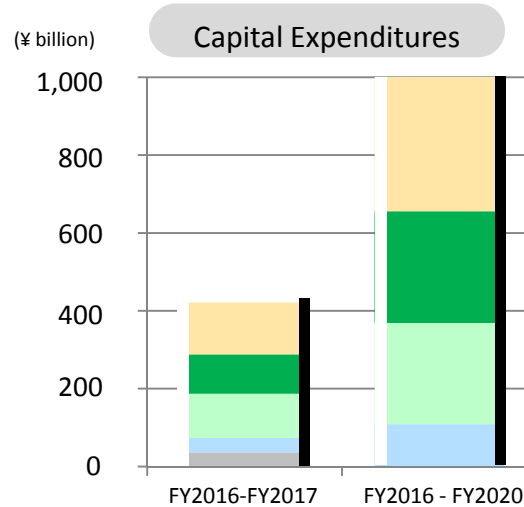
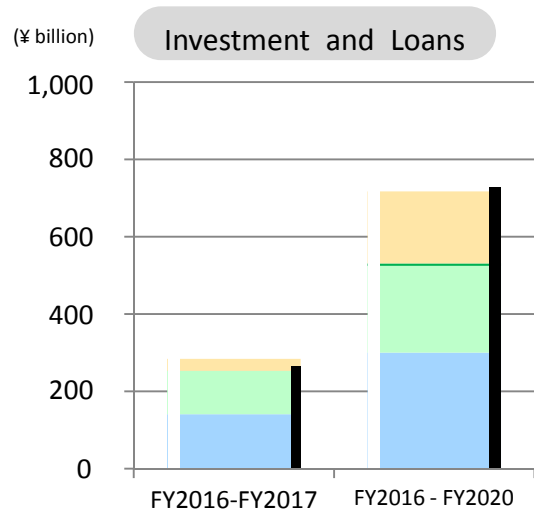


Action Plans: Investment Plan

- Increase investment and loans by **¥200 billion** [¥1.5 trillion → ¥1.7 trillion] (Performance Products)
- Increase R&D investment by **¥25 billion** over 3 years (Performance Products, Health Care)



Resource Allocation Plan



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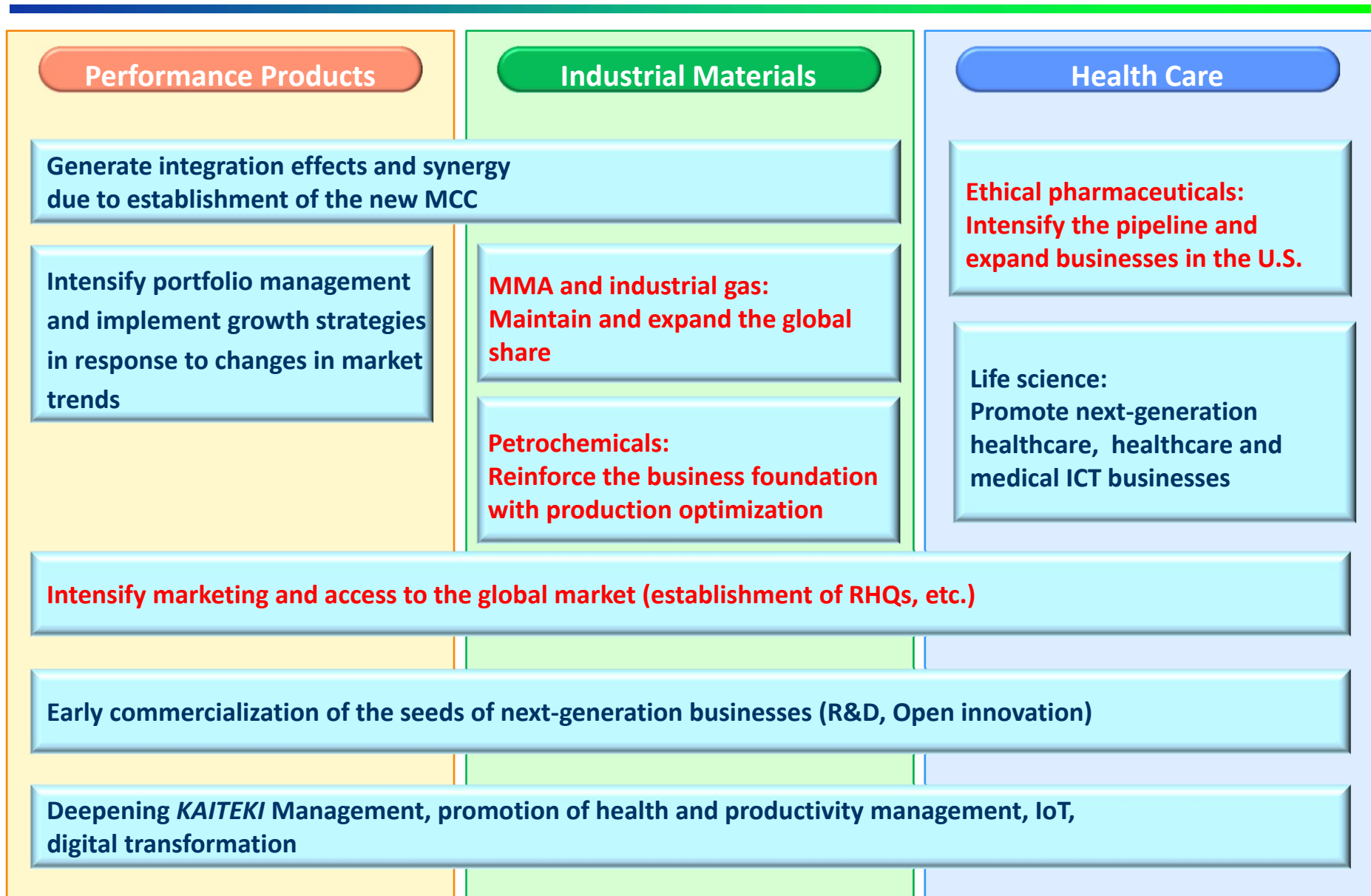
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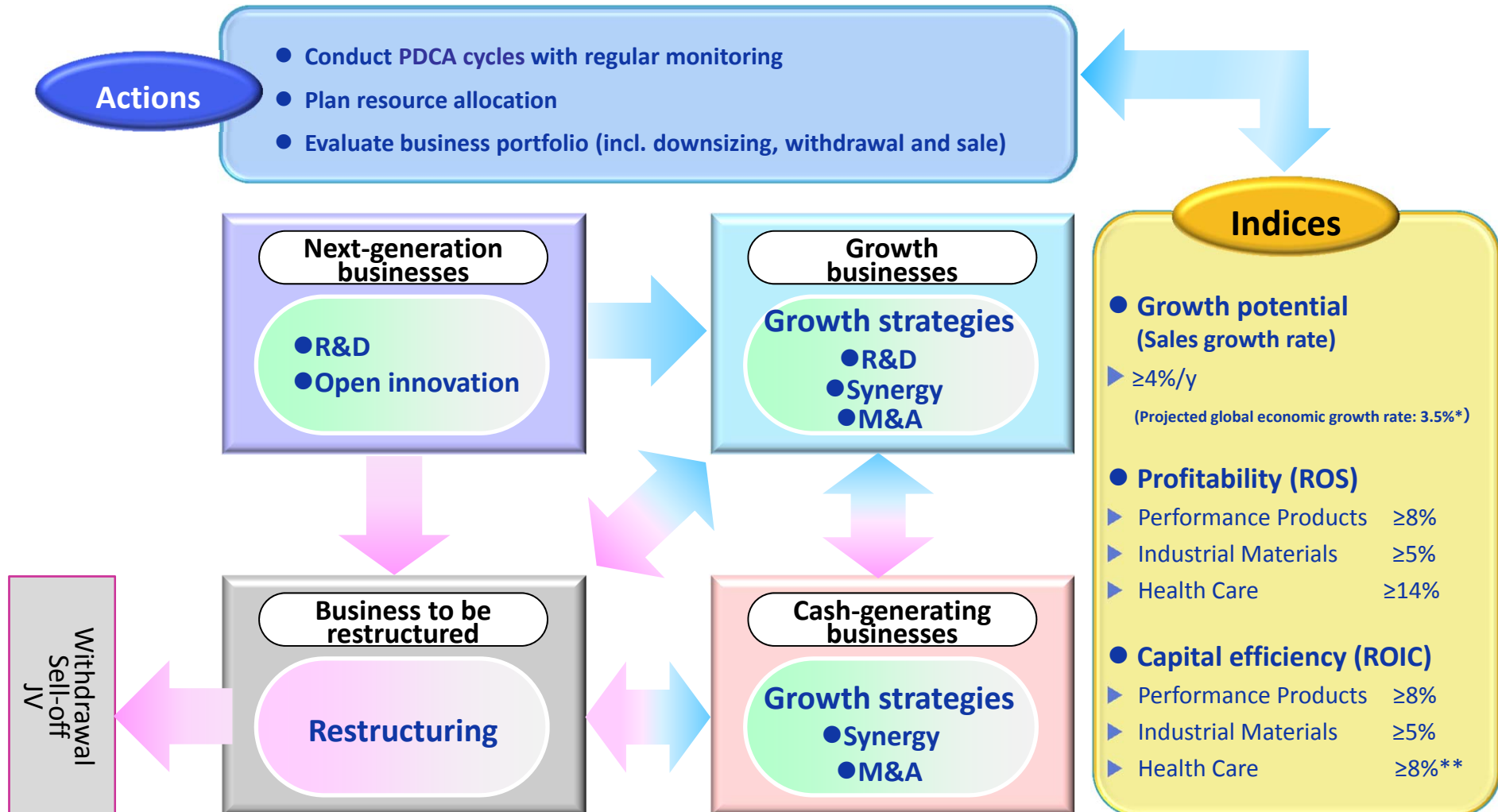
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Toward Fiscal 2020



Intensifying Business Portfolio Management (1)

- Positioning each operating company and subsidiary based on the indices by business domain
- Optimizing the business portfolio and resource allocations with regular monitoring



*IMP outlook 2016-2020 average

**Calculated excluding dash and deposits 22

Intensifying Business Portfolio Management (2)



Basic Policies on Growth Strategies

MCHC Group Philosophy and Vision

*Good **Chemistry** for Tomorrow*

Creating better relationships among people, society, and our planet.



Mega Trends

- Worsening climate change, pollution and insufficiency of water resources
- Increasing global and ageing population
- Advancing globalization, expansion of regional economic zones, and development of emerging countries' economies
- Digitalization, modularization, ICT introduction
- Increasing medical costs, regenerative medicine and personalized medicine

Environmental and societal issues that the MCHC Group must address

- Efficient use of resources and energy
- Climate change (CO2 reductions)
- Securing clean water resources
- Food and agricultural problems
- Health maintenance and disease treatment
- Smart society

Focus Markets

1. Automobiles, Aircraft (Mobility)

Business scale
 ¥300 billion (FY2015)
 ¥310 billion (FY2017)
 ¥420 billion (FY2020)

2. IT, Electronics, Displays

Business scale
 ¥220 billion (FY2015)
 ¥230 billion (FY2017)
 ¥300 billion (FY2020)

3. Medical, Food, Bio Products

Business scale
 ¥80 billion (FY2015)
 ¥85 billion (FY2017)
 ¥150 billion (FY2020)

4. Healthcare

(Pharmaceuticals, Healthcare solutions)

Business scale:
 ¥540 billion (FY2015)
 ¥550 billion (FY2017)
 ¥650 billion (FY2020)

5. Environment, Energy

Business scale
 ¥135 billion (FY2015)
 ¥150 billion (FY2017)
 ¥240 billion (FY2020)

6. Packaging, Labels, Films

Business scale
 ¥165 billion (FY2015)
 ¥175 billion (FY2017)
 ¥230 billion (FY2020)

Focus Markets (1)

Automobile, Aircraft (Mobility)

Lightweight	<ul style="list-style-type: none"> ■ Strengthening the Europe and U. S. business of CF-SMC , which has already been used in domestic mass production cars <ul style="list-style-type: none"> ●Japan: Expansion of production facilities and diversification of products ●Europe: Establish mass production structure of few thousand tons/year scale Strengthening the system for production, sales, and technical services ●North America: Consider the possibility of local production ■ Enhancing the production capacity of PP compounds in North America and Asia (15%)
Electrification	<ul style="list-style-type: none"> ■ Sales expansion of resin for electric wire coating material for EVs ■ Sales expansion of materials that handle noise and vibration problems peculiar to EVs <ul style="list-style-type: none"> ●Glass fiber mat composite material ●Extra fine acrylic nonwoven fabric
Environmental applications	<ul style="list-style-type: none"> ■ Sales expansion of bio-based engineering plastic <i>DURABIO</i> used in internal/external components and transparent panels

Environment, Energy

LIB materials	<ul style="list-style-type: none"> ■ Electrolyte: Enhancement of world quadrupole production system (Restart of production in the U.K., capacity increase in Japan and the U.S., sales expansion by JV in China)
Water treatment	<ul style="list-style-type: none"> ■ Waste water treatment facilities: Targeting China's wastewater treatment market for farmers' villages and pig farming ■ Full-scale operations at the JV for water quality analysis in Myanmar (FY2018)
Separation/purification	<ul style="list-style-type: none"> ■ Mass production of new separating agents for peptides such as insulin and nucleic acid drugs (FY2018)
Agri solutions	<ul style="list-style-type: none"> ■ Collaboration in deployment of plant factory with China Internet e-commerce company (FY2017)
Infrastructure	<ul style="list-style-type: none"> ■ Enhancing the provision of solutions by packaging disaster prevention/disaster mitigation products (FY2018)

Focus Markets (2)

IT, Electronics, Displays

Displays	<ul style="list-style-type: none"> ■ Strengthening LCD components Examination of expansion of new <i>OPL film</i> line (for large-sized TVs) Expanding Chinese production facilities for high-performance coating polyester film
	<ul style="list-style-type: none"> ■ OLED components: Sales expansion of bank materials ■ OLED flexible components: Strengthening development and commercialization of cover film, OCA film, etc. ■ Printed ink materials for OLED: Sales expansion of ink materials
	<ul style="list-style-type: none"> ■ Strengthening sales structure in East Asia and China (Industrial Gases) ■ Strengthening sales synergy of other semiconductor materials (Performance Products)
Cleaning agent, cleaning services	<ul style="list-style-type: none"> ■ Sales expansion of cleaning agents after CMP and precision cleaning services, etc.
Thermal management materials	<ul style="list-style-type: none"> ■ Strengthening development of high-thermal conductivity materials: commercialization of new heat release materials

Focus Markets (3)

Medical, Food, Bio Products


Implant materials, Infusion bags	<ul style="list-style-type: none"> ■ Business expansion of implant materials: Accelerating deployment of precision molding of super engineering plastics and near net shape molding ■ Infusion bags: Realizing high-performance products by development of multilayer technology and high barrier materials, etc. (compatibility of barrier properties and flexibility)
Capsules	<ul style="list-style-type: none"> ■ Strengthening business development in emerging countries ■ Production enhancement of plant-based capsules in Japan and the U.S.
Sugar ester formulation	<ul style="list-style-type: none"> ■ Sales expansion in China and Hong Kong ■ New product development in China/ASEAN countries
Lactic acid bacteria <i>LACRIS</i>	<ul style="list-style-type: none"> ■ full-fledged development of <i>LACRIS</i> in the field of animal feed (to be implemented in 2018) ■ Development novel intestinal flora-related materials

Packaging, Labels, Films

Barrier application	<ul style="list-style-type: none"> ■ Accelerating development in Asia: Local production of food packaging film <i>DIAMIRON</i> (FY2020) ■ Development in Europe and the U.S.: Accelerating deployment of domestic product group using existing production sites in Europe and the U.S.
High-performance films	<ul style="list-style-type: none"> ■ Increase in customer demand: Enhancing production capacity of <i>TECHBARRIER</i> and products of J-Film Corporation ■ Polyester film production site in the U.S.: Enhance business by operating the expanded line

Focus Markets (4-1)

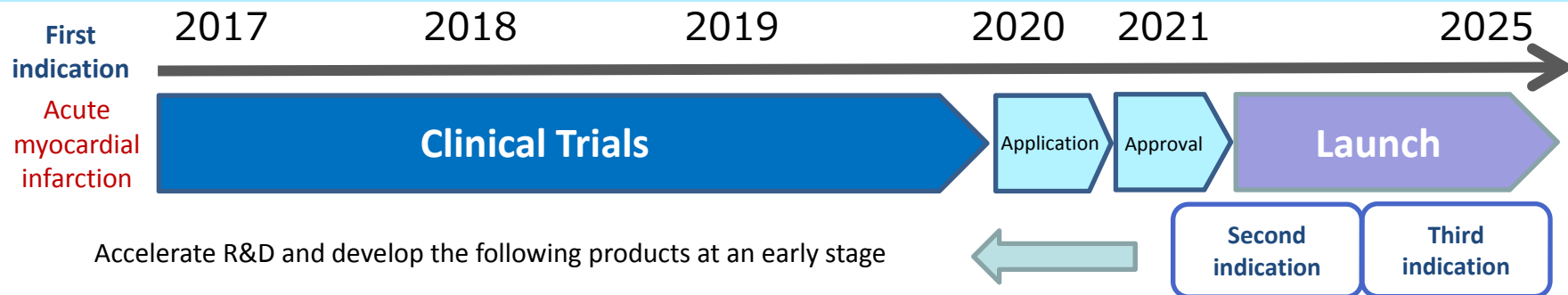
Healthcare

Ethical pharmaceuticals	<ul style="list-style-type: none"> ■ U. S. business development: Expanding <i>Radicava</i> and launch of ND0612 lead to achievement of sales revenue of ¥80 billion ■ Maximizing pipeline value: Creation of 10 candidates that advance to late-stage development ■ Strengthening IKUYAKU (drug fostering and evolution) and marketing: Achieve domestic sales revenue of ¥300 billion by continuous focus on autoimmune disorder, diabetes and renal disease, etc. ■ Vaccine business: Acceleration of development of novel vaccines such as plant-derived VLP vaccines Productivity improvement by establishing a vaccine manufacturing JV, BIKEN Co., Ltd.
Regenerative medicine	<ul style="list-style-type: none"> ■ Development of regenerative medical products using Muse cells <p style="text-align: right;"> Refer to the next page for details</p>
Healthcare, medical ICT	<ul style="list-style-type: none"> ■ Start of businesses concerning diagnostic support system using AI ■ Expansion of health support business

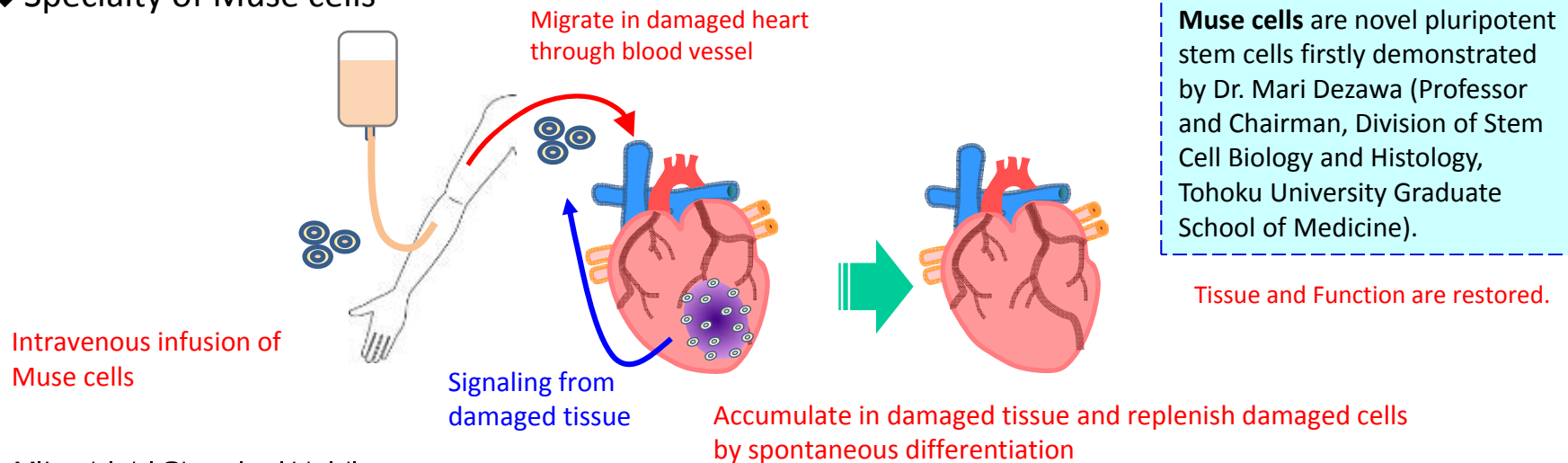
Focus Markets (4-2)

Development of Regenerative Medical Products Using Muse Cells

- Start clinical trials for the first indication: acute myocardial infarction (by the end of fiscal 2017)
- Aim for application in fiscal 2020 and approval in fiscal 2021
- Pursue expansion of indications, and accelerate the development
- Construct a manufacturing facility for regenerative medical products



◆ Specialty of Muse cells



Synergy, Growth, Rationalization through Integration of Three Chemical Companies

- Improve earnings of ¥44 billion through synergy and growth and rationalization of three chemical companies

Synergy, Growth

Total ¥35 billion of which ¥2 billion will be in FY2017

Automobiles, Aircraft (Mobility) ¥14 billion

Environment, Energy ¥7 billion

IT, Electronics, Displays ¥3 billion

Packaging, Labels, Films ¥3 billion

Medical, Food, Bio Products ¥2 billion

Fundamental Industrial Materials ¥4 billion

Rationalization by integration of three chemical companies

Total ¥15 billion of which ¥4 billion will be in FY2017

Integration of affiliated companies

- Reducing MCHC Group affiliated companies of approximately 760 companies by 25% (Target)
 - Reducing by 25% of approximately 400 MCC Group affiliated companies (Target)
- ¥2 billion

Productivity improvement, Work style reforms

- Implementation of efforts to improve productivity as UP!20
 - Improve productivity by reducing actual working hours
- ¥2 billion

Rationalization of corporate functions

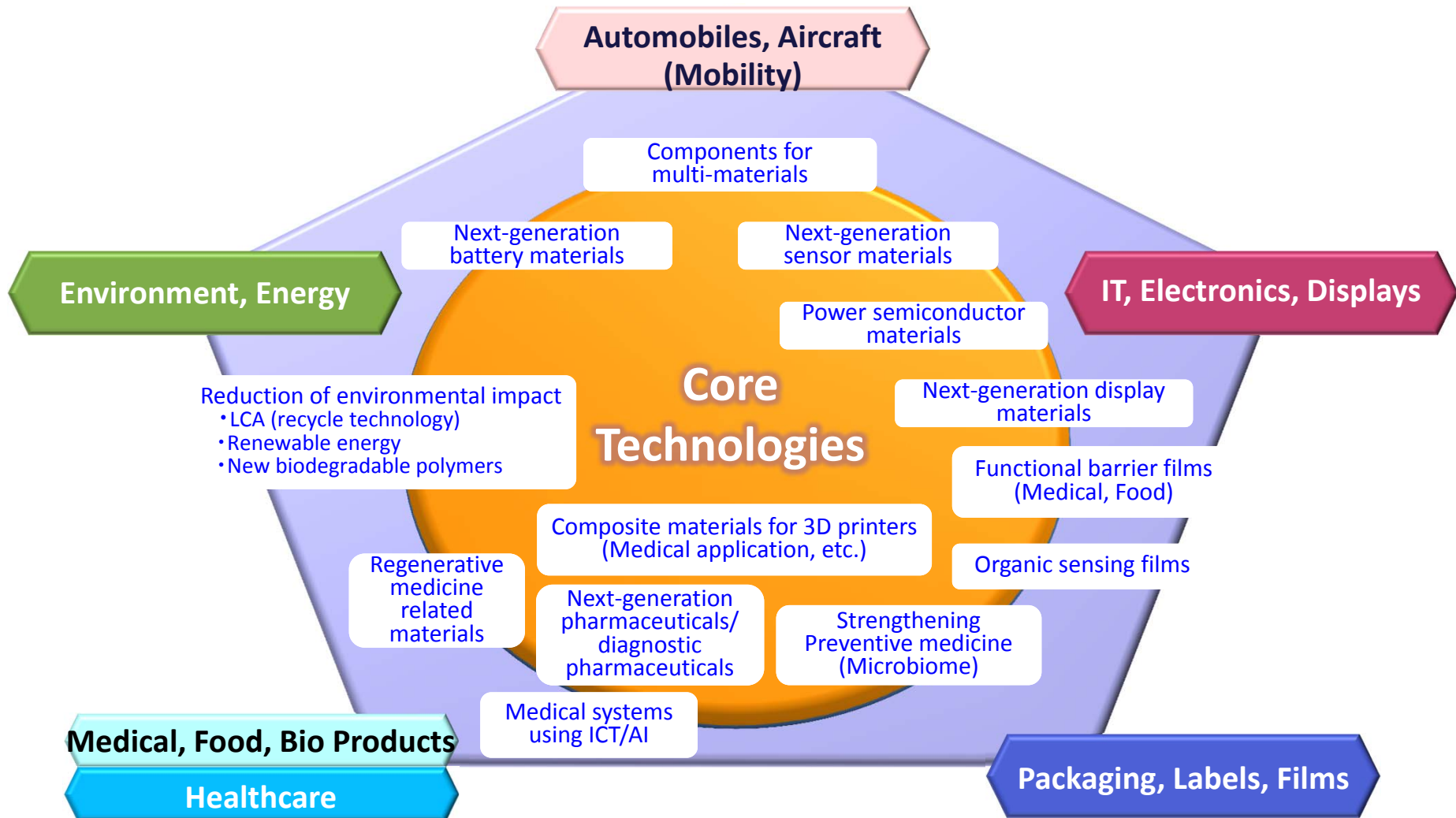
- Review of personnel plan of corporate functions, reduction of controllable expenses by 20%
- ¥3 billion

AI/IoT

- Contributing to productivity improvement through the use of ICT/AI, including new sensors and analysis technology at production, quality, development, business and service locations
- ¥4 billion

Early Commercialization of Seeds of Next-generation Businesses (1)

- Promote commercialization of next-generation businesses, which reflect trends in focus markets
- Accelerate technology innovation through open innovation, which is necessary for new businesses



Early Commercialization of Seeds of Next-generation Businesses (2)

- Established Emerging Technology & Business Development Office (ETBDO) under domain of CIO*, aiming to promote open innovation
 - Contribute to expanding MCHC Group business portfolio in 10-20 year timeframe and strengthening our global presence
 - The organization is planned to include approximately 50 members by the end of fiscal 2017.

*Chief Innovation Officer

<p>Emerging Technology Group</p>	<ul style="list-style-type: none"> ■ Expand global innovation network, aiming to exploit emerging technologies and business models from outside MCHC Group ■ Establish presence in the U.S. and start cooperation and investment with accelerators, incubators, and VC funds, etc., in order to strengthen ties with innovative venture businesses
<p>Future Market Group</p>	<ul style="list-style-type: none"> ■ Conduct market research focused on creating business models linked deeply to future potential customers
<p>Healthcare Business Development Group</p>	<ul style="list-style-type: none"> ■ Survey the needs of the medical fields to create new business models in the Health Care Business Domain
<p>Digital Transformation Group</p>	<ul style="list-style-type: none"> ■ Create new value through the use of AI and IoT ■ Develop and nurture “digital native” organizations and human resources <p style="text-align: right;">➡ Refer to the next page for details</p>

Digital Transformation

- Launch a MCHC Group-wide dedicated organization
- Promote digital projects that move toward solution of business issues (more than 10 issues in the first step)
- Reform MCHC Group businesses and culture with digital technology and philosophy

Current MCHC Group Digital Projects

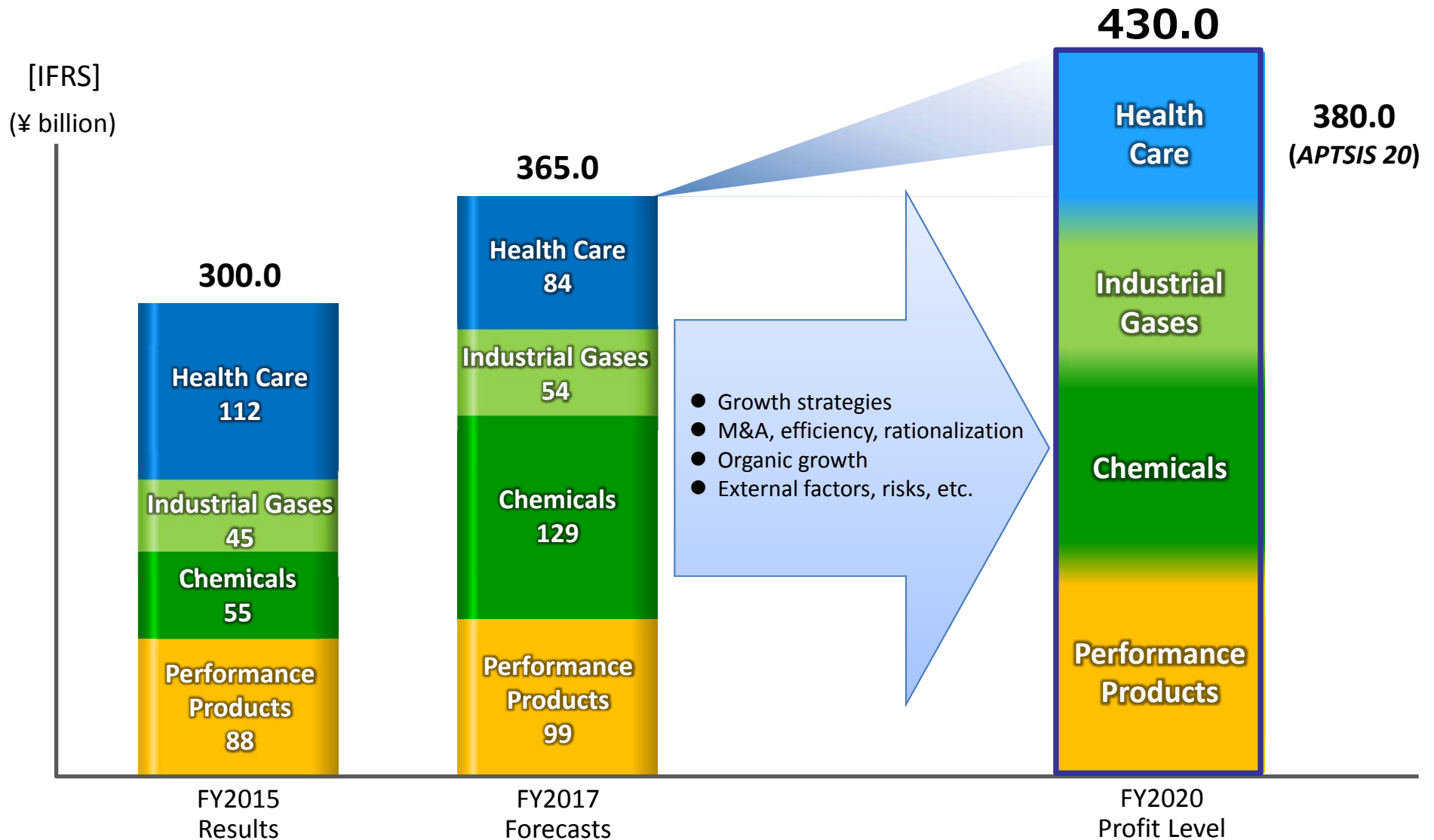
Production Technology	<ul style="list-style-type: none"> ■ Production planning and demand forecasting ■ Facility abnormality detection and prediction ■ Quality control and improvement ■ Collaboration between human and robot
R&D	<ul style="list-style-type: none"> ■ Digital R&D and application of AI to product development ■ Technology inheritance and knowledge management via AI
Foundation	<ul style="list-style-type: none"> ■ IoT platform (big data network) ■ Common infrastructure foundation and method maintenance (sharing analysis processing) ■ Digital human resources development ■ Internal networking

Creation
of
New Value

Digital native organization/
human resource development
over a broad range of fields

Fiscal 2020 Profit Level

■ Further accelerate growth with an eye on ¥430 billion in core operating income for fiscal 2020



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2. Toward Fiscal 2020

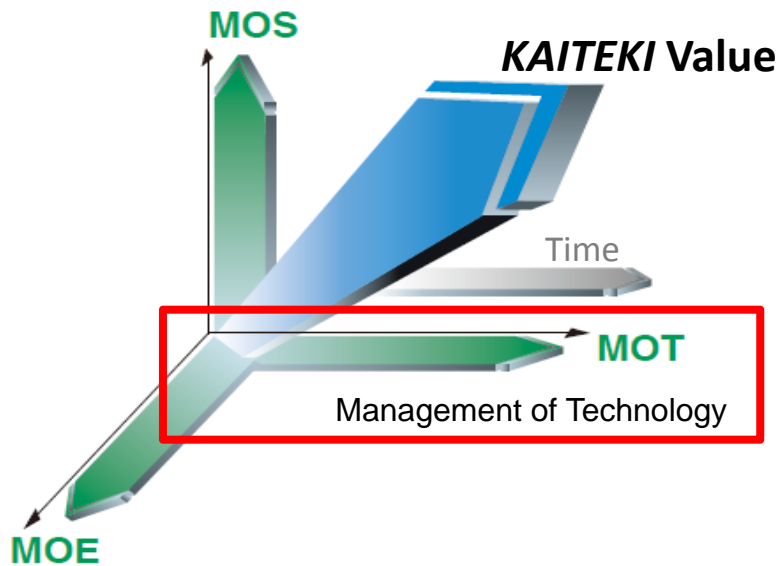
- Intensifying Business Portfolio Management
- Basic Policies on Growth Strategies
- Focus Markets
- Synergy, Growth, and Rationalization through Integration of Three Chemical Companies
- Early Commercialization of Seeds of Next-generation Businesses
- Digital Transformation
- Fiscal 2020 Profit Level

3. Further Deepening *KAITEKI* Management

- Strengthening Management with MOT
- Improving ESG Evaluation by MOS

Strengthening Management with MOT

- New dimension of MOT Axis: Innovation and acceleration of commercialization by indices and progress management






MOT Indices (KPI)

R&D Indices	<ul style="list-style-type: none"> ■ No. of new seed settings ■ Success rate of moving up to next stage ■ Speed of moving up to next stage ■ Investment efficiency of successful seeds
IP Indices	<ul style="list-style-type: none"> ■ Innovative productivity ■ Overseas application rate ■ Patent profitability ■ Practical application rate of open innovation
Market Indices	<ul style="list-style-type: none"> ■ Total no. of new products and new services launched ■ New product and new service contributions to profits ■ New product and new service contributions to sales

**Commercialize the seeds of next-generation businesses:
Create road maps to enable thorough progress management**

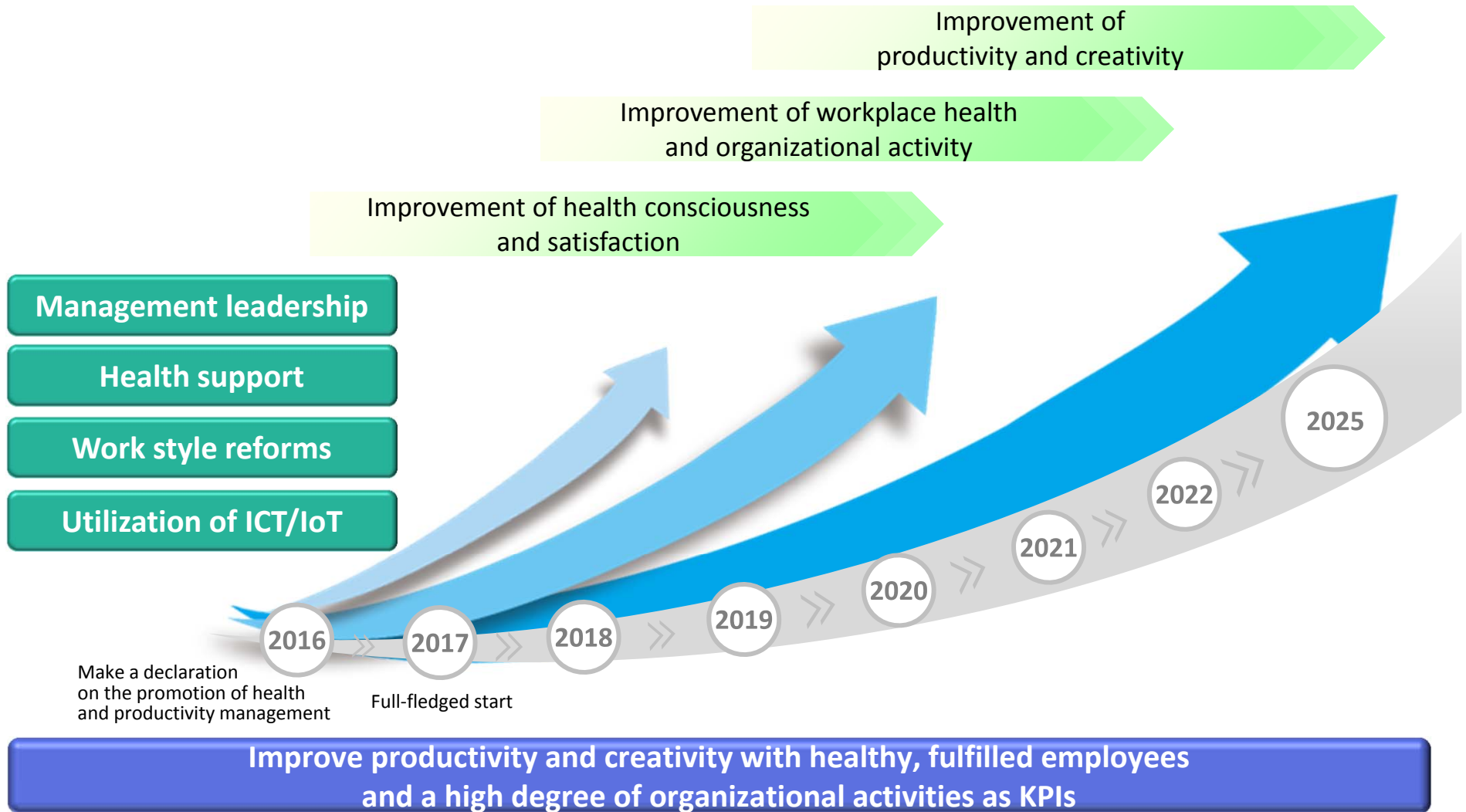
Improving ESG Evaluation by MOS: Environment

■ 141% achievement of fiscal 2016 targets, 31% progress toward fiscal 2020 targets

Related SDGs	Item	Results in FY2016	Targets of FY2020	Progress rate
Climate change 	Reduction of GHG emission (domestic reduction of scope 1, 2) [S-1-1]	<ul style="list-style-type: none"> ● Compared to FY2015 1,611 thousand tons of CO2 reduction (10%) ● Compared to FY2013 2,563 thousand tons of CO2 reduction (19%) 	Achieved domestic reduction targets (initially estimated emissions: 13,400 thousand tons of CO2) Considering a new target	–
	Contribution to GHG reduction by products and services [S-3-1]	Contribution to 46 million tons of CO2 reduction	150 million tons of CO2	31%
Resources and energy 	Resource saving and conversion to renewable materials [S-2-2]	Reduction of 1,965 tons when converted to heavy oil	12,000 tons	16%
	Promotion of the use of renewable energy [S-2-3]	Promoting utilization of 42 Mw	50Mw	84%
Water 	Response to water risk	<ul style="list-style-type: none"> ● Creation of a risk map of production sites, including overseas ● Investigation of 3 high risk areas and confirmation of response →Certified CDP-Water A list (2017) 	–	–
	Contribution to solving water resource problems [S-3-2]	156 million tons reuse of water supply	Total 1.7 billion tons	9%

Improving ESG Evaluation by MOS: Society (1)

- Promote *KAITEKI* health and productivity management as key to sustainable growth



Improving ESG Evaluation by MOS: Society (2)

- Build win-win relations between the company and employees through promotion of *KAITEKI* health and productivity management to increase corporate value

Targets	Categories	Examples of Measures
<ul style="list-style-type: none"> ● Improvement of health consciousness and satisfaction ● Improvement of workplace health and organizational activity ● Improvement of productivity and creativity 	Management leadership	<ul style="list-style-type: none"> ● Launch health and productivity management promotion projects ● Establish a CHO* in each operating company ● Formulate the promotion plan by 2020 ● Promote PDCA through the setup and utilization of KPIs
	Health support	<ul style="list-style-type: none"> ● Use of wearable devices (WD) ● Health point system ● Events for prevention of lifestyle diseases ● Distribute health white paper ● <i>KAITEKI</i> exercise
	Work style reforms	<ul style="list-style-type: none"> ● Health survey and reforms ● Meeting style reforms ● Workstyle and business practice reforms ● Expand skill development programs
	Utilization of ICT/IoT	<ul style="list-style-type: none"> ● Promote effective/efficient health and productivity management by integrating data on WD, health checkup, workstyle, etc.

Set KIPs during fiscal 2017 and start monitoring

*Chief Health Officer

Improving ESG Evaluation by MOS: Governance (ESG External Assessment)

■ Deepening business portfolio management by strengthening governance structure

Further clarification of role and function between MCHC and operating companies

■ Start of new management and execution structure

- Changes in the composition of the Board of Directors
- Expansion of the Corporate Strategy Division
- New establishment of the Corporate Executive Officers Committee (improving management agility and ensuring objectivity and transparency)

■ Improvement of the effectiveness of the Board of Directors

- Vitalization of discussions involving outside directors

Continually earned third-party corporate credibility in fiscal 2016 and fiscal 2017
with progressive ESG activities



Obtained the highest rank in the Development Bank of Japan's environmental rankings and also received a special commendation



MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM 

Selected as a world member for the first time
(The only Japanese company in the Materials category)