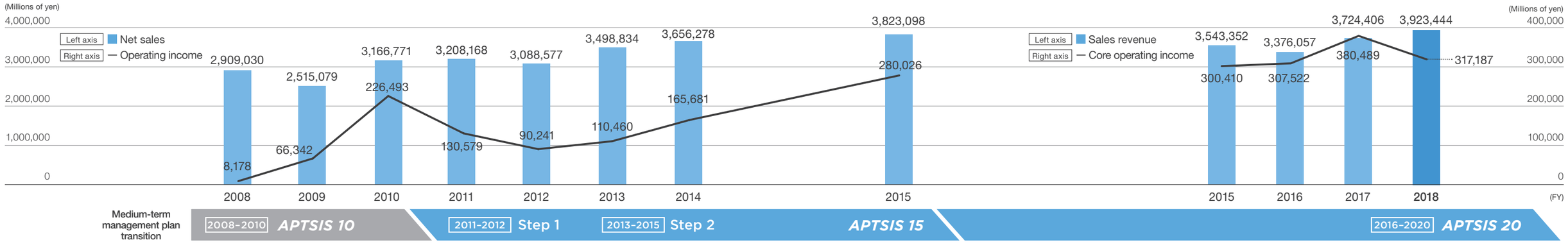
Financial Summary

J-GAAP (FY2008 – FY2015)

	2008	2009	2010	2011	2012	2013	2014	2015
For the Year								Millions of yen
Net sales	2,909,030	2,515,079	3,166,771	3,208,168	3,088,577	3,498,834	3,656,278	3,823,098
Operating income	8,178	66,342	226,493	130,579	90,241	110,460	165,681	280,026
Income (loss) before income taxes and minority interests in consolidated subsidiaries	(44,002)	43,311	169,552	127,474	82,900	116,594	165,621	198,248
Net income (loss) attributable to owners of the parent	(67,178)	12,833	83,581	35,486	18,596	32,248	60,859	46,444
Total comprehensive income	—	37,513	86,742	64,199	94,900	134,016	173,692	7,695
Capital expenditures	139,011	119,025	117,806	116,145	132,221	133,339	165,057	176,508
Depreciation and amortization	119,230	129,574	148,697	145,695	129,549	131,571	151,253	180,374
R&D expenditures	127,802	136,863	130,825	138,545	134,723	134,260	132,217	138,364
Net cash provided by (used in) operating activities	76,149	116,073	288,853	217,954	206,504	177,027	329,776	388,663
Net cash provided by (used in) investing activities	(189,233)	(327,006)	(101,064)	(63,404)	(169,758)	(159,789)	(277,223)	(202,796)
Net cash provided by (used in) financing activities	179,526	94,437	(149,493)	(164,146)	(26,250)	(8,307)	(2,061)	(156,957)
At Year-end								
Total assets	2,740,876	3,355,097	3,294,014	3,173,970	3,307,758	3,479,359	4,323,038	4,061,572
Property, plant and equipment	834,046	1,167,073	1,088,369	1,032,738	1,061,551	1,118,050	1,498,146	1,390,727
Short-term and long-term debt	1,033,239	1,454,126	1,304,589	1,164,128	1,198,799	1,258,186	1,603,595	1,465,752
Total net assets	940,114	1,032,865	1,114,003	1,144,954	1,203,316	1,314,870	1,588,601	1,554,528
Per Share								Yen
Net income (loss) - basic	(48.81)	9.32	58.72	24.06	12.61	21.89	41.40	31.70
Net assets	486.09	490.99	514.30	522.77	553.54	611.95	669.77	636.43
Cash dividends	12.00	8.00	10.00	10.00	12.00	12.00	13.00	15.00
Major Index								
Return on assets (ROA) (%)	(1.5)	1.4	5.1	3.9	2.6	3.4	4.2	4.7
Return on equity (ROE) (%)	(8.9)	1.9	11.6	4.6	2.3	3.7	6.4	4.8
Shareholders' equity ratio (%)	24.4	20.0	23.0	24.2	24.6	25.8	22.6	22.9
Other								
Number of employees	41,480	53,907	53,882	53,979	55,131	56,031	68,263	68,988

International Financial Reporting Standards (IFRS FY2015 - FY2018)

	2015	2016	2017	2018	Increase or decrease (%)	2018
For the Year				Millions of yen		Thousands of U.S. dollars
Sales revenue	3,543,352	3,376,057	3,724,406	**3,923,444**	5.3%	**35,314,527**
Core operating income	300,410	307,522	380,489	**317,187**	(16.6%)	**2,854,968**
Income before taxes	252,791	258,343	344,077	**288,056**	(16.3%)	**2,592,763**
Net income attributable to owners of the parent	51,358	156,259	211,788	**169,530**	(20.0%)	**1,525,923**
Total comprehensive income	34,302	226,493	297,476	**205,898**	(30.8%)	**1,853,267**
Capital expenditures	213,134	206,482	225,189	**231,742**	2.9%	**2,085,887**
Depreciation and amortization	182,656	174,040	178,895	**199,332**	11.4%	**1,794,167**
R&D expenditures	126,782	126,290	138,833	**143,836**	3.6%	**1,294,653**
Net cash provided by (used in) operating activities	299,612	396,643	397,940	**415,575**	—	**3,740,549**
Net cash provided by (used in) investment activities	(234,078)	(289,056)	(335,933)	**(895,068)**	—	**(8,056,418)**
Net cash provided by (used in) financing activities	(40,945)	1,411	(150,592)	**519,062**	—	**4,672,025**
At Year-end						
Total assets	4,223,774	4,463,547	4,701,415	**5,572,508**	18.5%	**50,157,588**
Property, plant and equipment	1,403,437	1,431,681	1,433,509	**1,683,354**	17.4%	**15,151,701**
Interest-bearing debt	1,579,575	1,693,742	1,606,123	**2,246,751**	39.9%	**20,222,781**
Equity attributable to owners of the parent	972,197	1,091,398	1,285,750	**1,377,947**	7.2%	**12,402,763**
Per Share				Yen		U.S. Dollars
Basic earnings	35.06	106.73	147.14	**119.22**	(19.0%)	**1.1**
Equity attributable to owners of the parent	663.71	758.30	893.26	**970.46**	8.6%	**8.7**
Cash dividends	15.00	20.00	32.00	**40.00**	25.0%	**0.4**
Major Index						
Return on assets (ROA) (%)	5.9	5.9	7.5	**5.6**	(1.9pt)	—
Return on equity (ROE) (%)	5.2	15.1	17.8	**12.7**	(5.1pt)	—
Ratio of equity attributable to owners of the parent (%)	23.0	24.5	27.4	**24.7**	(2.7pt)	—
Other						
Number of employees	68,988	69,291	69,230	**72,020**	4.0%	—



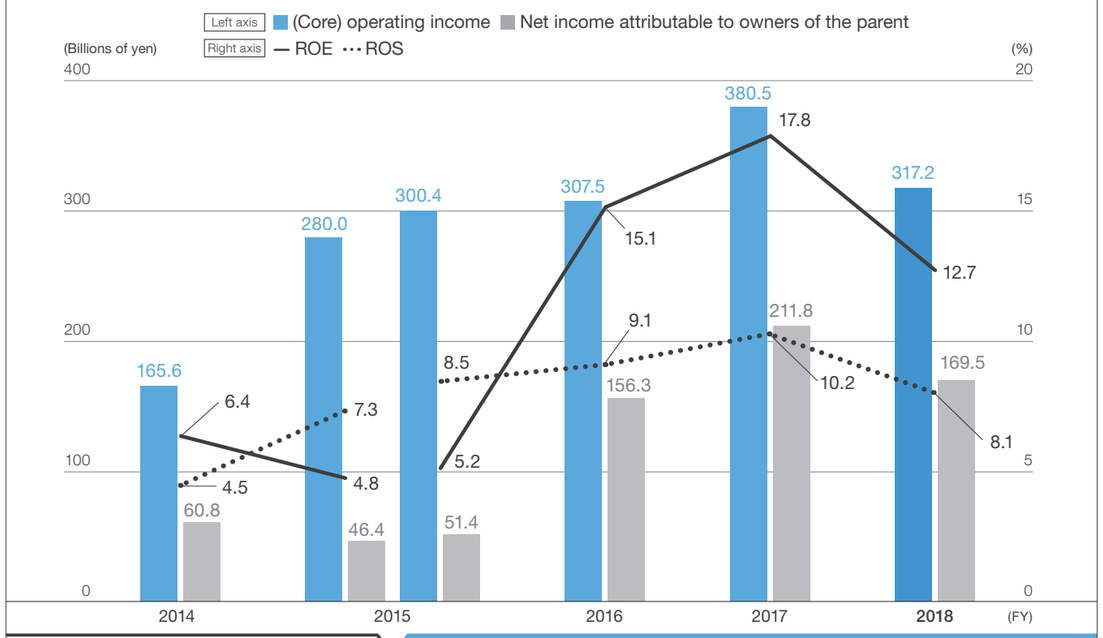
(Notes) 1. In this report, the fiscal year refers to the period beginning April 1 and ending March 31 of the following year. FY2018 refers to the year ended March 31, 2019.
2. U.S. dollar amounts are converted from yen at the rate of ¥111.1 = U.S. $1.00.
3. Return on assets (ROA) (%) is calculated by dividing profit before tax by the average of the beginning and ending balances of total assets.

(Notes) 4. Return on equity (ROE) (%) is calculated by dividing net profit attributable to owners of the parent by the average of the beginning and ending balances of equity attributable to owners of the parent.
5. When non-recurring depreciation on non-current assets is recorded, the amount is included in depreciation and amortization.

Financial Index

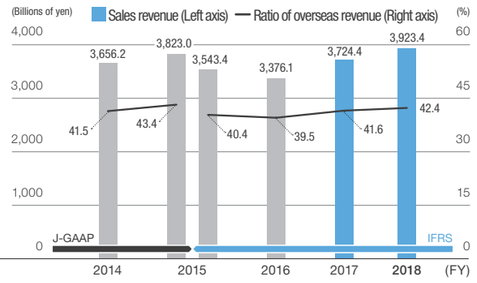
With the start of the medium-term management plan *APTSIS 20*, we have adopted the International Financial Reporting Standards (IFRS) in FY2016. Core operating income is calculated as operating income (loss) excluding certain gains and expenses attributable to non-recurring factors (gains and losses incurred by business withdrawal and contraction, etc). We disclose core operating income as our unique gains/losses incurred by staged gains/losses, considering the comparability with the operating income of J-GAAP.

Net Income and ROS/ROE



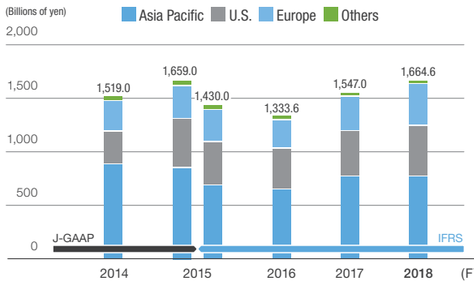
We implemented business portfolio reforms under the previous medium-term management plan (for FY2011 to FY2015) and the present plan, *APTSIS 20,* launched in FY2016. As a result, we stabilized sales revenue in the Industrial Materials domain and increased sales volumes mainly in the Performance Products domain. In FY2017, we set new records for both core operating income and net income attributable to owners of the parent. In FY2018, the market remained brisk in the Industrial Materials domain in the first half, however, a greater impact of demand slowdown of some products, the scheduled maintenance and repair at petrochemical production facility in Petrochemicals subsegment, and national health insurance (NHI) drug price revision in the Health Care domain in the second half caused decrease in core operating income by ¥63.3 billion (16.6%) to ¥317.2 billion and drop of ROS to 8.1%, down 2.1 points year on year. Net income attributable to owners of the parent declined ¥42.3 billion (20.0%), to ¥169.5 billion and ROE also decreased to 12.7%, down 5.1 points year on year.

Sales Revenue and Ratio of Overseas Revenue



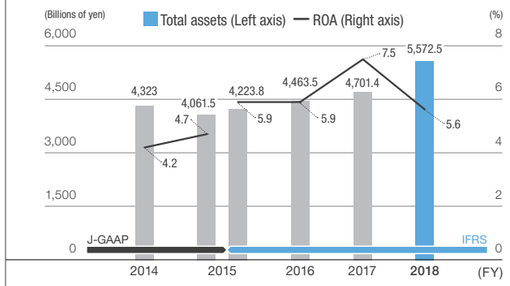
Sale revenue increased by ¥199.0 billion (5.3%) from a year earlier, driven by the brisk market in the Industrial Materials domain, despite the impact of the NHI drug prices revision and demand slowdown in the Performance Products domain. The ratio of overseas revenue rose to 42.4%, up 0.8 points year on year.

Overseas Revenue by Region



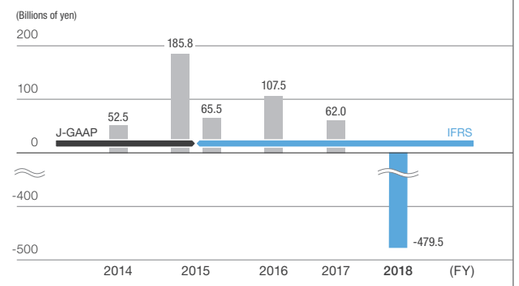
Overseas revenue were up owing to the acquisitions of an industrial gas business in Europe and the U.S. and increase in sales of *Radicava,* a treatment for amyotrophic lateral sclerosis (ALS) in the U.S.

Total Assets and ROA



Total assets amounted to ¥5,572.5 billion. Owing to the industrial gas business acquisitions in Europe and the U.S., the fixed assets and goodwill increased by ¥871.1 billion from the end of the previous fiscal year. ROA was 5.6%, down 1.9 points year on year.

Free Cash Flow



Net cash flows by operating activities was ¥415.6 billion, mainly due to the posting of income before taxes. Net cash used by investing activities was ¥895.1 billion, due to ¥677.6 billion used on the industrial gas business acquisitions in Europe and the U.S. Accordingly, net free cash used (by operating and by investing activities) was ¥479.5 billion.

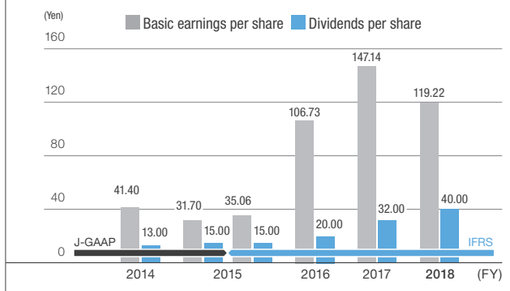
Ratio of Equity Attributable to Owners of the Parent

Equity attributable to owners of the parent increased ¥92.1 billion, to ¥1,377.9 billion. Consequently, the ratio of equity attributable to owners of the parent decreased 2.6 points year on year, to 24.7%. We will continue striving to achieve 30%, the target in the medium-term management plan, *APTSIS 20.*

Net Interest-bearing Debt and Net D/E Ratio

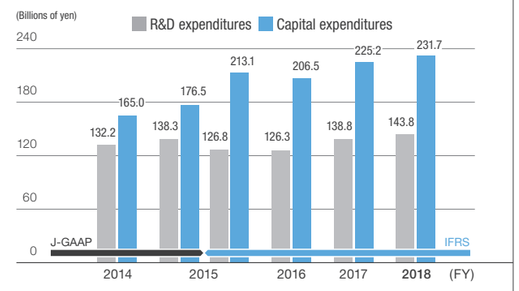
Net interest-bearing debt rose to ¥1,736.2 billion, up ¥596.7 billion year on year, owing to the industrial gas businesses acquisitions in Europe and the U.S. The net D/E ratio increased 0.37 from the end of the previous fiscal year, to 1.26. We will continue thriving to achieve 1.0, the target in the medium-term management plan, *APTSIS 20.*

Basic Earnings per Share and Cash Dividends per Share



Basic earnings per share amounted to ¥119.22. The full-year cash dividend per share increased ¥8 year on year, to ¥40, in consideration of maintaining an appropriate balance between strengthening the financial position, investing in growth business, and enhancing shareholder returns.

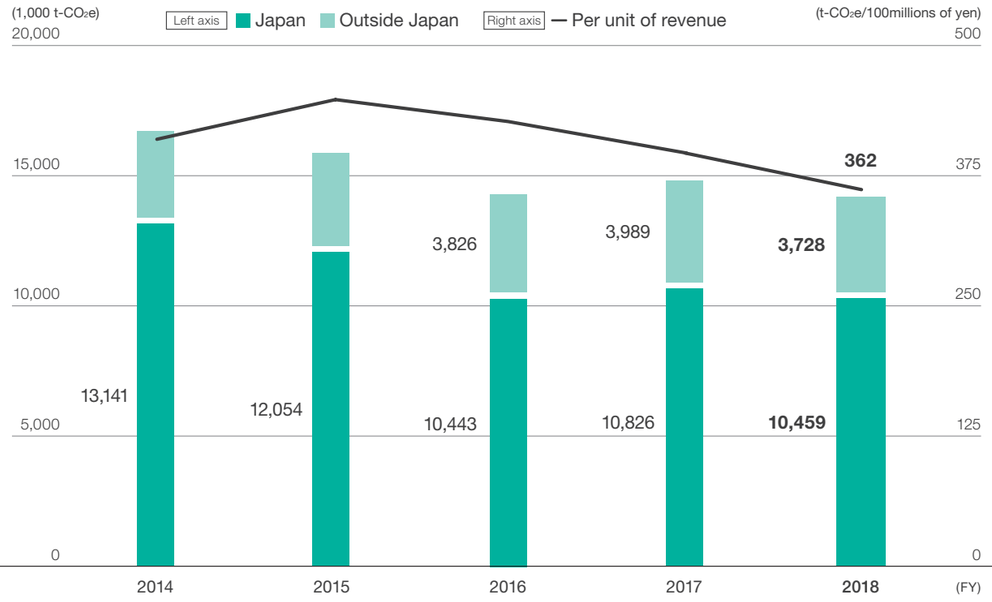
R&D Expenditures and Capital Expenditures



R&D expenditures increased ¥5 billion year on year, to ¥143.8 billion, mainly in the Performance Products domain. These expenditure were applied to refine and develop technologies. Capital expenditures increased to ¥231.7 billion, up ¥6.5 billion year on year, due to expenses the construction of new facilities or the expansion and renewal of existing facilities, mainly in the Industrial Materials domain.

Non-Financial Index

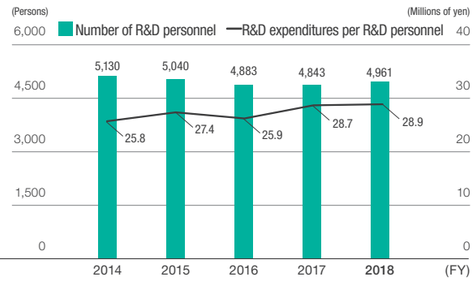
GHG Emissions



In FY2018, our GHG emissions (Scope 1 + Scope 2) came to 14,187 thousand t-CO_2e and the emissions per unit of revenue were 362 t-CO_2e/100millions of yen.

Our absolute GHG emissions decreased by 4% from the previous fiscal year as a result of the periodic repair and maintenance large production facilities and of the improvement of the emission factor for electricity outside Japan. We decreased per-unit emissions substantially as in the previous fiscal year. To achieve the 2030 reduction targets in alignment with the Paris Agreement, we will continue to plan and implement GHG emission reduction measures. Additionally, in FY2016 the emission calculation method was revised to be in line with the global standards. We will continue to expand the scope of calculation and enhance the reliability of the method so that we can achieve the medium-term reduction targets.

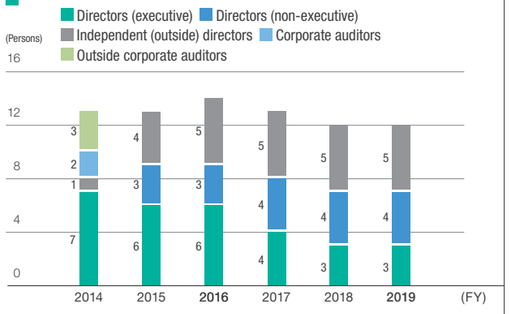
Number of R&D Personnel and R&D Expenditures per R&D Personnel



For FY2018, the number of R&D personnel increased by 118 persons from the previous fiscal year to 4,961 persons. R&D expenditures per R&D personnel remained at the same level as the previous fiscal year, 28.9 million yen.

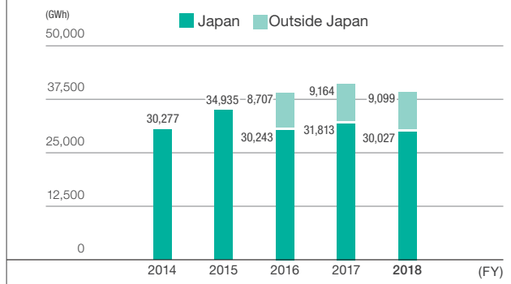
* International Financial Reporting Standards (IFRS) basis since FY2016

Number of Directors and Outside Directors



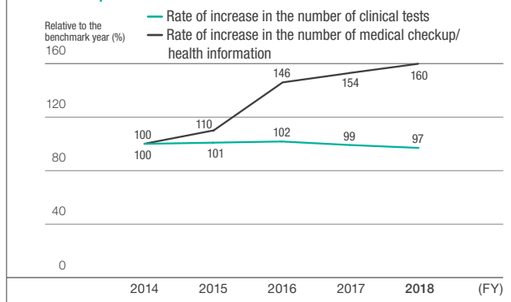
MCHC transitioned to a company with nominating committee, etc. in June 2015.

Energy Consumption



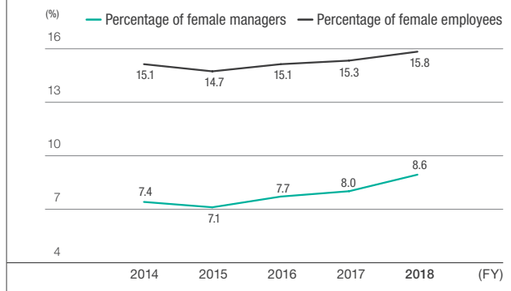
Since FY2016, we have expanded the scope of tracking energy consumption to a global level, and the results are assured by a third party. In FY2018, our energy consumption decreased in Japan mainly as a result of the periodic maintenance of our large production facilities, while the power consumption increased as a result of the brisk production for the performance products. As a total, our energy consumption slightly decreased. To accelerate the reduction of energy consumption, we will further expand measures for stable process operation, energy conservation and efficient use of energy.

Increase Rate of Number of Clinical Tests and Medical Checkup/Health Information



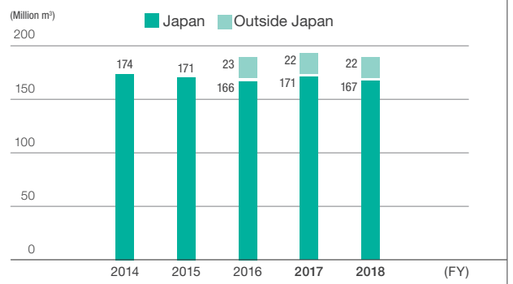
The number of clinical tests and the number of medical checkup/health information came to 97% and 160%, respectively, relative to the benchmark year (FY2014) for the MOS indices.

Percentage of Female Employees/ Percentage of Female Managers



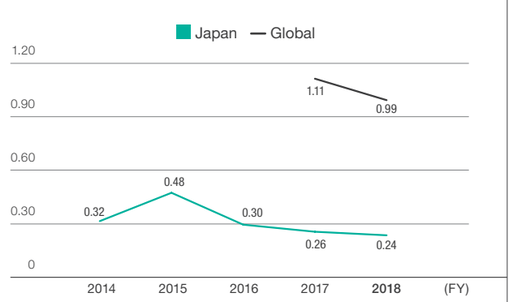
The percentage of female employees increased by 0.5 points to 15.8% from the previous fiscal year while the percentage of female managers was 8.6%, up 0.6 points from the previous fiscal year. We are continuing to implement measures for the empowerment of women.

Water Withdrawal



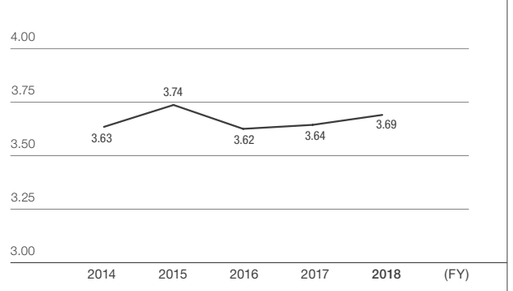
Since FY2016, we have tracked our water withdrawal (excluding seawater) globally and the results have been assured by a third party. For FY2018, we used 189 million m^3 of water, down 4 million m^3 year on year, due to the efficient use of the water. We will continue to make effective use of water resources to reduce our water consumption and thereby contribute to greater sustainability of water resources.

Lost-time Injury Frequency Rate (LTIFR)



The LTIFR in Japan was 0.24, a slight improvement from the previous year. Meanwhile, the global LTIFR, for which data started to be gathered and calculated in FY2017, has been higher than that in Japan. We will strive to reduce the LTIFR by stepping up efforts to prevent occupational accidents through measures such as ensuring compliance with basic behavioral and operational rules for safety as well as undertaking risk assessments.

Employee Satisfaction



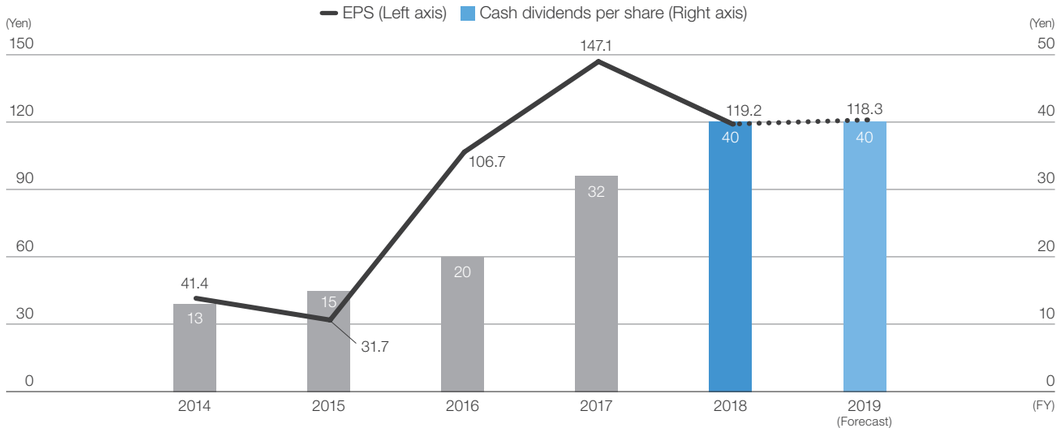
The level of employee satisfaction rose 0.05 points from the previous fiscal year to 3.69 and has remained favorable as a whole. We will foster health and productivity management and work-style reforms to further raise the level of satisfaction.

Basic Policy on Shareholder Returns

Aim to improve shareholder value by enhancing corporate value
In dividend policy, consider the balance between growth investment and improving financial position

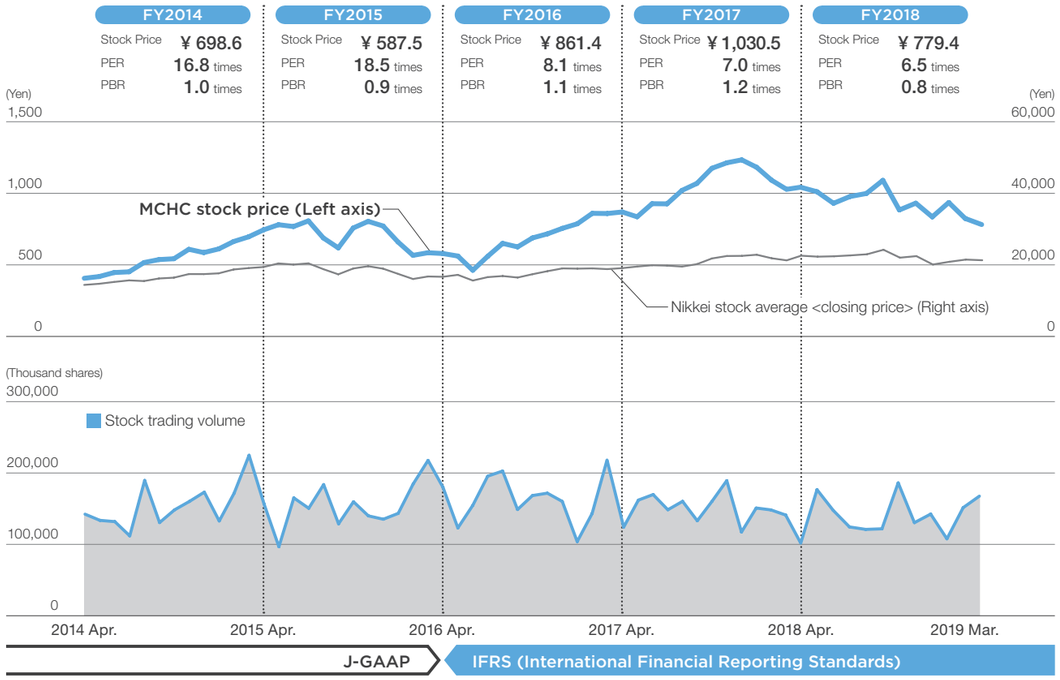
Targeting a medium-term consolidated payout ratio of 30% / Paying stable dividends

EPS/Cash Dividends per Share



J-GAAP | IFRS (International Financial Reporting Standards)

Stock Price / Stock Trading Volume



J-GAAP | IFRS (International Financial Reporting Standards)

*Stock price: As of March 31 PER: Share price as of March 31/Basic earnings per share (Net income (loss)-basic per share in the J-GAAP) PBR: Share price as of March 31/Equity attributable to owners of the parent per share (Net assets per share in the J-GAAP)

Stock Information (As of March 31, 2019)

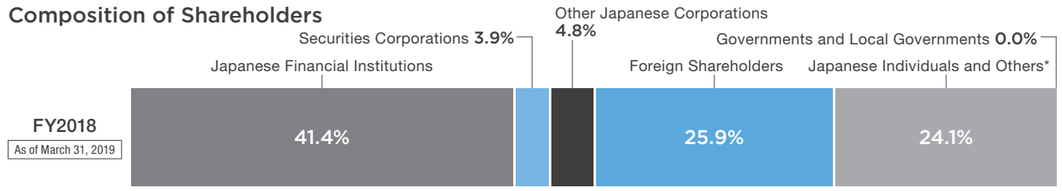
Securities code	4188 (First Section of the Tokyo Stock Exchange)
Shares per unit	100
Authorized shares	6,000,000,000
Outstanding shares	1,506,288,107
Number of shareholders	206,844

Major Shareholders

Name	Number of Shares (Thousands)	Percentage (%)
The Master Trust Bank of Japan, Ltd. (Trust account)	103,414	7.3
Japan Trustee Service Bank, Ltd. (Trust account)	82,308	5.8
Meiji Yasuda Life Insurance Company	64,389	4.5
Nippon Life Insurance Company	42,509	3.0
Japan Trustee Service Bank, Ltd. (Trust account 4)	28,319	2.0
Japan Trustee Service Bank, Ltd. (Trust account 5)	25,724	1.8
Japan Trustee Service Bank, Ltd. (Trust account 7)	25,552	1.8
SSBTC CLIENT OMNIBUS ACCOUNT	21,503	1.5
MUFG Bank, Ltd.	20,553	1.4
State Street Bank West Client-Treaty 505234	20,472	1.4

(Notes) 1.In addition to the above, MCHC holds 83,118 thousand shares as treasury stocks, but these shares are non-voting pursuant to the provisions of Article 308, Paragraph 2 of the Companies Act.
2. Equity investment ratios are calculated to the exclusion of the treasury stock (83,118 thousand shares).
3. In addition to the above, equity investments of MUFG Bank, Ltd. In MCHC include 2,375 thousand shares of stock (representing the equity investment ratio of 0.2%) held in the name of "The Nomura Trust and Banking Co., Ltd (Retirement Benefit Trust MUFG Bank Account)" over which MUFG Bank, Ltd. retains the right to issue instructions regarding the exercise of the relevant voting right.

Composition of Shareholders



* Shares held by the Group as treasury stock are included in "Japanese Individuals and Others."

FY2018 IR Report

MCHC has an active and constructive dialog with shareholders, customers and other stakeholders through various opportunities and aims to cooperate for realization of KAITEKI by sharing issues and goals. In dialog with shareholders and investors, we will ensure appropriate disclosure so as to gain the trust of our shareholders and encourage long-term holding of our shares. We also intend to engage in active dialog with shareholders and reflect it in our corporate activities.

Activities		Description
1 **General Meeting of Shareholders**		Held on June 25, 2019, Attendance: 2,782 persons (Reference: 1,826 attended in 2018)
2 **For domestic and overseas institutional investors, analysts**	IR briefings (large meetings)	2 sessions, Jun.: IR Day, Dec.: Business briefing
	Top management's dialog with investors	Small meetings (Jun., Dec.), Visits to investors Overseas roadshows (6 times, 9 countries in North America, Europe and Asia)
	Conference call, following the financial results announcement	4 sessions (following the quarterly financial results announcement), Audio data available on the website (Japanese and English)
	Participation in conference held by securities firms	6 sessions (4 sessions in Japan, 2 sessions in overseas)
	Visit to operating sites	2 tours, Sep.: Mie district plants, Feb.: Kagawa Plant
	Other IR activities	Individual meetings following the financial results announcement and small meetings on specific subjects
3 **For individual investors**	IR briefings	10 sessions for 1,901 attendees (including those in the online sessions and in briefings by the CEO and CFO)


Business briefing


IR briefing for individual investors

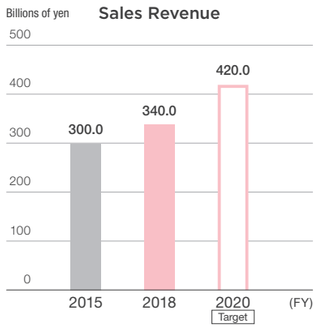
Growth Measures of the Focus Markets and Updates of Actions in the Three Business Domains

We expand our business in the six focus markets through generating synergy effects among related business segments.

Focus Markets		Related Business Segments
Automobiles, Aircraft (Mobility)	Lightweight composites Environment-friendly materials	Performance Products, Chemicals
IT, Electronics, Displays	Flat Panel Display materials Semiconductor-related materials	Performance Products, Industrial Gases
Medical, Food, Bio Products	Food ingredients Pharmaceutical materials Medical - related products	Performance Products, Industrial Gases, Health Care
Health Care	Ethical pharmaceuticals Regenerative medicine	Health Care
Environment, Energy	Battery materials Water treatment systems and devices	Performance Products
Packaging, Labels, Films	Food packaging films Industrial films	Performance Products

3 Business Domains: • Performance Products • Industrial Materials (Chemicals, Industrial Gases) • Health Care

Automobiles, Aircraft (Mobility)



Growth Measures

Responding to trend toward CASE (Connected, Autonomous, Shared, Electric) in the automotive industry, reinforce response to environmental issues

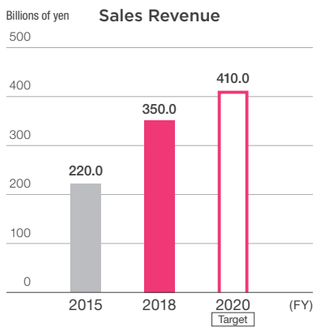
Reinforcing carbon fiber and composite material business and accelerate overseas expansion

Accelerating overseas expansion of resin compound business

Progress

- Reinforcing overseas network for carbon fiber and composite material business
- Expanding adoption of carbon fiber sheet molding compound: *Prius PHV* of Toyota Motor Corporation, other
- Higher performance of polypropylene: A new polypropylene manufacturing facility is under construction at the Goi Plant (150kt/y)
- Acquired 2 overseas compound producers (India, Indonesia)

IT, Electronics, Displays



Growth Measures

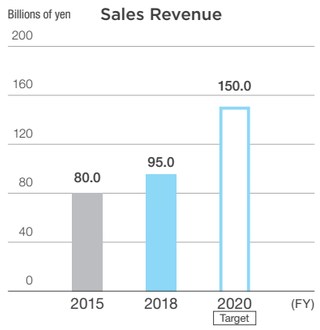
Reinforcing display-related product business: LCD and OLED materials

Expanding semiconductor related business: Expanding precision cleaning agent related business, developing thermal management materials

Progress

- Optical films: A new line is under construction in China
- Optical PVOH film, *OPL Film:* A new line is under construction
- Precision cleaning of semiconductor manufacturing equipment: Acquired Cleanpart Group GmbH

Medical, Food, Bio Products



Growth Measures

Expanding the implant material business

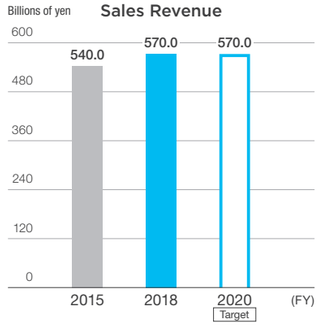
Expanding the nutrition-related business

Expanding the medical use gas business

Progress

- Acquired a U.S. high-performance engineering plastics molding company (Piper Plastics, Inc.)
- Food emulsifier: Expanding sales mainly in China and other ASEAN countries
- Respiratory-related business including home healthcare services: Acquired IMI Co., Ltd.

Health Care



Growth Measures

Reinforcing pipelines for ethical pharmaceuticals

Developing the business in the U.S.

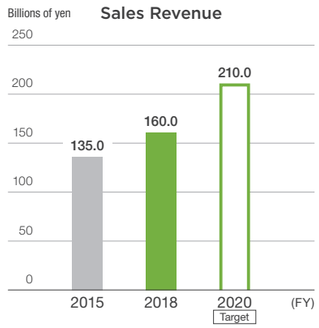
Commercialization of VLP (Virus Like Particles) vaccine

Commercialization of regenerative medicine

Progress

- Expanding *Radicava,* a treatment for ALS, globally
- Advancing development of influenza VLP vaccine and constructing a manufacturing facility for commercialization
- Developing Muse cell-based regenerative medicine and promoting commercialization

Environment, Energy



Growth Measures

Expanding Lithium-ion battery materials business

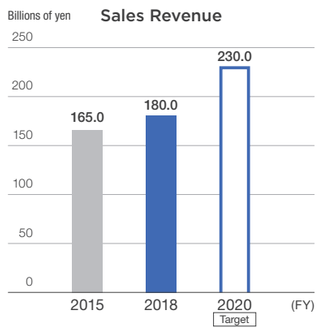
Accelerating development of wastewater treatment in China and water supply treatment business in Japan

Developing products that reduce environmental impact

Progress

- Accelerating global expansion of electrolyte business (Europe/U.S./China)
- Start of full-scale sales of wastewater treatment facilities for farming villages and pig farms in China
- Accelerating development of other applications of biodegradable polymer, *BioPBS*

Packaging, Labels, Films



Growth Measures

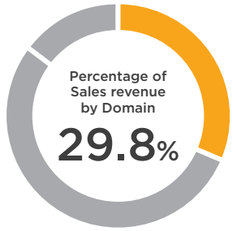
Barrier application: Accelerating overseas expansion of food packaging film, reinforcing development of new high-barrier performance products

High-performance films: Developing new products by combining the Group's technologies

Progress

- Started full-scale operation of a new polyester film line in the U.S. in FY2018
- Launch of high-barrier performance deep-formed microwavable containers
- Multilayer co-extruded film *DIAMIRON* production site is under construction in Thailand

* Figures for FY2016 do not include discontinued operations.
* Figures for FY2014 to 2016 of reporting segments prior to the change are presented for reference purposes only.
* Sales Revenue Growth Rate and ROA figures for FY2016 in the New Segments section are presented for reference purposes only.
* ROA = (Core) Operating Income / Total Assets (Annual Average)



Performance Products Domain

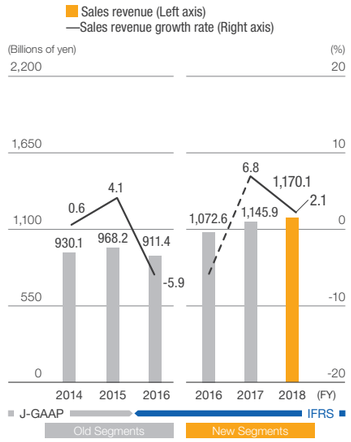
Sales revenue

¥1,170.1billion

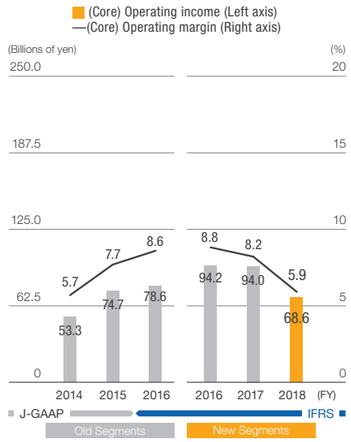
ROIC

6.1%

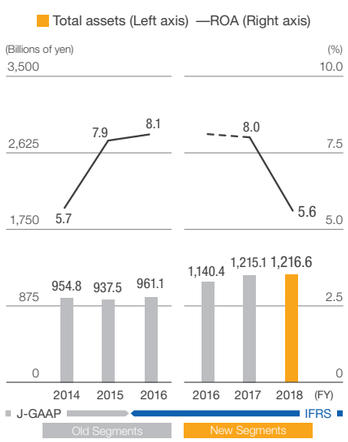
Sales Revenue/Sales Revenue Growth Rate



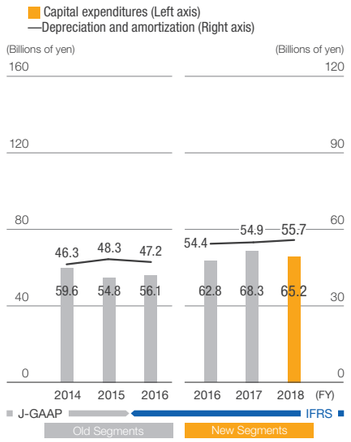
(Core) Operating Income/(Core) Operating Margin



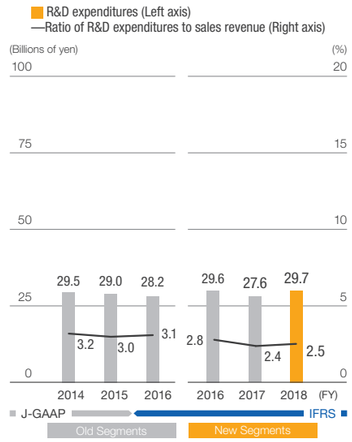
Total Assets/ROA

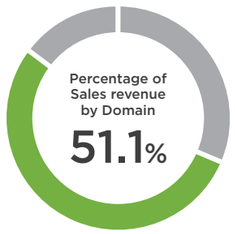


Capital Expenditures/Depreciation and Amortization



R&D Expenditures/Ratio of R&D Expenditures to Sales Revenue





Industrial Materials Domain

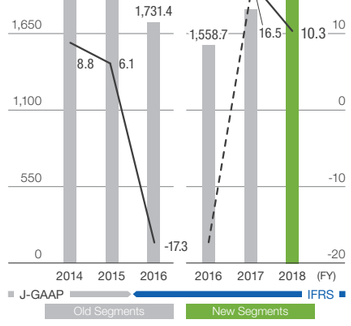
Sales revenue

¥2,003.5billion

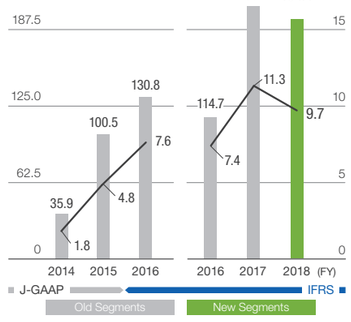
ROIC

7.3%

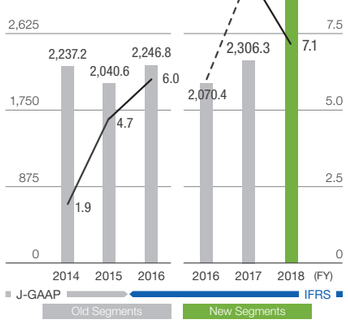
Sales revenue/Sales revenue growth rate



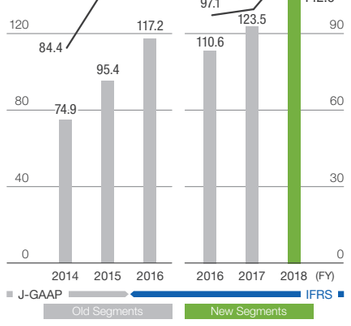
(Core) Operating income/(Core) Operating margin



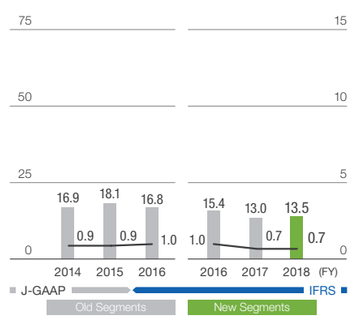
Total Assets/ROA

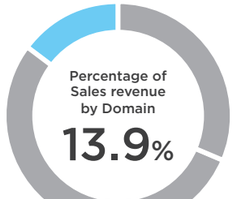


Capital Expenditures/Depreciation and Amortization



R&D Expenditures/Ratio of R&D Expenditures to Sales Revenue





Health Care Domain

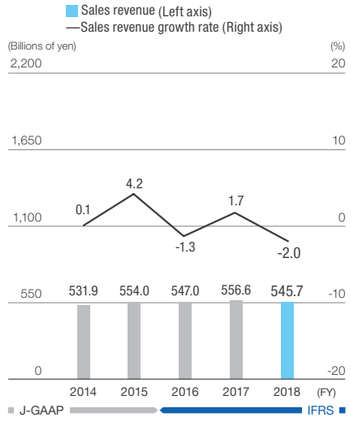
Sales revenue

¥545.7billion

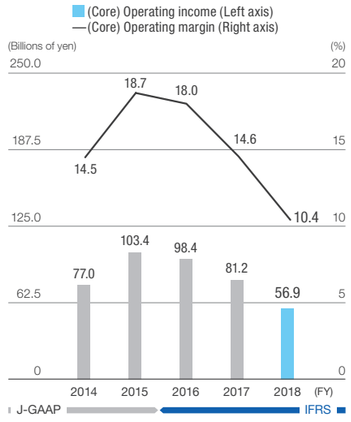
ROIC

5.9%

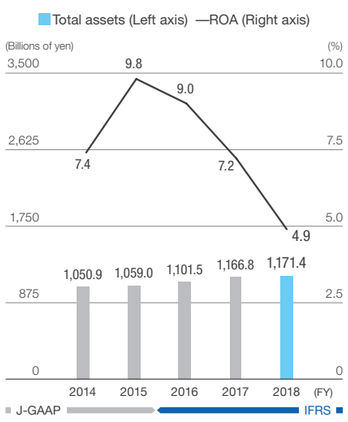
Sales revenue/Sales revenue growth rate



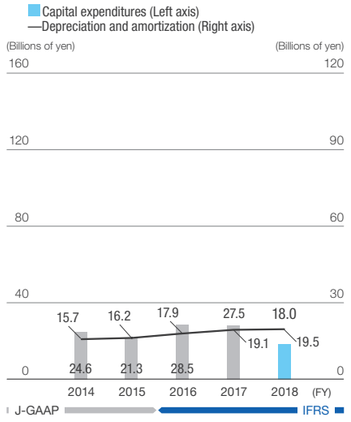
(Core) Operating income/(Core) Operating margin



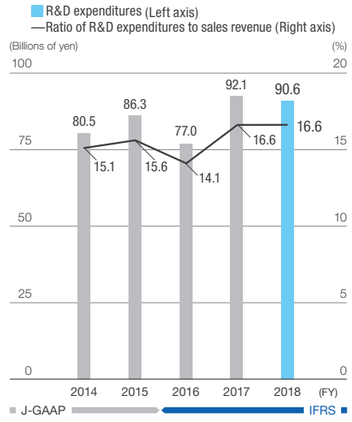
Total Assets/ROA



Capital Expenditures/Depreciation and Amortization



R&D Expenditures/Ratio of R&D Expenditures to Sales Revenue



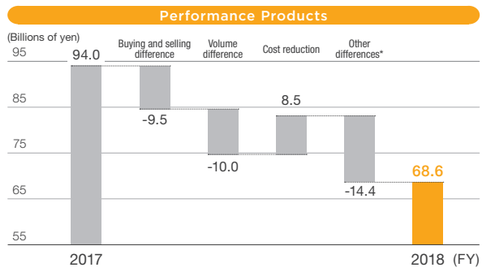
FY2018 Results by Segment

Performance Products Domain

Performance Products Segment

This segment posted increased sales revenue and decreased income. Sales revenue advanced ¥24.2 billion, to ¥1,170.1 billion, but core operating income dropped ¥25.4 billion, to ¥68.6 billion. Sales revenue remained basically flat in the Functional Products subsegment. This was because sales volumes dwindled for products related to information and electronics, and displays, and other products with demand slowing, principally in the second half, despite higher sales volumes in high-performance engineering plastics and other products for advanced moldings and composites. Sales revenue rose in the Performance Chemicals subsegment by reflecting favorable market conditions in the first half for phenol-polycarbonate chain materials in advanced polymers, which outweighed a downturn in the second half. Another positive factor was higher automotive battery materials sales volumes in the new energy business. However, core operating income in this segment was down owing to generally higher raw materials costs, higher fixed expenses, and the impact of scheduled maintenance and repairs at production facilities for phenol-polycarbonate chain materials in advanced polymers.

Contributing Factors to Core Operating Income



Industrial Materials Domain

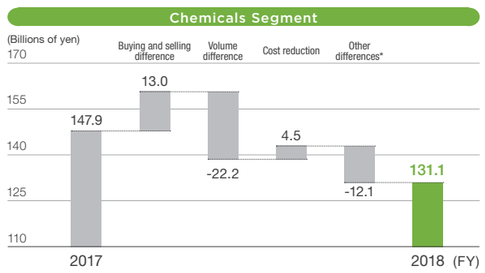
Chemicals Segment

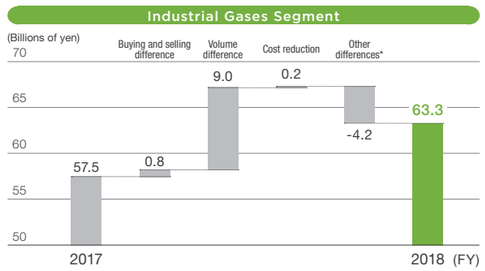
This segment posted increased sales revenue and decreased income. Sales revenue rose ¥93.4 billion, to ¥1,270.7 billion. Core operating income declined ¥16.8 billion, to ¥131.1 billion. Sales revenue in the MMA subsegment was basically unchanged. This was because a demand slowdown in the second half, particularly in China, offset the impact of favorable MMA monomer and other products market conditions in the first half. In the Petrochemicals subsegment, sales volumes fell because of the impact of scheduled maintenance and repairs at the ethylene production facility. Sales revenue increased, however, on higher prices in line with increased raw materials costs. Sales revenue rose in the Carbon Products subsegment because prices increased in the needle coke market amid firm demand for coke and other products. Core operating income in this segment declined because a widened price spread between raw materials costs and prices of carbon products was outweighed by a greater impact of scheduled maintenance and repairs at petrochemicals product facilities, inventory valuation losses stemming from plunging raw materials costs since the end of the previous year, and a fall in MMA sales volumes.

Industrial Gases Segment

This segment recorded growth in both sales revenue and income. Sales revenue rose ¥94.1 billion, to ¥732.8 billion. Core operating income was up ¥5.8 billion, to ¥63.3 billion. These gains reflected the solid performances of overseas businesses and the impact of the acquisition of a portion of the European business of Praxair, Inc. of the U.S. and part of the U.S. hydrogen and carbon monoxide business and related assets of Linde Gas North America LLC.

Contributing Factors to Core Operating Income



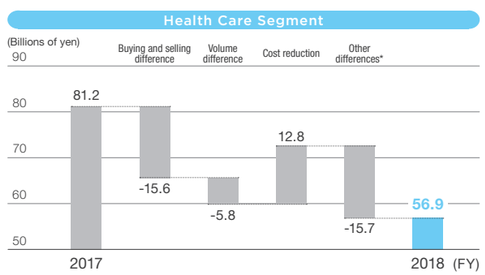


Health Care Domain

Health Care Segment

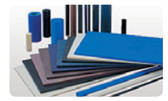
This segment posted increased sales revenue and decreased income. Sales revenue declined ¥10.9 billion, to ¥545.7 billion. Core operating income dropped ¥24.3 billion, to ¥56.9 billion. In pharmaceuticals, sales revenue was down despite higher U.S. sales of *Radicava* for treating amyotropic lateral sclerosis, owing to the impact of national health insurance price revision in domestic ethical pharmaceuticals in April 2018 and lower royalty revenue. Core operating income decreased because of lower sales revenue and higher research and development expenses. Royalty revenue from Novartis International AG for *Gilenya*, multiple sclerosis treatment was down, as a part of the revenue was not recognized under IFRS 15 owing to start of arbitration proceedings.

Contributing Factors to Core Operating Income



* "Other differences" include impacts from inventory valuation gain/loss and differences of equity income, etc.

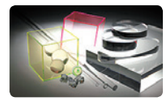
Functional Products

Information, Electronics and Displays	Optical films, liquid crystal- and semiconductor-related products, etc.	
High Performance Films	Food packaging materials, industrial-use and medical films, etc.	
Environment and Living Solutions	Aqua solutions, ion-exchange resins, agricultural and infrastructural solutions, etc.	
Advanced Moldings and Composites	Carbon fibers, alumina fibers, high-performance engineering plastics, etc.	

Performance Chemicals

Advanced Polymers	Phenol and polycarbonate, performance polymers, etc.	
High Performance Chemicals	Specialty chemicals, food ingredients, etc.	
New Energy	Lithium-ion batteries materials, optoelectronics materials, etc.	

Chemicals

MMA	MMA (raw materials), PMMA (acrylic resins), etc.	
Petrochemicals	Basic petrochemicals and derivatives, polyolefins, etc.	
Carbon Products	Coke, carbon materials, carbon black, synthetic rubber, etc.	
Industrial Gases	Industrial gases, industrial gas-related equipment and facilities, etc.	

Health Care

Pharmaceuticals	Ethical pharmaceuticals, etc.	
Life Science	Capsules and pharmaceutical processing equipment, active pharmaceutical ingredients and intermediates, etc.	

Performance Products

SWOT Analysis

Strengths

Optical Films
Strong market position and ability to deliver solutions for various optical applications

High-performance Films
Technologies to add functions including gas barrier, porous control and multiple layers

High-performance Engineering Plastics
Global network across business groups from materials to forming processing field

Carbon Fiber and Composite Materials
Business development through a vertically-integrated value chain which covers materials from carbon fibers to intermediate base material/composites

Weaknesses

Optical Films
Ability to adapt to the short-term demand changes that fluctuated beyond expectation

High-performance Films
Business development with a focus on the domestic market

High-performance Engineering Plastics
Widespread and direct impacts from social/economic/foreign exchange risks in different regions around the world

Carbon Fiber and Composite Materials
Exchange rate impacts due to the high ratio of overseas sales

Opportunities

Optical Films
Increase in the sophistication of market needs (greater demand for high-performance and high-precision products)

High-performance Films
Roll-out of high-performance products to overseas businesses

High-performance Engineering Plastics
Expanded demand in industrial (aircraft, semiconductors) and medical use

Carbon Fiber and Composite Materials
Expanded demand in industrial use (automobiles, wind power generation, pressure vessels, and others)

Threats

Optical Films
Shrinkage of existing market due to disruptive technology and innovation

High-performance Films
Medium-term decrease in domestic demand

High-performance Engineering Plastics
Shrinkage of existing market due to diffusion of new technologies such as 3D printer

Carbon Fiber and Composite Materials
Intensified competition due to quality improvement of products from developing countries

Performance Products Domain

In the performance products domain, the MCHC Group focuses on five growing markets while coordinating a wide range of products and technologies of the Group to differentiate and enhance the performance of products in order to provide a variety of solutions to the respective markets.

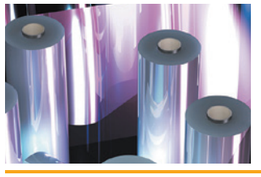
Main businesses and products

Functional Products

FY2018 Sales revenue
¥785.9 billion

FY2018 Core operating income
¥40.1 billion

Information, Electronics and Displays
Optical films, precision cleaning, color resist



Optical films
We swiftly respond to the globally expanding markets, increasingly sophisticated needs and support the advancement of displays through products such as polyester films, optical clear adhesive sheets and optical PVOH films.

Information and electronics materials
We focus on developing and selling products and services that create new value consistent with customers' needs, including through various materials for FPD (Flat Panel Display) and precision cleaning for semiconductors.

High Performance Films
High-performance films: food package materials, industrial-use films, medical and sanitary films

High-performance films
Through the optimal combination of technologies, including polymer material design, forming processing, surface treatment and composition, we offer products with added functionalities such as gas barrier, weather resistance, moisture permeability, and easy-opening, applied in different markets such as food, industrial, and healthcare.

Environment and Living Solutions
Aqua solutions, ion-exchange resins, separator and aqua chemicals, agricultural solutions, infrastructure solutions

Aqua solutions
Through offerings such as water treatment chemicals, filtration membranes, and ion-exchange resins, we cover the whole water treatment process ranging from drinking water to wastewater, aiming to provide solutions to any and all water-related issues worldwide.

Agricultural solutions
We offer agricultural materials such as high-performance films with superior durability for greenhouses and plant factories for cultivating high-quality vegetables stably throughout the year.

Advanced Moldings and Composites
High-performance engineering plastics, carbon fiber and composite materials, fibers and textiles, alumina fibers, functional moldings and composites

High-performance engineering plastics
As a leading global manufacturer of high-performance engineering plastics, we are developing our business in a wide range of fields, such as industrial machinery, automobiles, aircrafts, and medical use.

Carbon fiber and composite materials
We have realized one of the most integrated product chains in the world, covering materials from PAN-based and pitch-based carbon fibers to intermediates and composite products using fibers as base materials.

Performance Chemicals

FY2018 Sales revenue
¥384.2 billion

FY2018 Core operating income
¥28.5 billion

Advanced Polymers
Performance polymers, phenol and polycarbonate, polybutylene terephthalate, sustainable resources

Performance polymers
With a broad product range centered on thermoplastic elastomers, performance polyolefins and PVC compounds, we contribute to the customers' innovations in areas ranging from medical care and industry to daily consumer goods.

Phenol and polycarbonate
Integrating our proprietary manufacturing process technologies with polymer design technologies and compound technologies, we have expanded our business globally while having one of the largest market shares in Asia.

High Performance Chemicals
Coating materials, epoxy resins, resin additives, food ingredients, inorganic chemicals

Coating materials
We provide added value with a strong consciousness of sustainability for polymers used in paints, inks, adhesives, hair care materials and resist materials for semiconductors based on advanced technologies of synthesis, formulation and evaluation.

Food ingredients
We have expanded our business to a wide range of fields from food to pharmaceuticals and cosmetics in product groups such as emulsifiers, represented by our sugar ester, which has the leading global market share, and vitamin E.

New Energy
Lithium-ion battery materials, phosphors, scintillators, GaN substrates

Lithium-ion battery materials
While targeting the increasingly sophisticated needs of customers, we are developing electrolytes and anode materials primarily for the batteries used in electric vehicles based on high technological capabilities and a global supply chain network covering from material development to safety evaluation.

Phosphors, scintillators, GaN substrates
We are providing phosphors for fluorescent backlights and LED lighting, and scintillators for security and medical diagnostic devices, such as CT scanners. We are also developing gallium nitride (GaN) substrates used in lasers and other high-performance devices.

APTSIS 20

Policies

Provide high-performance products and solutions on a global scale by accelerating growth through cooperation and integration.

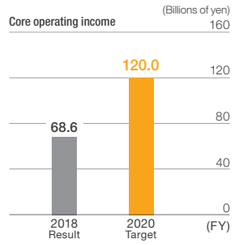
Key Strategies

Expand high-performance, higher value-added products and solutions business
Accelerate global development
Enhance innovation through business integration
Achieve profitability of new energy businesses at an early stage

Target Figures

Investment
(Five-year plan, total)
¥390 billion*

R&D investment
(Five-year plan, total)
¥170 billion*

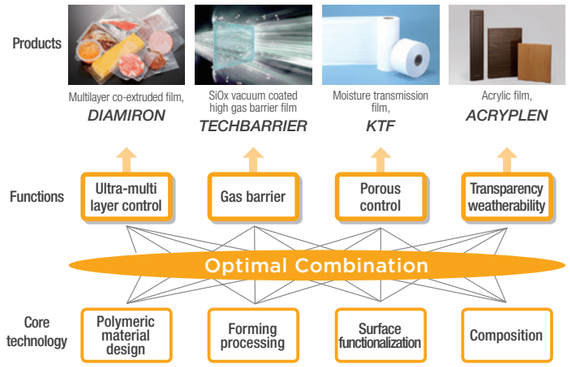


* In November 2017, MCHC announced that it would increase investments and loans by 200 billion yen and R&D investments by 25 billion yen on a company-wide basis.

Growth Strategies of High Performance Films

While strengthening our advantage in product development, delivering solutions by increasing positive synergy among other business domains, and advancing a seamless technology platform, we will accelerate the global expansion of higher value-added products by making full use of resources of overseas affiliates. We are constructing a new production facility in Thailand for multilayer co-extruded film, *DIAMIRON,* that is widely used in food and medical packaging in order to expand business in the ASEAN where growing market demands are expected. (Commercial production will begin in April 2020). We will also globally expand the business of barrier films through our M&A strategy and enhance the technological development of next-generation products, such as smart packaging, with focus on achieving SDGs, solving the food-loss issue (longer shelf life), and others.

Technology Platform



Growth Strategies of Advanced Polymers

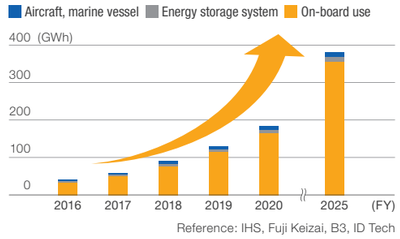
Our growth strategies are: enhancing the competitiveness of the existing businesses, pioneering a circular economy, and promoting M&A and alliances. In the existing businesses, the strength of our solution proposals are bolstered by our global network. In FY2018, we decided to establish a new production facility for PVC compound production in China (Chengdu), and acquired two PVC compound producers in Indonesia and India. Toward the actualization of a circular economy, we proactively contribute to the achievement of the SDGs and the reduction of GHGs with a strong focus on the feature improvement of biomass and biodegradable polymers. We are accelerating M&A and alliances activities with the aim of acquiring new technologies, new applications, new customers and new business models for further business growth.

Expanding Production and Sales Bases

Growth Strategies of New Energy

We will cultivate next-generation businesses by promoting early commercialization and profitability of business clusters that contribute to the realization of a sustainable society. The electrolyte and anode materials used in the lithium-ion batteries (LiBs) that we manufacture and distribute are widely adopted for automobile LiB as high-performance products capable of improving performance such as LiB life, output and charging characteristics. Going forward, we will continue to enhance our global supply chains through increased production capacity at overseas business bases, and will meet our customers' needs for more sophisticated performance with our advanced technological capabilities.

Demand Forecast for Large-scale LiB Use



Reference: IHS, Fuji Keizai, B3, ID Tech

FOCUS

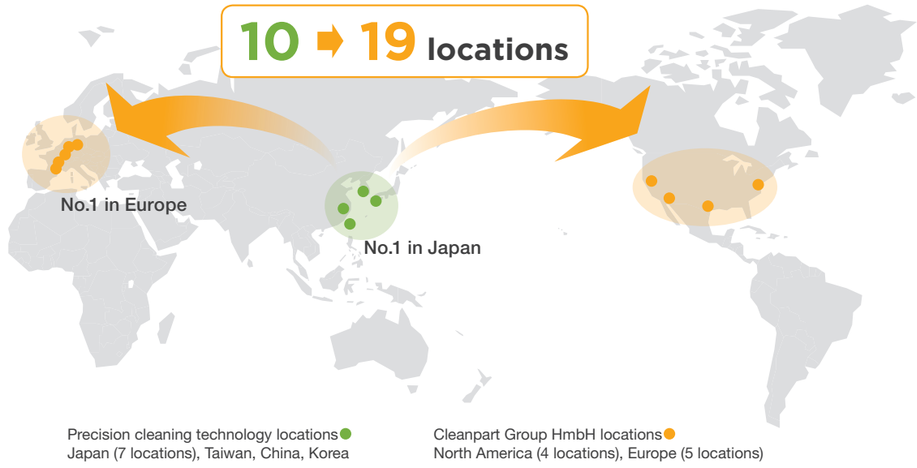
Provide a wide range of solutions and accelerate global business deployment in the IT, electronics, and displays market.

The integration of businesses involving optical films used in electric displays and information and electronics materials, such as color resists, realized a timely response to the remarkable technological innovation in this market. As LCD panels become thinner and larger, we are not only accelerating the building-up of production lines for wider optical PVOH film, *OPL Film* used in polarizer but also applying our technology and expertise in displays to OLED panel materials, which are expected to grow in the future.

On the other hand, as the volume of data being processed increases due to the development of information technologies such as AI and IoT, the semiconductor market has been growing remarkably, which is expected to continue. To date, we have endeavored to enhance businesses including cleaning solutions and precision cleaning services. In October 2018, we acquired Cleanpart Group GmbH, one of the leading companies in fields that include precision cleaning and coating services for semiconductor manufacturers in Europe and the U.S. We will strengthen our access to the semiconductor industry based on the advanced precision cleaning technology cultivated in Japan and Asia and the acquired business bases and their client networks in Europe and the U.S. We will also enhance our solution proposal capability to respond to customers' technological development and needs.

Established a global cleaning service system based on the acquisition of Cleanpart Group GmbH

Expanding business by transferring advanced precision cleaning technology developed in Japan and Asia to semi-conductor manufactures in Europe and North America



Precision cleaning technology locations
Japan (7 locations), Taiwan, China, Korea

Cleanpart Group HmbH locations
North America (4 locations), Europe (5 locations)

Expanding KAITEKI Value

Provide innovative advanced moldings and composites to the aircraft markets to realize a KAITEKI society

Our high-performance engineering plastics and carbon fiber reinforced plastic are also applied to various parts of aircrafts. In addition to their light weight, these products have requisite characteristics for aircraft, such as strength, heat resistance, flame retardance, sound insulation and vibration damping, allowing aircraft to achieve higher performance. Going forward, as the global leader in high-performance engineering plastics and carbon fiber reinforced plastic, we will continue to make utmost efforts to contribute to improving safety and reliability in the growing aircraft markets of the world and realize a KAITEKI society.

Industrial Materials

Industrial Materials Domain

MCHC will continue to advance the diversification of raw materials, including renewable resources, provide products and technologies through a framework that reflects the needs of the time, and support the growing markets.

SWOT Analysis

Strengths

MMA	Petrochemicals	Carbon Products	Industrial Gases
Possesses three major manufacturing methods. Holds a strong market position with the world's top market share	Possesses product chains ranging from crackers to derivatives, and accumulation of own technologies	Coking coal blending technologies and coke quality management technologies	Holds a strong market position and the domestic top market share with a supply system that cover the whole global market

Weaknesses

MMA	Petrochemicals	Carbon Products	Industrial Gases
Fluctuating revenue due to overseas market conditions and raw material trends	Susceptible to the impacts of price fluctuation in commodities such as crude oil	Fluctuating revenue due to volatile coking coal prices	Fluctuating domestic revenue due to the impact of electricity cost

Opportunities

MMA	Petrochemicals	Carbon Products	Industrial Gases
Business network positioned to respond to global expansion of demands	Knowledge business (technology license, catalysts) in overseas growth regions	Expanding the production of crude steel and increase in coke demand in developing countries such as India	Increased investment opportunities overseas and demand from electronics and medical use

Threats

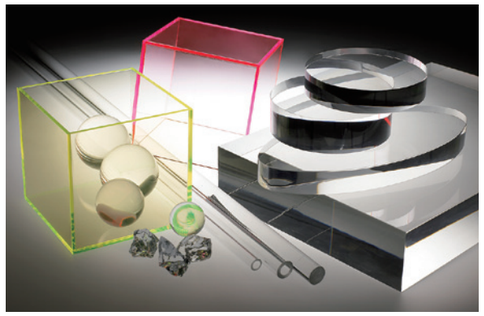
MMA	Petrochemicals	Carbon Products	Industrial Gases
Competition with other materials	U.S. shale-based products and Chinese coal-based products flowing into the Japanese market in greater than expected quantities	Integration of blast furnace along with the restructuring of steel companies	Oligopolization of the major gas companies in oversea markets

Major Businesses and Products

MMA

FY2018
Sales revenue
¥388.8 billion

FY2018
Core operating income
¥94.4 billion



MMA, PMMA

MMA*1

We possess three major manufacturing methods*2 that utilize different raw materials, and maintain a leading 40% share of the global market. By establishing a global supply chain that takes advantage of raw material availability for each plant as well as cost competitiveness, MCHC aims to actualize sophisticated operations.

*1 Methyl methacrylate
*2 Acetone cyanohydrin (ACH) method, C4 direct oxidation process, and New Ethylene Method (Alpha Technology)

PMMA*3

PMMA (acrylic resin) has various excellent characteristics such as superior transparency, strong weatherability, and formability. We operate businesses that utilize a variety of PMMA products including acrylic sheets for signs, display shelves and aquarium tanks, molding materials for automotive products, optical components and home electronic parts, and plastic optical fibers.

*3 Polymethyl methacrylate

Petrochemicals

FY2018
Sales revenue
¥601.6 billion

FY2018
Core operating income
¥12.2 billion

Basic petrochemicals, basic chemical derivatives, polyolefins

Basic petrochemicals and basic chemical derivatives

Our ethylene plants are located in Ibaraki and Okayama,* Japan, where we manufacture olefins such as ethylene and propylene, and aromatics such as benzene and toluene. We also deal in various ethylene, propylene and C4 derivatives, terephthalic acid and more.

*The Okayama ethylene plant is owned by Asahi Kasei Mitsubishi Chemical Ethylene Corporation, which is jointly owned by Asahi Kasei Corporation and Mitsubishi Chemical Corporation (MCC).

Polyolefins

Our polyolefin (polyethylene and polypropylene) business offers high-quality and high-performance product lineups for a wide range of fields including automobiles, electrical wires, medical devices and food packaging based on proprietary catalyst and process technologies. We are also expanding this business to markets outside Japan as a global supplier of high-performance materials while developing the growing global markets including the automobile industry.

Carbon Products

FY2018
Sales revenue
¥280.3 billion

FY2018
Core operating income
¥24.5 billion

Coke, carbon materials, carbon black, synthetic rubber

Coke

Coke supports the global steel industries, and it serves as a raw material for various products which are produced from the tar created in the coke manufacturing process. Each year we import coal from countries around the world and produce coke of different qualities by blending around 60-70 types of raw materials in various combinations.

Carbon black

Carbon black is a material used for products found in daily life, such as tires, printing ink and colored resins. We manufacture carbon black under stringent quality control throughout the manufacturing process, covering all stages from raw material processing to the final products.

Industrial Gases

FY2018
Sales revenue
¥732.8 billion

FY2018
Core operating income
¥63.3 billion

Industrial gases, industrial gas-related equipment and facilities

Industrial gases

We have a leading 40% share of the domestic market for industrial gases, centered on oxygen, nitrogen and argon. We are expanding our business overseas with a focus on North America, Europe, Asia and Oceania as the key markets.

Industrial gas-related equipment and facilities

Besides our domestic production of Japan's first air separation units plant, we have earned a stellar reputation as a world class plant manufacturer through the production of space-simulation chambers and liquid helium-related equipment.

APTSIS 20

Policies

Stabilizing earnings by strengthening cost-competitiveness

Accelerating growth and increasing presence in the global market

Key Strategies

Ehance cost-competitiveness

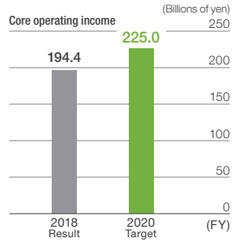
Accelerate global business development (MMA, industrial gasses)

Business restructuring

Target Figures

Investment
(Five-year plan, total)
¥1,280 billion*

R&D investment
(Five-year plan, total)
¥80 billion*



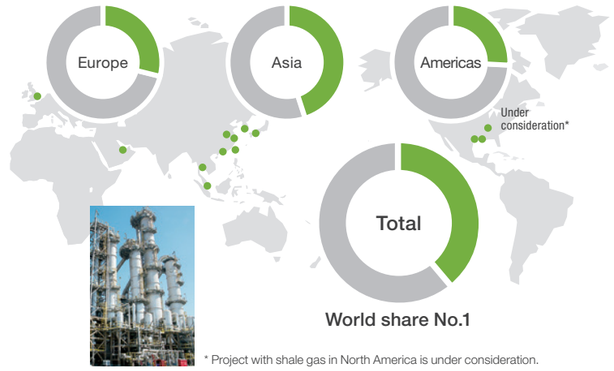
*1 In November 2017, MCHC announced that it would increase investments and loans by 200 billion yen and R&D investment by 25 billion yen on a company-wide basis.
*2 A capital increase of 700 billion yen was implemented due to the large-scale merger of an industrial gas company in FY2018.

Growth Strategies of the MMA Domain

We will continue to increase our production capacity and optimize the production system with the aim of maintaining our competitiveness as the leading global supplier of MMA, boasting a roughly 40% share of the global production capacity.

In April 2018, a new plant with the world's largest production capacity started its operation. The plant utilizes the MCC Group's proprietary New Ethylene Method (Alpha Technology) together with the highly cost-competitive natural gas of Saudi Arabia. Furthermore, in North America, we are also considering the establishment of a new plant that utilizes the New Ethylene Method with a less expensive shale gas-based ethylene. Thus, we will secure stable earnings while maintaining the competitiveness by retaining a leading share in MMA and building optimal production systems.

MMA Production Bases and Regional Share



* Project with shale gas in North America is under consideration.

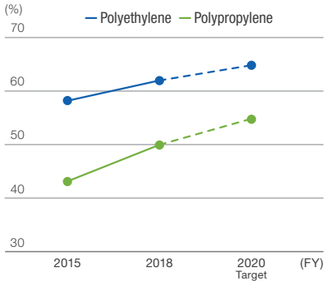
Strategic Approach to Strengthening Competitiveness of Petrochemicals

We have completed the large-scale structural reforms, including the consolidation of naphtha cracker and withdrawal from unprofitable businesses, to a certain extent. Looking ahead, we will continue to increase the added value by commercializing the unused fraction between crackers and derivatives, developing high-performance polyolefin, and expanding technology licenses through the refinement of possessed technologies.

For high-performance polyolefin, we are accelerating the development to add higher value to polyolefin by developing a new catalyst to improve the strength, heat resistance and molding capability of polyolefin.

We will continue to maximize earnings by increasing the value of our petrochemical business.

Ratio of Higher Value-added Polyolefin



Door module
(Automotive interior component)

Automotive fuel tank

Strategic Approach to Strengthening Competitiveness of Carbon Products

We will endeavor to secure stable earnings by consistently producing coke, core product, and maximizing the added value of coke byproducts, such as needle coke.

In 2009, MCC introduced large-scale partial refining operation under a coke oven (hot renewal method) for the first time in Japan, enabling us to stably produce coke without suspending the operation of the oven while at the same time maintaining its soundness.

We will focus on maximizing earnings by consistently promoting efforts to increase the added value of coke byproducts, such as needle coke, the demand for which has been sharply increasing in recent years due to its use in graphite electrodes.

FOCUS

Industrial gases: Aiming at further growth based on the tetrapolar global production structure

As the oligopolization of the industrial gas industry advances due to internal reorganizations, Taiyo Nippon Sanso Corporation (TNSC) has been implementing its Ortus Stage 2, a four-year Medium-term Management Plan, starting from the fiscal year ended March 2018, with the aim of firming up its position by enhancing its global competitiveness. In December 2018, TNSC acquired a European subsidiary of Praxair, Inc. and thereby obtained the company's market share in Europe, a market which TNSC was yet to enter at that time. As the regional headquarters in Europe, TNSC established Nippon Gases Euro-Holding S.L.U. in Spain to organize the governance system of each subsidiary. As a result, the tetrapolar global production structure (Japan, the U.S., Europe, and Asia-Oceania) was finally established.

Amid its efforts to expand the gas technology domain through M&A based on the priority strategy of Innovation under the Ortus Stage 2 Plan, TNSC made an entry into the HyCO business by acquiring the U.S. HyCO business of Linde Gas North America LLC, a subsidiary of Linde AG, in February 2019.

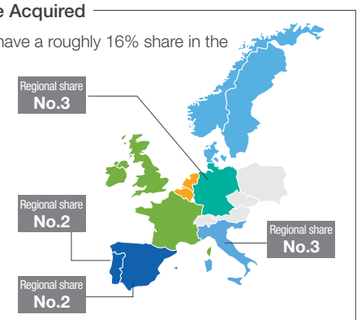
HyCO business refers to the large-scale supply of hydrogen (H_2) and carbon monoxide (CO) separated from natural gas and other raw materials by steam reforming equipment, etc. pipelined to be used mainly in the oil refinery/petrochemical industries. TNSC will endeavor to enhance its ability to make proposals to users by expanding the product lineup.

Expanding global market share by moving into new business areas

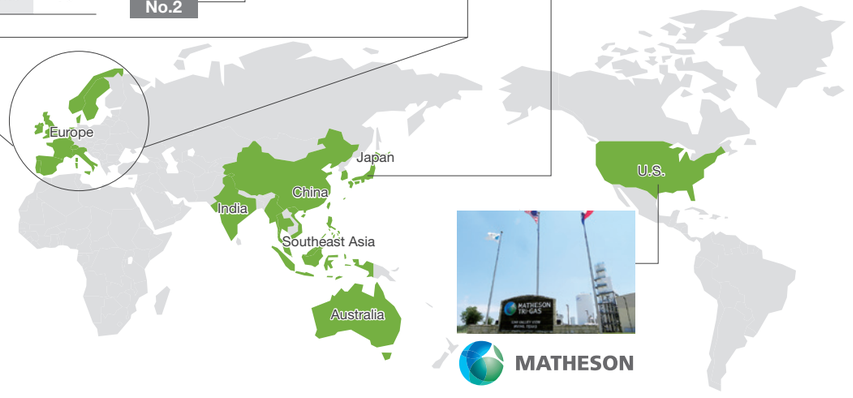
Target Businesses to be Acquired

Businesses to be acquired have a roughly 16% share in the target regions.

Outline of major assets, etc.	Number of plants
Air separation units	27
Cylinder filling plants	35
Liquid CO_2 plants	12
Dry ice plants	19



TAIYO NIPPON SANSO



MATHESON

Expanding KAITEKI Value

Business development of earth-friendly and high-performance plant-derived materials

MCC has developed *BENEBiOL*, the world's first plant-derived polycarbonate diol (PCD). While PCD has been applied to resin coating materials, such as artificial/synthetic leather and exterior and interior coating materials for automobiles, the plant-derived PCD not only has an excellent environmental performance but also the capability of improving texture, flexibility and strength compared to conventional PCD from petroleum. Looking forward, our Group will continue to promote the business development of earth-friendly and high-performance plant-derived materials, thus contributing to the construction of a resource-saving and recycling-oriented society.

"Ultrasuede® BX," Toray Industries' environmentally friendly non-woven material with a suede texture using our *BENEBiOL*. (Image courtesy of Toray Industries, Inc.)

Health Care

Health Care Domain

MCHC will develop the healthcare businesses beyond the treatment of diseases, with an aim to create a society where people around the world live longer and healthier.

SWOT Analysis

Strengths

Pharmaceuticals
- Capabilities for drug discovery and IKUYAKU (drug fostering and evolution) in the pharmaceutical business
- Presence in focus areas, including autoimmune diseases

Life Science
- Broad business foundation covering sick care, health care, and life care
- Strong market position in the capsule manufacturing business

Weaknesses

Pharmaceuticals
- Delay in global business expansion (especially in North America)

Life Science
- Product/service lineup insufficient to meet a range of customer needs

Opportunities

Pharmaceuticals
- Diversification of medical needs
- Expanding demand in the healthcare domain due to global aging

Life Science
- Expanded use of big data by health and medical ICT
- Governmental incentives to maintain health and prevent serious diseases in order to stop the increase of medical expenses
- Enhanced awareness of health, including self-medication

Threats

Pharmaceuticals
- Declining success rate for new drug discovery, and increasing R&D costs due to stricter drug approval processes
- Various measures taken to control medical expenditures by governments

Life Science
- Lack of economic incentives in the healthcare business

Major Businesses and Products

Health Care

FY2018 Sales revenue
¥545.7 billion

FY2018 Core operating income
¥56.9 billion

Pharmaceuticals

Remicade *Simponi* *Stelara*

Immuno-inflammation

We have a strong sales foundation based on the relationships of trust built with medical professionals through one of our main products, *Remicade* (indication: inflammatory autoimmune diseases such as rheumatoid arthritis). We will continue to take the top share in this area by maximizing the advantages provided by three products: *Remicade, Simponi* (indication: rheumatoid arthritis, etc.) and *Stelara* (indication: psoriasis, Crohn's disease, etc.).

Tenelia *Canaglu* *Canalia*

Diabetes and kidney

We aim to obtain clinical evidence and expand sales channels for *Tenelia* Tablets and *Canaglu* Tablets, originally developed by Mitsubishi Tanabe Pharma Corporation (MTPC) as Japan's first treatment for type 2 diabetes mellitus, and for *Canalia* Combination Tablets, thereby establishing our presence in this area.

Lexpro *Radicut*

Central nervous system

It is thought that *Radicut (Radicava* in the U.S.) has the effect of scavenging free radicals, which increase in ALS, protecting motor neurons from oxidative stress, and delaying the decline in muscle strength and the progress of muscular atrophy. For this product, we obtained approval for the indication of ALS first in Japan in June 2015 and subsequently in South Korea, the U.S., Canada, and Switzerland. We are now applying for approval in China while developing an oral agent in the U.S.

Influenza vaccine *Tetrabik* Varicella vaccine

Vaccines

MTPC and the Research Foundation for Microbial Diseases of Osaka University founded BIKEN Co., Ltd., a joint venture to produce vaccines, which started operation in September 2017. We plan to double or triple the production volume of varicella vaccine and to increase total vaccine production capacity by 20 to 30% in the future. We will also enhance the production platform for vaccines that are in greater demand and help further stabilize the supply of vaccines.

Life Science

Regenerative medical product

Next-generation healthcare

We began the clinical testing with a formulation that uses Muse* cells, which were discovered by a team led by Professor Mari Dezawa of Tohoku University. To obtain an approval for Muse cell-based product (CL2020) by FY2021, we have been conducting clinical tests for four indications. Additionally, we constructed a new cell processing center ("Tonomachi CPC") for the commercialization of Muse cell-based products. In February 2019, we began preparing for production at the CPC for the launch. (See page 84).

*Muse: Multilineage-differentiating Stress Enduring

Pharmaceutical capsules, active pharmaceutical ingredients and intermediates

Drug discovery solutions

We manufacture active pharmaceutical ingredients and intermediates. We also provide high-quality, high-performance hard capsules, such as HPMC*, the world's first HPMC made from plant-derived materials, and pharmaceutical processing equipment made by using our manufacturing technologies and expertise.

*HPMC: Hydroxypropyl methylcellulose

Medical ICT

Health and medical ICT

To solve social issues, such as the aging society and regional disparities in medical treatment, we will develop diagnosis support systems for higher quality medical care by using digital technology thereby creating a new business that helps mitigate the burdens imposed on doctors. Presently we are collaborating with universities and others to develop an AI-based diagnostic imaging support system.

APTSIS 20

Policies

Worldwide growth in the pharmaceutical business

Establish and improve the healthcare and medical business utilizing ICT and the regenerative medical products

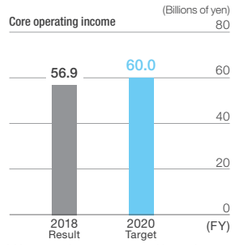
Key Strategies

- Promote the development of overseas pharmaceutical business, particularly in the U.S.
- Strengthen capabilities for drug discovery
- Maximize the value of new drugs and priority products by strengthening capabilities of IKUYAKU (drug fostering and evolution) and marketing
- Expand the healthcare and medical business utilizing ICT
- Expand the regenerative medicine business
- Improve profitability and global expansion of the business for capsules

Target Figures

Investment
(Five-year plan, total)
¥460 billion*

R&D investment
(Five-year plan, total)
¥440 billion*



* In November 2017, MCHC announced that it would increase investments and loans by ¥200 billion and R&D investment by ¥25 billion on a company-wide basis.

Four Strategic Priorities to Open Up the Future

Strategic Priority 1: Maximizing Pipeline Value
Late-stage development for 10 drug candidates
R&D investment ¥400.0 billion
FY2018 Results:Started late-stage development in 7 candidates
Estimate by FY2020:Start late-stage development for 4 additional drug candidates

Strategic Priority 2: Strengthening IKUYAKU* and Marketing
Revenue in Japan(FY2020) ¥300.0 billion
New drug and priority product sales ratio 75%
FY2018 Results: ¥307.7 billion Estimate by FY2020: 55%
*Drug Fostering and Evolution

Goal for FY2020
Revenue of ¥430.0 billion and core operating income of ¥60 billion

Strategic Priority 3: Accelerating U.S. Business Development
¥40.0 billion in North America + Sales of *Radicava* in more countries
Strategical investment in the U.S. by more than ¥200.0 billion
FY2018 Results: ¥27.0 billion

Strategic Priority 4: Reforming Operational Productivity
Reduction of the cost of sales and SG&A expenses ¥20.0 billion
Number of employees 5,000
FY2018 Results: Reduced by ¥25.0 billion and to 4,956 employees
Estimate by FY2020: Reduced by ¥30.0 billion

Growth Strategies in the Pharmaceutical Business

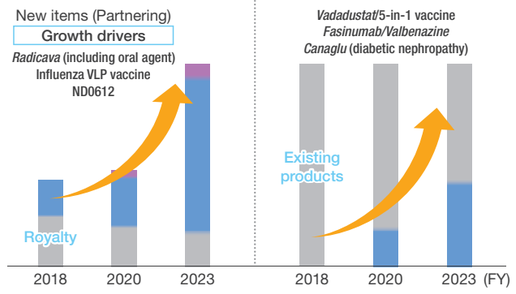
MTPC engages in the pharmaceutical business within the MCHC Group. In November 2018 it revised the FY2020 targets set in its Medium-term Management Plan, "Open Up the Future." Specifically, it made downward revisions to revenue (down ¥70 billion to ¥430 billion) and to core operating income (down ¥40 billion to ¥60 billion), mainly because of a decrease in the royalty revenue gained for *Invocana,* a treatment for type 2 diabetes mellitus, and the delayed business contribution by the M&A project in the U.S.

MTPC Aims to Achieve the Initial Targets by FY2023 Through the Following Measures

Peak sales (Billions of yen)

U.S. and Europe	Launch of *Radicava* oral agent	70–100 (including intravenous agent)
	Launch of influenza VLP vaccine	40–60
	Launch of ND0612 (indication: Parkinson's disease)	50–80
Japan	Launch of *Vadadustat* (indication: renal anemia)	
	5-in-1 vaccine (for pertussis, diphtheria, tetanus, polio and Hib)	Total in five products
	Fasinumab (indication: osteoarthrosis), and *Valbenazine* (indication: tardive dyskinesia), and an additional indication to *Canaglu* (diabetic nephropathy)	50–70

In the U.S. and Europe, accelerate growth through the three drivers as maintaining revenue of ¥300 billion achieved by launching new drugs and promoting IKUYAKU in Japanese market



Growth Strategies in the Life Science Business

Provision of solutions to promote people's health and prevent the aggravation of symptoms

Wellness Solution

Provision of unique products and services for pharmaceutical development

Medical Solution

Provision of solutions to meet unmet medical needs

Next-generation Healthcare

We will address unmet medical needs by developing regenerative medicine of Muse cell-based formulation, and aim to obtain approval for the manufacture and sale of the product in FY2021. In February 2019, we began preparations for the production and commercialization of said product at the newly completed cell processing center.

Health and Medical ICT

We will create new businesses to improve the quality of medical treatment by using digital technology, thereby contributing to solving social issues such as the aging society and regional disparities in medical treatment.

Drug Discovery Solutions

While taking an integrated approach across the pharmaceutical business (active pharmaceutical ingredients and intermediates, capsules, etc.), we will provide pharmaceutical companies with higher value-added one-stop solutions through alliances with other organizations.

FOCUS

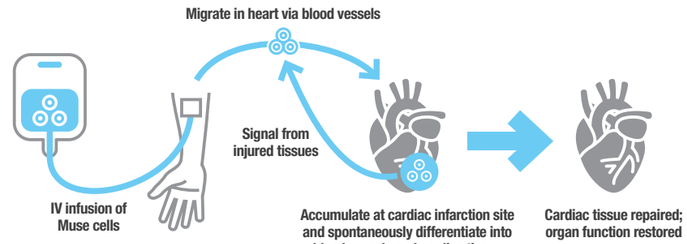
Aiming to meet Unmet Medical Needs by providing Muse cell-based products

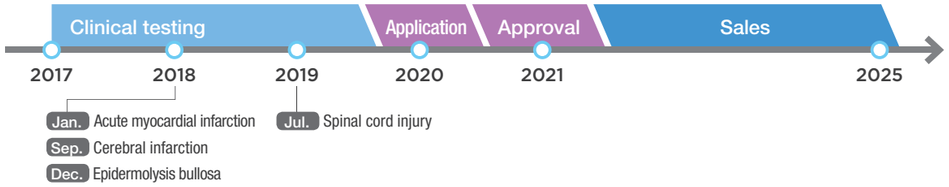
Development of new drugs and medical technologies have tremendously progressed in recent years, however, some disease have not had effective therapies yet. They call them unmet medical needs and we are working to address these unmet medical needs by creating Muse cell-based regenerative medicine and other products.

Muse cells were discovered by a team led by Professor Mari Dezawa of Tohoku University in 2010. These pluripotent stem cells have the capacity to differentiate into a range of human cells. Muse cells naturally exist in the connective tissue of the human body and therefore risks of tumorigenicity is likely low. Moreover, they have characteristics not to necessarily induce into damaged tissues, but through iv injection, to accumulate and engraft injured tissues for repairing.

We are developing Muse cell-based products (CL2020) through the use of Muse cell enrichment culture techniques. Exploratory clinical test for the treatment of acute myocardial infarction started in January 2018 and we are now conducting another tests indicated for cerebral infarction and epidermolysis bullosa. Furthermore, we have conducted the clinical study for spinal cord injury from July 2019. We will continuously work on research and development for new treatment options.

Outline of the use of the Muse cell product for acute myocardial infarction





For CL2020, we aim to obtain manufacturing and sales approval by FY2021. We started preparations for commercial manufacturing of CL2020 from February 2019 at the newly completed cell processing center (CPC).

We will continue our efforts to deliver CL2020 to patients as soon as possible.

Tonomachi CPC (within the Life Innovation Center in Kanagawa)

Expanding KAITEKI Value

Providing patients with easier-to-take drugs

Radicava was released in the U.S. in 2017 as the first new drug developed in 20 years to help ALS patients delay the progression of the damage caused by the disease to their physical functions, and we are working to introduce it to other countries. Presently, however, the drug can be administered only by instillation and patients and their caregivers need to visit and remain at medical facilities for the administration of the drug.

In order to mitigate this burden, we are developing an oral suspension that can be easily taken by patients and aim to obtain approval for it in FY2021.