December 8, 2016

Hitoshi Ochi,
President & CEO
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, performance products, polymers and processed products, pharmaceuticals, carbon and inorganic products, industrial gases and petrochemicals, 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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>MCHC</td>
<td>Mitsubishi Chemical Holdings Corporation</td>
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<tr>
<td>MCC</td>
<td>Mitsubishi Chemical Corporation</td>
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<tr>
<td>MTPC</td>
<td>Mitsubishi Tanabe Pharma Corporation</td>
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<tr>
<td>MPI</td>
<td>Mitsubishi Plastics, Inc.</td>
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<tr>
<td>MRC</td>
<td>Mitsubishi Rayon Co., Ltd.</td>
</tr>
<tr>
<td>LSII</td>
<td>Life Science Institute, Inc.</td>
</tr>
<tr>
<td>TNSC</td>
<td>Taiyo Nippon Sanso Corporation</td>
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**New MCC:** Integrated company by the merger of three chemical companies: MCC, MPI, MRC

<table>
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<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>APIC</td>
<td>API Corporation</td>
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<tr>
<td>MFC</td>
<td>Mitsubishi-Kagaku Foods Corporation</td>
</tr>
<tr>
<td>NKC</td>
<td>Nippon Kasei Chemical Company Limited</td>
</tr>
<tr>
<td>NSCI</td>
<td>The Nippon Synthetic Chemical Industry Co., Ltd.</td>
</tr>
<tr>
<td>QKKK</td>
<td>Qualicaps Co., Ltd.</td>
</tr>
<tr>
<td>LIBTEC</td>
<td>Consortium for Lithium Ion Battery Technology and Evaluation Center</td>
</tr>
<tr>
<td>MAFF</td>
<td>Ministry of Agriculture, Forestry and Fisheries</td>
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<tr>
<td>NEDO</td>
<td>New Energy and Industrial Technology Development Organization</td>
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AA</td>
<td>Acrylic acid</td>
</tr>
<tr>
<td>AE</td>
<td>Acrylic ester</td>
</tr>
<tr>
<td>ALS</td>
<td>Amyotrophic lateral sclerosis</td>
</tr>
<tr>
<td>API</td>
<td>Active pharmaceutical ingredients and intermediates</td>
</tr>
<tr>
<td>BPA</td>
<td>Bisphenol A</td>
</tr>
<tr>
<td>BtoB</td>
<td>Butene to butadiene</td>
</tr>
<tr>
<td>DLC</td>
<td>Diamond-like-carbon</td>
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<tr>
<td>DTP</td>
<td>Dimethyl ether to propylene</td>
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<tr>
<td>EO</td>
<td>Ethylene oxide</td>
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<tr>
<td>ESS</td>
<td>Energy storage system</td>
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<tr>
<td>FPD</td>
<td>Flat panel display</td>
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<tr>
<td>GaN</td>
<td>Gallium nitride</td>
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<tr>
<td>HPMC</td>
<td>Hydroxypropyl methylcellulose</td>
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<tr>
<td>ICT</td>
<td>Information and communication technology</td>
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<tr>
<td>IoT</td>
<td>Internet of things</td>
</tr>
<tr>
<td>MBR</td>
<td>Membrane bio reactor</td>
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<tr>
<td>MMA</td>
<td>Methyl methacrylate</td>
</tr>
<tr>
<td>MOS</td>
<td>Management of Sustainability</td>
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<tr>
<td>MOT</td>
<td>Management of Technology</td>
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<tr>
<td>OCA</td>
<td>Optical clear adhesive</td>
</tr>
<tr>
<td>OLED</td>
<td>Organic light emitting diode</td>
</tr>
<tr>
<td>PC</td>
<td>Polycarbonate</td>
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<tr>
<td>PE</td>
<td>Polyethylene</td>
</tr>
<tr>
<td>PEEK</td>
<td>Polyether ether ketone</td>
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<tr>
<td>PET</td>
<td>Polyethylene terephthalate</td>
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<tr>
<td>PBT</td>
<td>Polybutylene terephthalate</td>
</tr>
<tr>
<td>PP</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>PTA</td>
<td>Terephthalic acid</td>
</tr>
<tr>
<td>PTP</td>
<td>Press through package</td>
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<tr>
<td>PVOH</td>
<td>Polyvinyl alcohol</td>
</tr>
<tr>
<td>RFID</td>
<td>Radio frequency identifier</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective catalytic reduction</td>
</tr>
<tr>
<td>VCM</td>
<td>Vinyl chloride monomers</td>
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<tr>
<td>xEV</td>
<td>Collective term for EV, HEV, PHEV, etc.</td>
</tr>
</tbody>
</table>

FY2016: April 1, 2016 – March 31, 2017

**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.
1. Toward Accomplishing the Medium-term Management Plan *APTSIS 20*
   - Progress in Fiscal 2016
   - Action Plans

2. Growth Strategies for the New Mitsubishi Chemical Group

3. Management System of Mitsubishi Chemical Holdings

4. Toward Realizing *KAITEKI*
Agenda

1. Toward Accomplishing the Medium-term Management Plan APTSIS 20
   - Progress in Fiscal 2016
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4. Toward Realizing KAITEKI
**Business Environment**

### Society, Economy, Market

- Aging and expanding global population
- Diversification of market economy (Japan, U.S., Europe, China, Russia, etc.)
- Advancing globalization and expansion of regional economic zones:
  - Development of emerging countries' economies led by Asia
- Acceleration of technology innovation and emergence of data-driven economy
  - (Digitalization, modularization, ICT introduction, AI, robotics, 3D printers)
    - (Big data, IoT, Internet of everything, Industry 4.0)
- Increase in importance of CSR in business management
- Regeneration of chemical industry in the U.S.
- and expansion of coal chemical industry in China
- Utilization of hydrogen
- Post 3.11 energy policy review (Japan)
- Olympic/Paralympic games, earthquake restoration (Japan)

### Health, Medicine

- Increase in medical costs
- and strengthening of medical economic evaluation
- Change of the disease structure
  - with the super aging of Japan’s population
- Promotion of ICT introduction
  - (medical information, healthcare information, IoT, etc.)
- Development of regenerative medicine and precision medicine
- Paradigm shift of medical treatment from “Cure” to “Care”

### Global Environment, Resources

- Worsening climate change
- Pollution and insufficiency of water resources
- Destruction of ecosystem
- Fluctuation of natural and fossil resource markets
- Shale revolution
- Stagnation of the emerging economy, such as China, Brazil, and Russia
- Brexit
- Adoption of SDGs
- Paris Agreement entered into force.
- Post 3.11 energy policy review (Japan)
- Olympic/Paralympic games, earthquake restoration (Japan)

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Mitsubishi Chemical Holdings
Anticipating ¥259 billion in core operating income for fiscal 2016
(Performance Products: ¥71 billion, Industrial Materials: ¥100 billion, Health Care: ¥88 billion*)
### Performance Products

- **Promotion of generating synergy in the MCHC Group**
  - Converting NSCI to a wholly owned subsidiary
  - Converting NKC to a wholly owned subsidiary
  - Integration of MRC wastewater treatment business
  - Reorganization of MPI film/sheet processing business

- **Increasing profitability of overseas businesses**
  - U.S.: Expansion of polyester film production line (Scheduled to start operation in 2017)
  - U.S.: Expansion of carbon fiber production line
  - Carbon fiber: Establishing JV for wind turbine blade business
  - Quadrant: Acquisition of Piper Plastics, Inc. in the U.S.
  - Performance polymers: Establishing a business network in Vietnam

- **Making new energy businesses competitive sooner**
  - Profitability improvement of battery material business
    - Suspension of electrolyte production line in the UK
    - Establishing JV with Ube Industries, Ltd. in China

### Industrial Materials

- **Implementing fundamental measures for unprofitable and low-profit businesses**
  - Withdrawal from PTA business (India, China)

- **Increasing profitability of overseas businesses**
  - Polyolefin compound: Full-scale production in India, raising operation rate of production facility in Thailand
  - MMA Saudi PJ: Smooth progress
  - Industrial gases:
    - Acquisition of part of Air Liquide’s industrial gas business and related business assets in the U.S.
    - Awarded large-scale on-site supply contracts in Texas and Louisiana
    - Penetration into the Myanmar market

- **Realization of high-productivity corporate structure**
  - MMA
    - Lucite Singapore: Improving energy efficiency
    - Lucite Beaumont Plant: Starting full-fledged operation
  - Unification of ethylene production facilities in Mizushima

### Health Care

- **Sustainable growth and enhancing profitability**
  - Ethical pharmaceuticals
    - Licensed products: Invossa (cell therapy product)
    - Obtaining approval of Remicade for increased dosage and shorter dosing intervals in treating psoriasis
    - Filing an application for a combination drug of Tenelia and Canaglu
      - Basic agreement on the establishment of JV for vaccine manufacturing business

- **Increasing profitability of overseas businesses**
  - Ethical pharmaceuticals
    - Establishment of a sales company in the U.S.*
    - FDA’s acceptance of NDA filing for Edaravone (Radicut) to treat ALS and starting the examination
  - Qualicaps: Acquisition of a Brazilian hard capsule manufacturing company*

- **Realization of high-productivity corporate structure**
  - MTPC: Implementing early retirement*
  - APIC: Transfer of Fukuroi Plant

From fiscal 2010 to fiscal 2016, attained an increase of ¥1,400 billion in net sales through M&A and implemented ¥450 billion of business withdrawal or restructuring.
In fiscal 2016, unified ethylene production facilities in Mizushima, and decided to convert NSCI and NKC to wholly owned subsidiaries and withdrew PTA business in India and China.
Toward Attaining ROE of 10% or Higher

- Positioning each operating company and subsidiary within the criteria of each business domain
- Optimizing the business portfolio and resource allocation with regular monitoring

**Actions**
- Conduct PDCA cycle with regular monitoring
- Plan resource allocation
- Evaluate business portfolio (including downsizing, withdrawal, and sale)

**Criteria**

- **Growth potential**
  - (Sales growth rate)
  - \( \geq 4\% / \text{year} \)
  - (World economic outlook: 3.5\%*)

- **ROS**
  - Performance Products: \( \geq 8\% \)
  - Industrial Materials: \( \geq 5\% \)
  - Health Care: \( \geq 14\% \)

- **ROIC**
  - Performance Products: \( \geq 8\% \)
  - Industrial Materials: \( \geq 5\% \)
  - Health Care: \( \geq 5\% \)

*IMF outlook 2016 – 2020 average
### Priority Measures for Accelerating Growth

<table>
<thead>
<tr>
<th>Performance Products</th>
<th>Industrial Materials</th>
<th>Health Care</th>
</tr>
</thead>
</table>
| 1. Generate integration effects and synergy due to establishment of the new MCC | 3-1. Industrial gas and MMA
Maintain and expand the global share | 4-1. Ethical pharmaceuticals
Intensify the pipeline and expand businesses in the U.S. |
| 2. Incubate new businesses with R&D and accelerate M&A | 3-2. Petrochemicals
Reinforce the business foundation with production optimization | 4-2. Life science
Promote next-generation healthcare, and healthcare and medical ICT businesses |
| 5. Intensify marketing and access to the global market | | |
| 6. Accelerate R&D and early commercialization of next-generation businesses | | |
| 7. Improve productivity: promote health management, revise work styles, reduce overlapping functions, utilize IoT, etc. | | |
Resource Allocation

- Incorporating new MCC Group growth strategies, and considering an increase of ¥100 billion to ¥200 billion for M&A, mainly in the Performance Products domain
- Generating increased funds for M&A, principally by sale of assets

**Resource Allocation Plan**

![Graphs showing resource allocation](image)

- **Performance Products**
  - New markets
  - New technologies
  - High-performance films
  - High-performance engineering plastics
  - Food ingredients
  - Carbon fiber and composite materials
  - Performance polymers
  - Performance chemicals

- **Industrial Materials**
  - Overseas development
  - Industrial gases

- **Health Care**
  - Development in North America
  - New markets
  - Ethical pharmaceuticals (Specialty areas)
  - Healthcare, Medical ICT

0 200 400 600 800

0 200 400 600 800

0 200 400 600 800
Plan to Achieve Core Operating Income Target

- Total ¥50 billion by adding ¥30 billion as “Integration effects and synergy,” owing to new MCC Group growth strategies
- Achieving original profit targets for fiscal 2020 is critical.

[IFRS base] (¥ Billion)

FY2016 Forecast

M&A +20.0

Business environment factors – NHI drug price revisions, etc.

MCC Group growth strategies

Integration effect and synergy +20.0 → +50.0

Organic growth and cost reduction +93.0

FY2020 Target

380.0
### Numerical Targets for Fiscal 2020

- Improving capital efficiency and achieving APTSIS 20 numerical targets, regardless of changes of the world economic climate

<table>
<thead>
<tr>
<th>Financial Index (MOE)</th>
<th></th>
<th>IFRS base</th>
</tr>
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<tbody>
<tr>
<td>Core operating income</td>
<td></td>
<td>¥380.0 billion</td>
</tr>
<tr>
<td>ROS (Core operating income)</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Net income attributable to shareholders of the parent</td>
<td></td>
<td>¥180 billion</td>
</tr>
<tr>
<td>ROE</td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>Net D/E ratio</td>
<td></td>
<td>0.8</td>
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</table>
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Consolidation of SBUs and Acceleration of Growth

- Establishing 10 business domains and consolidating 56 SBUs into 26, from viewpoints of market access, etc., through integration of three chemical companies
- Accelerating growth by developing a business structure that capitalizes on market information and technological competence
MCHC Group Philosophy and Vision

Good Chemistry for Tomorrow
Creating better relationships among people, society, and our planet.

Realizing KAITEKI

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 New MCC Group must address
- Efficient use of resources and energy
- CO₂ reductions
- Securing clean water resources
- Food and agriculture problems
- Health maintenance and disease treatment
- Smart society

Focus Markets and Solutions

1. Automobiles, aircraft (mobility)
   - Products and services that contribute to environmental issues such as improving fuel efficiency by reducing weight

2. Packaging, labels, films
   - Products and services that contribute to longer product life and longer shelf life of food and medical products
   - Products and services that meet diversified needs (functions and raw materials)

3. IT, electronics, displays (incl. 3D printers, robotics)
   - Products and services that contribute to a smart society and more comfortable

4. Environment, Energy
   - Products and services that contribute to improvement of production and efficiency in agricultural, fishery, and livestock industries, and effective use of water resources
   - Products and services that contribute to resource and energy conservation

5. Medical, food, bio products
   - Products and services that contribute to health maintenance and reduced physical burdens, improved diagnostics, and medical advancement and efficiency
Focusing on five markets
Accelerating growth based on the most effective growth drivers, while generating synergy among related business divisions

**Focus Markets and Growth Drivers**

### Focus Markets

1. **Automobiles, aircraft (mobility)**
   - Lightweight composites
   - Environment-friendly materials

2. **Packaging, labels, films**
   - Food packaging films
   - Industrial films

3. **IT, electronics, displays**
   - FPD materials
   - Semiconductor-related materials
   (Incl. 3D printers, robotics)

4. **Environment, energy**
   - Battery materials
   - Water treatment systems and devices

5. **Medical, food, bio products**
   - Food ingredients
   - Pharmaceutical materials
   - Medical-related products

### Major Business Domains

- **High-performance polymers**
- **High-performance chemicals**
- **Advanced moldings & composites**

### Growth Drivers

- **Combination, integration, providing solutions**
- **Enhancing overseas development**
- **M&A, alliance**
- **R&D, innovation**
- **Intensifying competitiveness by improving productivity and efficiency**
- **Promoting generation of synergy in the MCHC Group by strengthening market access (Cross-sectional approach and consolidation of organization)**

### Fundamental materials

- **Petro-chemicals**
- **Carbon products**
- **MMA**
Growth Strategies for New Mitsubishi Chemical

Automobiles, Aircraft (Mobility)

Global Auto (Passenger Car) Markets

- Emerging countries: 3.7%/y
- Developed countries: 2.9%/y, 2.0%/y

2010: 73 mil units
2016: 90 mil units
2020: More than 100 mil units *Slowdown in growth

After 2025:
- Developed countries: Flat market growth and an increase in environmental friendly vehicles are expected.
- Emerging countries: Market growth is expected, centering on China.

Global Aircraft (Passenger Airplane) Markets*

- New demand: 17,499 (53%)
- Alternative demand: 15,661 (47%)
- No. of aircraft delivered: 33,160

- Aircraft in service will increase from about 20,000 to 38,000 over the next 20 years.
- New demand for 33,000 aircraft will be generated
- Forecasting growth rate of over 10%/year

Trends

- Lower dependence on fossil fuels
  - Expanding EV and FCV markets
  - Improving fuel efficiency through weight reduction

- Environment-friendly and zero emission
  - CO₂ reduction
  - Nox and SOx reduction
  - Measures to reduce dust [particulate matter]
  - Measures to reduce VOCs

- Automotive IT/electronics and changes in mobility concept
  - Self-driving vehicles
  - Advancement of safety functions
  - Convergence of automobiles using IT and social systems

- Acceleration of Japanese automakers’ global expansion

Technologies, Products, Solutions

- Reducing weight with alternative materials
  - Plastics
  - Carbon fiber composite materials

- Environment-friendly materials and technologies
  - Alumina fibers
  - Water soluble coating materials
  - Bio-based polymers
  - SCR catalyst (zeolite)
  - Lithium-ion battery materials

- Globally expanding networks in growing markets
  - Plastic compounds
  - Carbon fiber composite materials

*Source: Market forecast for passenger airplanes by Japan Aircraft Development Corporation (Mar. 2016)
Automobiles, Aircraft (Mobility)

- Provide various solutions for automobiles with wide-range of technologies and products of the new MCC Group

### Lightweight

- PP
- Engineering plastics
- Carbon fiber composite materials
- Performance polymers
- PE

### Functional Solutions

- Gas barrier films
  - IMD (In-mold decoration) molding film sheet
  - DIAFIX
- Acrylic film
  - Acryplen
- Low weight reinforced thermoplastics
  - GMT, SymaLITE
- White LEDs, GaN substrates, LED epitaxial wafers
- Plastic film-laminated steel sheet
  - HISHIMETAL
- Decorative metallic transfer foils
- MC NYLON
- Water-soluble adhesives
- Carbon black wet master batch
- Acrylic molding material
  - ACRYPET
- Acrylic sheet
  - SHINKOLITE

### Environmental Applications

- Alumina fiber
  - MAFTEC
- Aluminum composite material
  - ALPOLIC
- Bio-based engineering plastic
  - DURABIO
- High-purity aqueous urea solution for SCR system
  - AdBlue
- High-performance zeolite for SCR catalyst
  - AQSOA
- Lithium-ion battery materials
- Coating material
  - DIANAL
**Automobiles, Aircraft (Mobility)**

<table>
<thead>
<tr>
<th>China</th>
<th>North America</th>
<th>Asia Pacific</th>
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<tbody>
<tr>
<td>Technical Center China</td>
<td>Started group-wide activities in FY2016</td>
<td>Technical Center Asia</td>
</tr>
<tr>
<td>Deepens and expands group-wide activities</td>
<td></td>
<td>Is scheduled to be established in Thailand within FY2016</td>
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</table>

**Japan**

**Strengthening Market Access and Overseas Development**

**Strengthening activities in the AMS**

- Promoting group-wide global marketing approaches, including technical support, one stop service, etc.

**Enhancing overseas development of plastic compound businesses**

- Globally expanding supply capacity centering on growing automotive industry, in areas close to customers

- **Targets:**
  - PP compounds, performance polymers

- **Supply capacity:**
  - Building new plants, production capacity increase, establishing JV, M&A

- **Candidate areas for additional/expanded sites:**
  - India, Southeast Asia, China, Europe, Russia, US, Mexico, Brazil, etc.

**Current business scale (2015): ¥300 billion**

**Target business scale (2020): ¥420 billion**

- **Current plants & sales sites**
  - PP Compounds: Plant/sales
  - PP: Sales
  - Performance Polymers: Plant/sales
  - Performance Polymers: Sales

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*AMS: Automotive solutions*
Automobiles and Aircraft (Mobility)

<table>
<thead>
<tr>
<th>Automobiles, Aircraft (Mobility)</th>
<th>Current business scale (2015): ¥300 billion</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Target business scale (2020): ¥420 billion</td>
</tr>
</tbody>
</table>

- Combining/integrating materials and process technologies in each business domain, to contribute to lighter weight, more environment-friendly automobiles and aircraft

**Combination, Integration, Providing Solutions**

- Replacing metals with high-performance engineering plastics in growing aircraft market (high fuel efficiency/lightweight)
- Combining matrix resins and additives in the High-Performance Products Domain with carbon fibers to introduce distinctive, complex products in growing markets

- Combining carbon fiber and high-performance engineering plastics (PC, nylon, and super engineering plastics) to introduce thermal plastic composites for aircraft manufacturers, etc.

**High-Performance Chemicals Domain**

**Carbon Fiber and Composite Materials Division**
Packaging, Labels, Films

Global Market for Plastic Films and Sheets

- The global market value is about ¥14 trillion (2020 forecast*1), a growth rate of 2.4%/year. Performance film market occupies 1/3 of this market.
- The growth forecasts are as follows: Performance PET films: 4.7%; barrier films: 3.5%*2;

Applications of plastic films and sheets (2020)*1
*1Based on data by Fuji Chimera Research Institute, Inc. (2016)
*2Based on TSC Forecast Vol. 2 by NEDO

Global Demand for Performance PET Films

- Food and medical products
  - Food loss problems (Longer product life and longer shelf life)
  - Home-meal replacement and individual meals
  - Safety and security (traceability)
  - Child resistant and senior friendly (pharmaceuticals)

- Packaging
  - Environmental-load reductions, renewable resource utilization
  - Multi-function, high-performance
  - Smart packaging and sensor films

- Realizing longer product life and longer shelf life by barrier performance
- Development of performance films by combining technologies (high gas barrier, transparency, easy peel, low moisture permeability, etc.)
- Release films for medical, automotive, and industrial use
- Products using renewable resources

Growth Strategies for the New Mitsubishi Chemical Group

THE KAITEKI COMPANY

23
Packaging, Labels, Films

Taking advantage of diverse technologies held in the group, utilize them to various applications.

Core Technologies in the Group

- Polymeric material design
- Sheeting
- Surface modification
- Compounding

Functions

- Multilayer control
- Separation
- High gas barrier
- Control of porous structures
- Biomass

Examples

Food

- Multilayer co-extruded film DIAMION
- Easy peel
- Label liner

Industry, Medical

- SiOx vacuum coated high gas barrier film TECHBARRIER
- High-barrier bottles using DLC* technology
  *Diamond-like-carbon

- Moisture transmission film KTF
- Bio-based film and sheet Ecoju
Packaging, Labels, Films

<table>
<thead>
<tr>
<th>Packaging, Labels, Films</th>
<th>Current business scale (FY2015): ¥180 billion</th>
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<tbody>
<tr>
<td></td>
<td>Target business scale (FY2020): ¥230 billion</td>
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**Enhancing Overseas Development**

- Establishing overseas plants and sales sites centering on food packaging and medical packaging
- Expanding business in the high-performance film market in Europe and the U.S., and in the growing Southeast Asian market

- Taking advantage of polyester film sites in Europe and the U.S., produce made-in-Japan quality high-value-added products, while considering M&A and other measures

- Priority areas: High-barrier food packaging (DIAMIRON, SOANOL), labels, medical, cards, liquid detergent (Hi-Selon)

- Establishing plants and sales sites for the growing Southeast Asian markets including food packaging, etc.
  - High-barrier food packaging films
  - PTP packaging

- In Asia, producing high-performance films and labels, which require Euro-American production technologies.
**Global Display Market**

Display market will remain firm toward 2020. In the smartphone panel market, OLED demand will grow.

**Display Panels (Overall)**

- Market scale (¥ trillion)

**Smartphone Panels**

- Market scale (¥ trillion)

**Trends**

- High definition
- Long life, energy saving
- Thin, light
- Flexible, foldable
- Increase in size
- Price reduction

**Technologies, Products, Solutions**

- Thinner due to combination of materials and technology (adhesives, coating technology)
- Shorter processes and cost reduction for customers due to combination and integration
- Providing plastic materials that are lightweight and flexible
- Higher quality due to high color saturation and high-definition chromatic material technology

Source: 30th HIS Display Japan Forum (January 2016)
**IT, Electronics, Displays** (Incl. 3D printers, robotics)

<table>
<thead>
<tr>
<th>IT, Electronics, Displays</th>
<th>Current business scale (FY2015): ¥220 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target business scale (FY2020): ¥300 billion</td>
<td></td>
</tr>
</tbody>
</table>

**Electronics and Display Domain**

- Wide-range of business development in the display market
- Consolidating major display-related businesses in the Electronics and Display Domain and realizing speedy response to technology innovation in the market by strengthening market access and accelerating R&D

**Components**

- Polarizer
- Color filter
- Liquid crystal cell
- Brightness enhancement film

**Materials**

- CLEAFIT (MPI)
  - Optical clear adhesive sheet
- OPL Film (NSCI)
  - Optical PVOH film
- Color Resist (MCC)
- DIAFOIL (MPI)
  - Optical biaxially oriented PET film
- SHINKOLITE (MRC)
  - Light guide panel for LCD backlighting
- LUMILEX (MPI)
  - Optical reflective sheet

**Process**

- Release film for surface protection
- Protection Panel
- OCA
- Touch Panel
- OCA
- Release film
- Retardation film
- Glass substrate
- Glass substrate
- Retardation film
- Release film
- PVOH
- PVOH
- Release film
- Prism sheet
- Diffuser plate
- Light guide plate
- Reflective plate
Growth Strategies for the New Mitsubishi Chemical Group

IT, Electronics, Displays (Incl. 3D printers, robotics)

Growth through R&D and Innovation

- Corresponding to expansion of LCD and OLED markets by adjusting and integrating materials
- Developing high-performance materials and components for growing robotics and 3D printer markets

Displays

- Integrated material for LCD color filter
- Corresponding to high quality vapor deposition process, develop new credible, low out-gas bank material and also develop high-performance film in near the future

Robotics

- Estimated market size (FY2020): ¥150 billion (Driving parts, sensors)

- Structural materials
- Exterior materials
- Battery

- Lightweight and highly rigid composite materials
- Functional soft materials
- High energy density battery

3D Printers

- Estimated market size (FY2020): ¥150 billion (Prototype filament, powder)

- Filaments
  - Improve high dimensional accuracy
  - Improve manufacturing speed, etc.

- A prototype using NSCI's polyvinyl alcohol related filament as support. White part dissolve in water and colored part become the product.

IT, Electronics, Displays

- Driving parts
  - Materials for soft actuator
  - Organic print sensors, materials for RFID tags

- Sensors
  - Organic print sensors, materials for RFID tags

R&D area

- High-performance filament, ink, and powder
  - High-dimensional accuracy
  - High transparency and high heat-resistant

Mitsubishi Chemical Holdings
Percentage of water volume actually supplied, compared to estimated water demand from land use (comparison ratio of cumulative water use volume and demand volume)

Percentage of water volume actually supplied, compared to estimated water demand from land use (comparison ratio of cumulative water use volume and demand volume)

Increasing water demand, increasing needs for safe water

Strengthening regulations on waste water

Energy saving

CO₂ reductions

Providing various solutions related to water treatment
- Livestock wastewater treatment
- Sewage treatment
- Groundwater membrane filtration systems
- Home-use water purifiers (Cleansui)

Proposing plant factory systems in areas that are water-stressed or have limited sunlight

Lithium-ion battery materials

Asia and west coast of North America are highly water-stressed.

Global Lithium-ion Battery Market
Expecting 25% annual growth by Fiscal 2020

Source: National Institute for Environmental Studies News, 29, 3

Source: HIS (2016/05/22) MCC estimation based on B3 data
Environment, Energy

Current Business Scale (FY2015): ¥110 billion
Target Business Scale (FY2020): ¥170 billion

Strengthening Market Access (Consolidation)

- Aggregate water- and separation-related businesses in the Environment and Living Solutions Division

Combination, Integration, Providing Solutions

- MCC: Ion-exchange resins, Plant factory systems, Zeolite membranes
- MPI: Plant factory systems, Agricultural materials, Feed tank, Air-conditioning tower, Piping materials
- MRC: Membranes, MBR, Flocculants, Water treatment engineering, Home-use water purifiers, CO₂ enriched water systems, Groundwater membrane filtration system

Solutions

Separation materials
Tank/Tower
Plant factory systems
Zeolite
Water treatment chemicals
Membrane module

Apply know-how of B to C and IoT

Targets

Eating and Drinking

- Developing fully artificial light-type plant growing systems and sunlight type plant factories in areas that are water-stressed or have limited sunlight
- Livestock wastewater recycle system (phosphorus and protein recovery)

Living

- Provide solutions to housing equipment/kitchen manufacturers – overseas development

Energy

- Development of bioethanol by sugar producers
Lithium-ion Battery Materials

Target market scale (2020): ¥200 billion

Target Business Scale (FY2020): ¥70 billion

- Amid intensifying competition, aiming for growth through measures including alliances with competitors

- Responding to sophistication of demand characteristics by developing high-performance additives for electrolytes and high-performance anode materials made from natural graphite

- Outsourcing R&D in next-generation battery materials to LIBTEC, etc.

- Targeting large-size battery market including xEVs, ESS, vessels, etc., which require high-quality, advanced technologies, expand business by maximizing technology capabilities

Growth Strategies for the New Mitsubishi Chemical Group

Environment, Energy

Improving Productivity and Efficiency

M&A, Alliance

- Amid intensifying competition, aiming for growth through measures including alliances with competitors

Source: Battery Technology Roadmap 2013 by NEDO
Global Pharmaceutical Market*1
Market growth at more than 5% annually toward 2022

Global Orthopedic Implant Market*2
Estimate market growth at 5% - 10% annually

Meditical, Food, Bio Products

Trends

Market
- Super-aged society
- Controlling increasing medical costs
- From “cure” to “care”
- Expansion of home care

Product and technology
- Biocompatible materials
  - Implant plastic materials
  - Bioabsorbable materials
- Minimally invasive and non-invasive treatment
- Expansion of biopharmaceuticals
- Drug delivery systems

Technologies, Products, Solutions

- Reduction of the burden on the body by reducing weight (implant, etc.)
  - Biocompatible engineering plastics
  - Carbon fiber composite products

- Responding to diversifying needs
  - Infusion bags with thermoplastic elastomers
  - Easy extrusion PTP sheets
  - HPMC capsules

- Refining of biopharmaceuticals
  - Agents for ion-exchange separation

- Minimally invasive self-medication
  - DNA chips
  - CO₂ enriched water systems
Medical, Food, Bio Products

- Developing products and solutions that respond flexibly to various medical needs

Examples of Products and Solutions in Medical Settings

- Infusion bags, tubes
- Tablets, capsules
- Tablets, capsules
- HPMC capsules
- PTP sheets for tablets and capsules
- Implant materials
- Biocompatible engineering plastics
- Separators for skin patches
- Polyester film based release liners for transdermal patches
- Capsule coating
- Biocompatible engineering plastics
- CO2 enriched water systems
- X-ray scintillator screens
- DNA chips
- Home medical care
- Diagnostic imaging
- Self-medication

Growth Strategies for the New Mitsubishi Chemical Group

Mitsubishi Chemical Holdings
## Medical, Food, Bio Products

### Medical

| Current business scale (FY2015): ¥50 billion*  *Incl. QKK  
| Target business scale (FY2020): ¥100 billion |

#### Strengthening Market Access (Consolidation)

### Focusing on target markets and aiming for intensive growth

<table>
<thead>
<tr>
<th>Pharmaceutical materials</th>
<th>Packaging materials</th>
<th>Implant material</th>
<th>Medical equipment and devices</th>
</tr>
</thead>
</table>
| Capsule for pharmaceuticals  
| API  
| Tablet coating agents | Infusion bag materials  
| PTP sheets for tablets and capsules  
| Syringe materials | Biocompatible engineering plastics | X-ray scintillator screens  
| CO2 enriched water systems | DNA chips |

| Synergy with QKK | Product development with high barrier and multilayer technologies in the High-Performance Film Domain and synergy between MTPC (CMC Division) | Compounding high-performance engineering plastic and carbon fiber composite material | De facto in a niche market |

#### Combination, Integration, Providing Solutions

- Replacement from metals to in vivo compatible plastic materials  
  (Weight saving, lubricity)

#### Biocompatible engineering plastics

- Hip joint (PE)  
- Knee joint (PE)  
- Spinal cord (PEEK)
**Food and Bio Products**

**Current Business scale (FY2015):** ¥30 billion  
**Target Business scale (FY2020):** ¥50 billion

---

### Combination, Integration, Providing Solutions

With MFC’s lactic acid bacteria *Lacris* as a core material, develop intestinal flora-related domains, collaborate with internal and external diagnosis business in health care field, expand high-performance materials (nutrition/disease protection) in feedstuff and livestock field, and strengthen business.

### Strengthening Overseas Development

Expanding business scale by providing solutions relating to sugar ester formulation for the growing processed food market in China and ASEAN countries

---

**Market expansion of cakes and confectionery**

<table>
<thead>
<tr>
<th>Year</th>
<th>China</th>
<th>ASEAN</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Approx. ¥3 trillion</td>
<td>Approx. ¥1 trillion</td>
<td>Approx. ¥2 trillion</td>
</tr>
<tr>
<td>2016</td>
<td>¥5-6 trillion yen</td>
<td>Approx. ¥2 trillion</td>
<td>Approx. ¥2 trillion</td>
</tr>
</tbody>
</table>

**Enhancing overseas sites**

**Aiming for developing business profitable in the feedstuff sooner!**

- **Keiyo Plant Engineering Co., Ltd.**  
  Machinery and materials related to livestock production
- **Environment and Living Solutions Domain**
- **MFC (Lacris)**
- **Sermas Co., Ltd.**  
  Test design, develop contacts with livestock industry
- **Chiba Univ.**
- **R&D Division**
- **Riken, etc.**
- **RIKEN, etc.**
- **MFC and other 16 companies**
- **Healthcare**
- **Feedstuff and livestock**
- **Heat treatment (MAFF’s project)**

**Demand increase in formulation of sugar ester**

**Realizing quality food — Fluffy texture**

**Shift to technologies and systems established in Japan**
World's No.1 supplier with about 40% global market share

Implementing MMA project in the Middle East (SAMAC project) on schedule
- Constructing MMA plant (250kt/y) and PMMA plant (40kt/y) in Al Jubail (Ibn Sina) with SABIC
- Realizing the world's largest MMA production capacity with the new ethylene process (Alpha technology) using ethane-based ethylene
- Commercial operation: Scheduled for July 2017

Locations of SAMAC Project

MMA Production Sites and Shares by Region

*North American project using shale gas is under review.
Fundamental Materials: Petrochemicals

Aiming for maximizing business value by completion of business structural reforms and building a strong business foundation

Development and sales expansion of high-value-added products

Performance PE/PP: Improving the high-value-added product ratio by developing products having new functions
  - PP 45% (2015) → 55% (2020)
  - PE 50% (2015) → 60% (2020)

Development and sales expansion of high-value-added monomers

Utility reform

Regional energy cooperation initiatives by taking advantage of liberalized electric power policies
  - Power interchange between electrical power company and different type of businesses
  - Reuse of idle equipment

Technology licensing

Refining owned technologies, and proactively developing licensing business
  - AA/AE/emulsion, BPA/PC, PP polymerization, DTP, BtoB, etc.

Utilization of unused fractions

Improving added value by utilizing unused fractions and derivatives
  - Effective use of by products and derivatives, strengthening the chain of derivatives, etc.
## Fundamental Materials: Petrochemicals

### Strengthening businesses by continuous structural reforms

<table>
<thead>
<tr>
<th></th>
<th>APTSIS 10</th>
<th>APTSIS 15</th>
<th>APTSIS 20</th>
<th>Thereafter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic petrochemicals</strong> (raw materials, Utilities)</td>
<td>Fuel conversion</td>
<td>Complex alliances</td>
<td>Unification of naphtha crackers at Mizushima</td>
<td>Utility Alliances</td>
</tr>
<tr>
<td><strong>Cracker structural reforms</strong></td>
<td></td>
<td></td>
<td>Completion of cracker structural reforms</td>
<td></td>
</tr>
<tr>
<td>● Aromatics alliances</td>
<td></td>
<td></td>
<td>Refinery alliances</td>
<td></td>
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<tr>
<td>● Unification of Naphtha crackers at Kashima</td>
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<tr>
<td><strong>Polyolefin</strong></td>
<td></td>
<td>Production optimization (Reorganization of production lines)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>● PE/PP: Optimization of production system</td>
<td></td>
<td></td>
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<tr>
<td><strong>Basic chemicals</strong> (derivatives)</td>
<td></td>
<td>Setting up EO center</td>
<td>Enhancing derivatives business (chain)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Restructuring of caustic soda and VCM</td>
<td>Cooperation with other business domains</td>
<td></td>
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<tr>
<td></td>
<td>Withdrawal from unprofitable derivatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Withdrawal from PTA (India, China)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Withdrawal from PTMG (China)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Common issues</strong></td>
<td>Development of high-value-added products, technology licensing</td>
<td>Utilization of unused fractions</td>
<td>Strengthening plants</td>
<td></td>
</tr>
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<td></td>
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</tbody>
</table>

● Measures
● Restructuring, downsizing, suspension

Mitsubishi Chemical Holdings
Establishing Regional Headquarters

- Toward attaining 50% of the new MCC Group overseas business ratio in fiscal 2020 from currently 44%, accelerate overseas business expansion
- Establish Regional Headquarters “RHQ” in global 4 areas to support each regional business to achieve overseas business growth and the enhancement of profitability.
- Identify important markets and promote cross-business marketing activities in each area.

**RHQ’ Functions**

- **Marketing**
  - Promote cross-company marketing activities to strengthen market access.
  - Provide services to customers through technical support.
- **R&D coordination Technology scouting**
  - Promote business development and R&D activities in cooperation with the head office in Japan.
  - Strengthen access to external resources such as venture companies, academia, public organizations.
- **HR**
  - Career management system, succession planning.
  - Training programs, recruitment of excellent staff, etc.
- **EHS product stewardship**
  - Establish EHS standards through information sharing and introducing best practices throughout the group.
  - Safety audit and product stewardship.
- **Administration, others**
  - Implement a consolidated tax system in the U.S.

**Focus Markets**

- **Automobiles/aircraft (mobility)**
- **Packaging, labels, films**
- **IT, electronics, displays (3D printers, robotics)**
- **Environment, energy**
- **Medical, food, bio products**

**Mitsubishi Chemical Americas**
- Mitsubishi Chemical America, Inc.
  - New York, Greer (SC), Charlotte (NC)

**Europe**
- Mitsubishi Chemical Europe GmbH
  - Düsseldorf, Wiesbaden

**Asia Pacific**
- Mitsubishi Chemical Asia Pacific Pte Ltd
  - Singapore

**China**
- Mitsubishi Chemical (China) Co., Ltd.
  - Shanghai

Focus Markets:
- Packaging, labels, films
- Environment, energy
- Medical, food, bio products
- IT, electronics, displays (3D printers, robotics)
- Automobiles/aircraft (mobility)
After integration of 3 chemical companies, increase management effectiveness by rechecking the way to conduct all works and avoiding the waste (recheck and streamline all works, expenses, organizations)

- ¥15 billion of productivity improvement in 2020 by the integration

<table>
<thead>
<tr>
<th>Portfolio transformation</th>
<th>Integrating 56 SBUs into 26, executing portfolio reforms in each SBU, and enhancing efficiency of management operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquidation and integration of about 400 affiliates into about 300 affiliates</td>
</tr>
</tbody>
</table>

**Productivity Improvement**

- Utilization of internal and external technologies and information
- Accelerating the development and improving the level of achievement by strengthening management with stage gate processes (utilization of IoT and AI)

**R&D**

- Reduction in troubles, plant automation, technology and safety information, sharing best practices

**Plant**

- Cost-effective procurement based on the range of procurement, strategic procurement by function (specialties — mass production materials), strategic procurement overseas
- Supply chain optimization, streamlining of logistics, cost reductions of logistics overseas

**Procurement & logistics**

- Improving efficiency of business and corporate management by integrating key systems
- Enhancing global communication
- Simplifying operations, advancing use of data (use of big data)

**IS**

- Promoting health management
- Revising work styles, promotion of diversity
- Payment of consolidated tax in the U.S., review of insurance, cash pooling, etc. (about ¥4.0 billion/year)
- Asset light

**Corporate, others**
Agenda

1. Toward Accomplishing the Medium-term Management Plan APTSIS 20
   - Progress in Fiscal 2016
   - Action Plans
2. Growth Strategies for the New Mitsubishi Chemical Group
3. Management System of Mitsubishi Chemical Holdings
4. Toward Realizing KAITEKI
Independently formulating medium-term strategies and more effectively monitoring of the medium-term management plan by enhancing the Corporate Strategy Division, to accelerate growth strategies

Establishing the Emerging Technology and Business Development Office to identify cutting-edge technologies including IoT, enhancing business competitiveness by utilizing these technologies and ties with external institutions, and promoting new business incubation
Emerging Technology and Business Development Office: Plans for ICT and AI Utilization

- Utilizing ICT and AI including new sensors and analysis technologies in production, quality, R&D, business, and services, aim at productivity improvement, safety, shorter R&D period, and new business incubation
- Investment of 20 billion yen in 5 years and human resource development

**Common operation**

**Data**

- Predictive analysis
- Operation guide
- Robot
- AI

**Business domain**

**Digitalization, Utilization of AI**

- **Performance Products**
  - Apply AI for product development
  - Optimizing control from production to quality
  - Innovation of production technologies
  - Supply chain management
  - New business utilizing IOT

- **Industrial Materials**
  - Further sophistication of plant predictive control
  - Estimation of equipment/facility lifetime and cycle of scheduled maintenance
  - Optimal utilization of energy

- **Health Care**
  - Drug development and sales utilizing ICT
  - Comprehensive diagnose supported by AI
  - Advancing medical examination
  - Healthcare and medical ICT

**Efficiency**

**New product/business**

**Quality improvement**

**Safety**

**Efficiency**

**New healthcare business**

**Next-generation medical care**
Agenda

1. Toward Accomplishing the Medium-term Management Plan APTSIS 20
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2. Growth Strategies for the New Mitsubishi Chemical Group
3. Management System of Mitsubishi Chemical Holdings
4. Toward Realizing KAITEKI
Process of Enhancing Corporate Value

Promoting enhancement of corporate value through KAITEKI Management

Enhancing corporate value

Value creation

Materiality Assessment

Macro trend Analysis
(Paris Agreement, SDGs, etc.)

APTSIS 20

<Management policies and measures>
- Growth strategies
- Reinforcement of business infrastructure
- Pursuit of efficiency
- Capital efficiency
- Innovation
- Sustainability

<Decision criteria for corporate activities>
- Sustainability
- Health
- Comfort

<Sources of corporate value>
- diversity of business
- technology platforms
- Health management (human capital)

<Results of corporate activities>
- MOE Index
- MOT Index
- MOS Index

<Disclosure>
- Annual security report
- Integrated reporting, etc.
Improving Corporate Value Assessment

- Establishing a virtuous cycle of improving corporate value assessment such as SRI, through deepening of KAITEKI Management

SRI Assessment Improvement in FY2016

- The score improves every year
- The percentile ranking has also improved
- Yearbook member (2015)

- The score has improved by 25%

- Continue to be a component

- The ranking has improved to 36th

*1. In November 2016, received environmental rating-based financing from Development Bank of Japan Inc. and earned accreditation for advancement of initiatives on environmental protection, and received special recognition as a model company.

*2. As of December 8, 2016