FY19-2 Creating New Customer Value through Innovations CEO Explanation



淡輪 敏 Tsutomu Tannowa Mitsui Chemicals Inc. President & CEO



Contents

- Business Performance
- Topics on Targeted Business Domains
- ► Topics on Sustainability
- Financial Overview
- Management Target for Sustainable Growth

For Sustainable Growth



0→1 MAKE IT HAPPEN

Fiscal 2019 marks the third year since Mitsui Chemicals put its 2025 Long-Term Business Plan, VISION 2025, into action. In this time, the global business environment has gone through major changes, ranging from U.S.–China trade tensions to what is said to be a once-in-a-century transformation of industry.

These harsh changes in the external environment have left Mitsui Chemicals unable to avoid some degree of slowdown in its business results. And we have been humble in taking this on board, pursuing a number of measures for the short term.

What is important, however, is that we accomplish our medium- and long-term goals – or in other words, portfolio transformation. This means following through with investments and new product and business development that we have put in place. And it means doing these things steadily, without wavering and based on the strategies we have established.

Meanwhile, issues with the global environment have grown more serious in recent years, giving the chemical industry an increasingly important role in bringing about a sustainable society. To fulfil this responsibility going forward, Mitsui Chemicals will endeavor to work as part of a global team aimed at solving a broad range of social challenges.

November 15, 2019 Tsutomu Tannowa





(JPY bn)

Results of 1H/FY19 and FY19 Outlook



△Denotes a minus

Profits down for FY19 due to worsening market conditions and accidents of facilities and typhoon

Items	FY2017	FY2018	FY2	019	Increase (Decrease)		
	Results	Results	1H Results	Outlook	FY17→FY18	FY18→FY19	
Sales	1,329	1,483	675	1,365	154	△ 118	
Operating income	103.5	93.4	34.5	84	△ 10	△ 9	
Non-operating income	6.7	9.6	△ 1.9	△ 5	3	△ 15	
Ordinary income	110.2	103.0	32.6	79	△ 7	△ 24	
Extraordinary gains/losses	△ 16.0	2.3	△ 9.3	△ 13	18	△ 15	
Net income*	71.6	76.1	11.8	42	5	△ 34	
Exchange rate (JPY/USD)	111	111	109	109	0	△ 2	
Domestic standard naphtha price (JPY/KL)	41,900	49,400	42,800	41,900	7,500	△ 7,500	

^{*}Net income refers to Profit attributable to owners of parent

Operating Income by Segment



△Denotes a minus

(JPY bn)

Soamont	FY2017 FY2018		FY2019			
Segment	Results	Results	1H Results	Outlook		
Mobility	42.3	42.7	19.8	41.0		
Health Care	10.8	13.6	6.0	14.5		
Food&Packaging	19.9	17.8	7.9	19.5		
3 Targeted Domains Subtotal	73.0	74.1	33.7	75.0		
Basic Materials	38.9	27.8	4.9	17.5		
Others	△8.4	△8.5	△4.1	△8.5		
合計	103.5	93.4	34.5	84.0		

Increase (Decrease)
FY18→FY19
△ 1.7
0.9
1.7
0.9
△10.3
0.0
△9.4

- Continued growth in targeted business domains despite economic slowdown
- Secured stable profit from crackers
- Profits down in Basic Materials due to significant fall in market conditions for phenol chain and plant troubles and natural disaster



(JPY bn)	FY15 Results	FY18 Results	FY19 Outlook	FY21 Target	vision 2025
Sales	1,344	1,483	1,365	1,670	2,000
Operating income (ROS)	70.9 (5.3%)	93.4 (6.3%)	84 (6.2%)	140 (8.4%)	200 (10%)
Net income	23.0	76.1	42.0	100.0	
ROE	5.8%	14.3%	7.5%	\rightarrow	10% or more
ROIC*	4.9%	6.0%	_	7.5%	8% or more
Net D/E	1.03	0.68	0.7	\rightarrow	0.8 or less
Total return ratio	34.9%	39.0%	30% or more	\rightarrow	30% or more

*ROIC : Return on Invested Capital = NOPAT/Invested capital

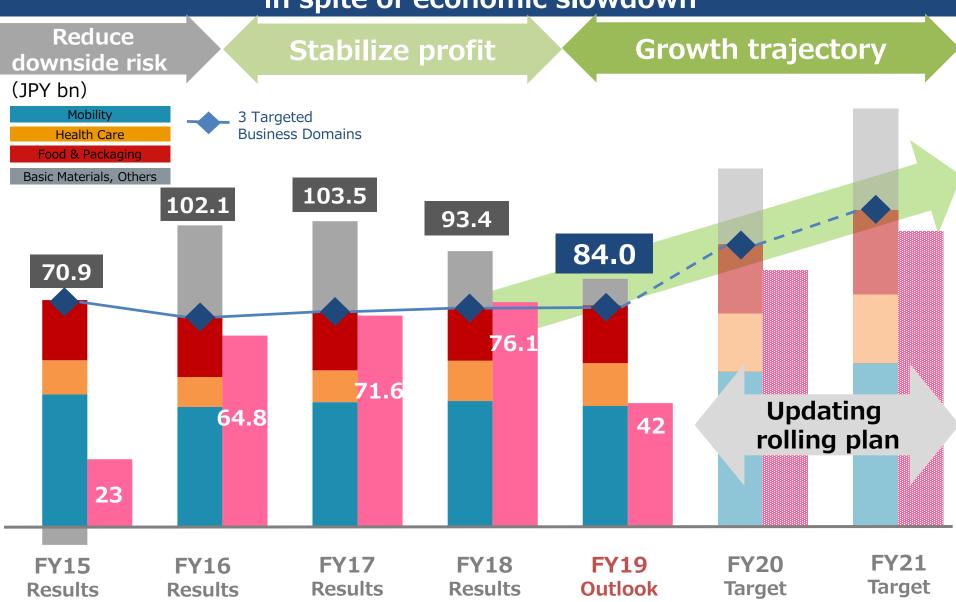
Mid-Term Management Targets

Operating Income





Secure stable profits from three Targeted Business Domains in spite of economic slowdown





Business Strategy

- **1** Expand 3 targeted business domains
 - Increase in investment themes
 - Including peripheral business area
 - Ensure production capacity to meet demand
- ②Accelerate development of new next generation businesses and new products
- **3 Further strengthen competitiveness of Basic Materials**
- Manufacturing
- **4** Enhance manufacturing technologies by utilizing IoT/AI
- **⑤**Ensure safety and enhance safety culture globally

- Management
- **6**Secure investment returns and improve inventory control
- **7** Enhance group-global management
- **®Promote ESG management**



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Mobility

Elastomers, Performance polymers, Performance compounds, Engineering plastics

3 Targeted **Business Domains**









Health Care

Ophthalmic lens materials, Nonwovens, Dental materials, Personal care materials

3 Targeted **Business Domains**









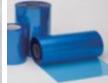
Food & Packaging

Packaging materials, Coatings Agrochemicals, Seeds

3 Targeted **Business Domains**

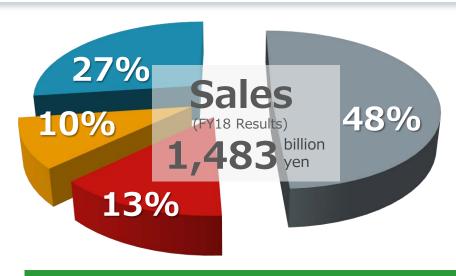








03



Next Generation

Energy, Medical, Agri-system, and **IoT Solutions**

Creation & Development









Basic Materials

Phenol, PTA/PET Polyolefin, Polyurethane, and others











Mobility

comprehensive strengths Provide solutions making full use of



Market Conditions for PP Compounds



Despite automotive production growth slowing down, shift to resin parts has helped maintain sales volume YoY

Automotive production for FY19

MCI-G's sales volume forecast for FY19

*Market estimates from IHS



North America

(Market: **▲**0.5%)

Growth #10%

 Maintaining sales despite strikes

Europe

(Market: ▲3.4%)

Growth +3%

 Start of full-scale efforts with European OEMs

Japan

(Market: ▲1.0%)

Growth Rate ±0%=

South America

(Market: +0.6%)

Growth +4%

 Strong production in Brazil

ASEAN+India

(Market: ▲9.8%)

Growth A 5%

- Sluggish production and exports in Thailand
- Sluggish sales in India

China

(Market: ▲9.0%)

Growth +4%

- Strong business with Japanese OEMs



Capacity Increase -Global Expansion-



New base in EU (ACE) Construction on track



- Rising need for light-weighting amid tightening environmental regulations
- Moving R&D capabilities to same area to help construct integrated system for production, sales and research

Steady progress toward eight global bases with 1,120 KTA capacity (FY2020)

Operations start in Japan, U.S. for long glass fiber reinforced PP



Background

- Growing needs for light-weight solution

Applications

- Metal replacement such as rear doors
- GFPA replacement
- PC/ABS replacement

Fast expansion driven by goodappearance and light-weight solution





Increase capacity for performance compound products

(Mitsui Chemicals Sun Alloys, Chiba, 5bn yen*)

*Including buildings

Increase capacity for Specialty TAFMER™ & ADMER™ (Nov.2021)



Specialty TAFMER™

- Growing demand as modifier for engineering plastics for replacing metal

ADMER™

- Growing demand for adhesive materials along with CASE trends

Increase capacity for **MILASTOMER™**

(Jan.2022)

Interior (Sheet skin) Weather strip Steering boots

Olefin

TPO Airbag cover

Vulcanized **TPS**

Interior (Injection molding skin) Door grip

Styrene

N-V TPS

Non-automobile application (Golf grips, etc.)

Non-vulcanized

TPV/TPS

- Growing demand as PVC replacement that minimizes bad smells from interiors and provides a sense of luxury
- Growing adoption of new line for use in oil-resistant boots

TPO

- Growing adoption due to more airbags being used



Mobility Project Schedule



Expand scope of investments in high-ROIC Mobility domain → accelerate growth

Mobility investment projects (partial list)		Capacity	Schedule for profit contribution					tion	Note	
		(KTA)	Stable growth			Accelerate growth				
		(KIA)	FY17	FY18	FY19	FY20	FY21	FY22		
	Increased capacity@India	10								
	Increased capacity@N.A	20							√Global top strategy in 8 global bases	
PP Compounds	Increased capacity@Mexico	10							✓Increase in automobile production ✓PP usage continues to increase along with	
rr Compounds	Increase capacity@India	12							lightweight needs	
	Increase capacity@Thailand	13								
	New base@Netherlands	30								
Long gloop fibor	Increase capacity@Japan	3.5								
Long glass fiber reinforced PP	New base@N.A	3.5							✓Establish 3-base global network ✓Expand resin parts	
reiiiioi ceu FF	New base@China	3.5							2 Dipulia resimpares	
	MILASTOMER™:Increased capacity@Japan	5								
D f	MILASTOMER™:Acquired TPS business	-								
Performance Compounds	MILASTOMER™:Increase capacity@N.A	6							✓Global expansion ✓Enhance solution capability	
Compounds	MILASTOMER™:Increased capacity@Japan	-							Emance solution capability	
	ADMER™:Increased capacity@Japan	-								
	Electrolyte: Increased capacity@Japan	5							✓Adopted by major LiB manufacturer in Japan	
LiB related materials	Electrolyte: Increased capacity@China	5							and China utilizing original additive technology Secure global standard position in LiB separator	
	HI-ZEX MILLION™: Increased capacity@Japan	1							material	
Elastomers	TAFMER™: Increase capacity@Singapore	25							√Secure global top share	
EldStomers	Specialty TAFMER™: Increased Capacity@Japan	-							Secure global top share	
Semiconductor materials	EUV pellicle: New facility@Japan	-							√Be a No.1 in cutting-edge area	
Lubricant oil materials	LUCANT™: New base@Japan	20							✓Expansion with Lubrizol	
	Acquired ARRK	-								
	Mobility Development Center	-							✓Offer total solution globally ✓Promote trend toward resin	
	Design & Solution Center	-							Chambre della towara resim	



Health Care

Provide products & services contributing to Quality of Life through chemical innovations



Expanding Vision Care Business



Bolster global No. 1 position with full range of refractive index and functional lens materials

Expecting to achieve record high sales for FY19

Further expansion in three target areas for FY20 and beyond



Needs

Need for good balance of optical properties along with strength

Topics

Searching for local collaboration partner to expand high-refractive lenses



Needs

Need for thinner and lighter lenses

Topics

Market share expanding with growing recognition of benefits of high-refractive lenses

India

China

Needs

Ongoing shift from glass to plastic lenses

Topics

Full-lineup strategy contributes to growing adoption

Accelerating feasibility study for capacity increase

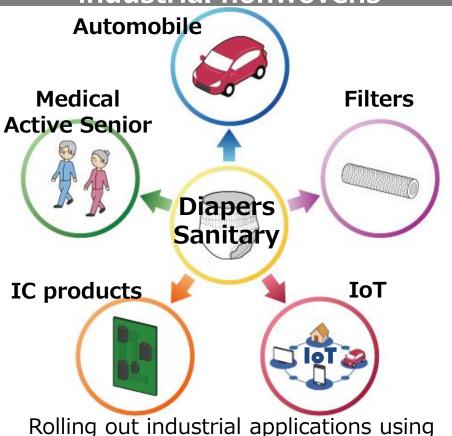




Increase capacity for nano-size nonwovens

(+75%, Yokkaichi, Jan.2020)





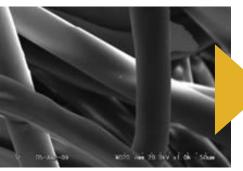
hygiene material technologies

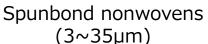
SYNTEX™ nano

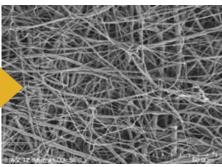
Refinement of semiconductor circuits

Needs

Refinement of filters







SYNTEX™ nano (100nm~900nm)

- Wide lineup of fine fibers
- Well-received flow rate quality

Expand electronics applications toward stronger nonwovens business portfolio

Accelerating New Product Development



New capabilities to iodine-based anti-mold agents YOHTOL™ DP-CD

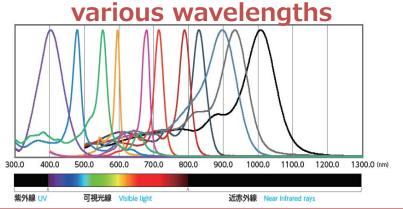
Improved functions by cyclo-encapsulating



Expand Personal Care business

Yamamoto Chemicals **Expand applications for** functional dyes

Dye lineup that selectively absorbs



Light conversion capability

Applications

*Filters that efficiently transmits only light of a specific wavelength

Band-pass filters* for ICT use

1 Luminous sensitivity filters

Start sales in FY19

24K/8K display color purity improvement filter

Start sales in FY20

Accelerate development of new products







Food &

Packaging

Provide solutions for world food problems, seizing new business opportunities

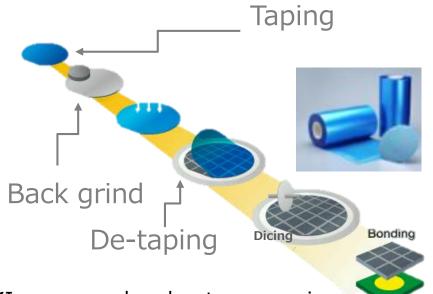




New base in Taiwan (Completed in Sep.2019)

Record high sales expected in FY19 despite semiconductor recession

World's No1 share protective tape used in semiconductor wafer back grinding



✓Increase sales due to expansion of high-performance grade and cultivation of new applications

✓Expand demand with start of

5G services after 2020

- Established in Taiwan, the greatest area of demand
- Increases capacity by 50%

*Capacity varies depending on the grade composition

Nagoya **2**Lines

Kaohsiung

Line(3.8Mm**)
Completion: Sep.2019



- √Capture the growing market
- ✓ Establish a stable supply system with multiple bases
- ✓Strengthen business in peripheral areas

Further capacity increase under feasibility study responding to strong demand and new application needs





Dinotefuran First shipment to Brazil



[Dinotefuran]

- Original structure ingredient that does not contain halogen in the molecule
- Can be used for various applications such as agrochemicals, household, and prevention of epidemics
- Registered in Brazil
- Started shipment to Brazil (Sep.2019)
- For sugar cane, soy beans, and coffee

New active ingredient

TENEBENAL™

Start operation



- Long-term commercialization contract with BASF
- Registered new category with IRAC*
- Registered in eight countries (inc. Japan, U.S., India, South Korea, ASEAN)
- Completed new plant at Omuta Works

*Insecticide Resistance Action Committee

Steady progress with global rollout and product development

New business in F&P domain



Bolster cross-organizational cooperation and create new businesses to maximize value chain

Recyclability

Ecological Packaging

Mono-material packaging, paper packaging

- ✓ Water-based polyurethane coating material with gas barrier properties: Takelac™ WPB
- ✓ Polyethylene base and sealant films: L-Smart[™], T.U.X[™]
- ∨ Water-based heat sealing material: Chemipearl™

Food Loss & Waste

Freshness Preservation Project

Freshness-preserving packaging based on scientific evidence

∨ Freshness-preserving film products: Spash™, PalFresh™, AdFresh™

Smart Food Consumption (SFC)

- ∨ Constructing a model to estimate best-before dates via sensor development and AI utilization
- ∨ Cutting down on distribution food loss via intelligent packaging

Film & Sheet

New Films and Sheets

Creating new themes for films and sheets

- ∨ Commercialization of Shape Memory Sheet
- ✓ Advancing new themes

Recycle Business

Plastic Waste Reduction Project

Material recycling for flexible packaging

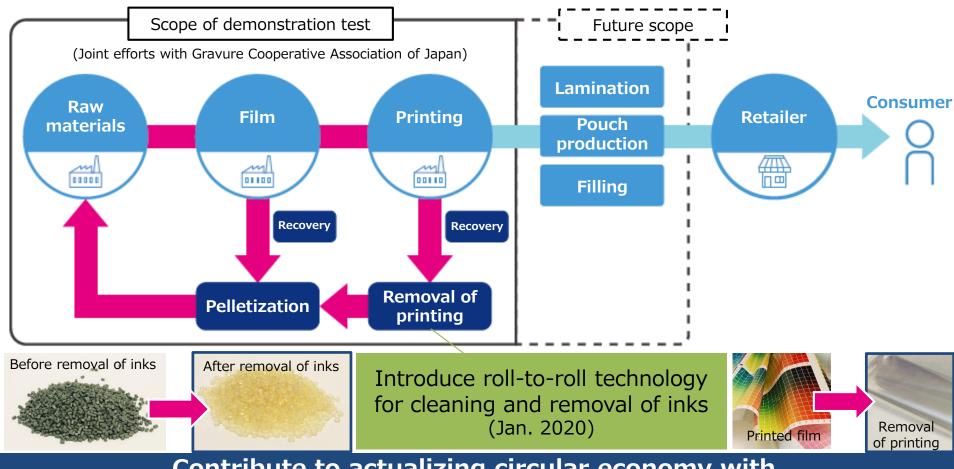
- ✓ Cutting down on industrial waste in packaging chain
- ✓ Completely removing printed inks from flexible packaging film to allow for recycling into new film





Start demonstration test for material recycling to cut down on waste plastic in packaging chain

Recycling plastic waste generated from film production and printing processes for use in new packaging film



Contribute to actualizing circular economy with proposal of mono-material packaging



Business **Next Generation**

Create solution & system businesses at the boundary or peripheral areas





EnergySolutions



Solar power generation and diagnostics business

- ✓Diagnosis accounts over 4GW
- **√Orders doubled due to end of FIT**
- ✓Enter certification business in India (Dec. 2019)

Medical Solutions



Rapid bacteriological identification system

- ✓ Provide re-agent for research
- √ Overseas deployment (Singapore, EU)
- √ Selected for AMED's ACT-M scheme

Agri Solutions



Advanced cultivation system (iCAST™)

√ Good field test results and good evaluation at large-scale farmers in US and Australia

IoT Solutions



Piezoelectric material for next generation display sensor

✓ **Application development for piezoelectric materials**✓ Customer evaluation on transparent-PI for OLED

Corporate Venturing



Open innovation & CVC

✓Joint development of new models for surgical practice (Good Design Award 2019)
✓Start collaboration with Plug and Play



Accelerate collaboration with customers on piezoelectric sensor materials

(Organic sensor materials for detecting pressure, vibration, impact, and distortion)

Piezoelectric film µFLEX™

μFLEX™

Murata Manufacturing

PicoLeafTM Touchleaf



Piezoelectric line PIEZOLA™



Applications

Sensing for nursing bed



Non-invasive heartbeat and respiration sensors



- -Sensors for detecting pressure, bending angle
- -Thin multifunctional touch panel for smartphones



New models for surgical practice

Expand adoption in ICT and healthcare sectors

PIEZOLA"



asic Materials

the basis of society and industry Provide materials for



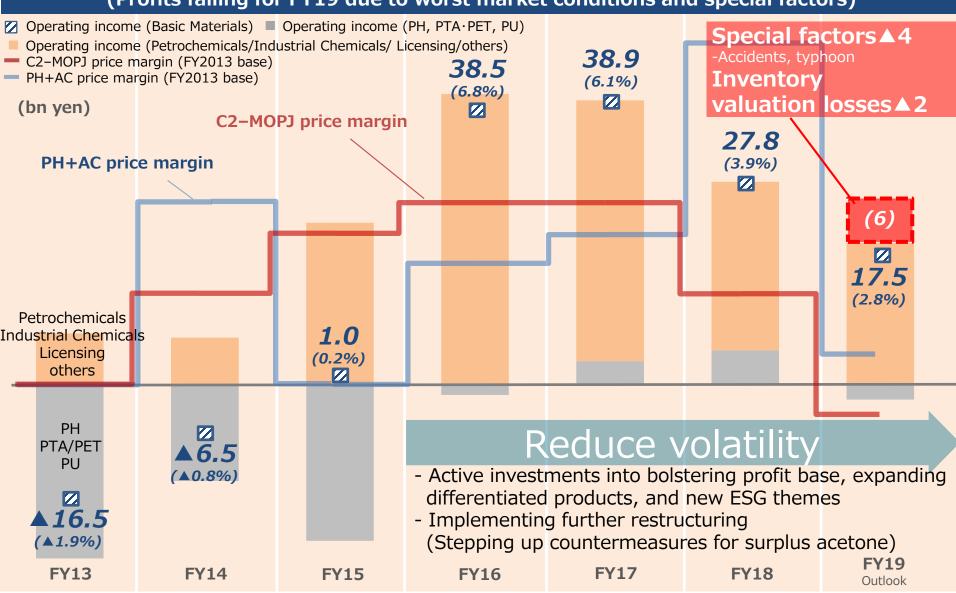


Building Stable Profit Base



Reduce volatility through restructuring

(Profits falling for FY19 due to worst market conditions and special factors)



ICT material business development project



Strengthen cross-organizational ICT marketing Expand existing businesses and create new businesses

	Mobility	Health Care	F&P	Next- gen	Basic Materials
Semi conductor	MITSUI PELLICLE™ Dust-proof cover	SYNTEX™ nano Filter	ICROS™ Tape Process tape for semiconductor		Special gas Silane, Disilane
conductor Display Display	TPX TM Reflective film PROVEST TM Reflective parts for LED	TouchFocus™ Next-gen. glasses Functional Dye Color filter	STRUCTBOND™ Sealing material for LC and OLED	ECRIOS™ Transparent polyimide	
	APEL™ Lens material	Functional Dye Color filter		µFLEX™ PIEZOLA™ Piezoelectric materials	
project Electronic materials	ARLEN™ Modified polyamide 6T		SP-PET™ Film for MLCC Opulent™ Heat-resistant release film	formation and Commu	

ICT: Information and Communication Technology



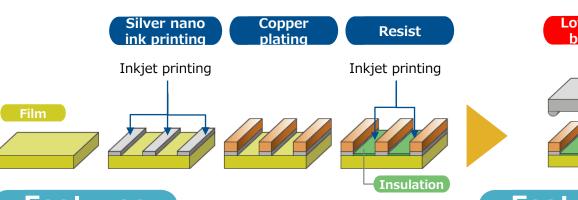
Strategic partnership with **Elephantec** (Oct.2019)

Startup in functional printing **Bringing into Nagoya Works**(Sep.2020)

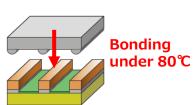
Strategic partnership with ConnecTec Japan (Nov.2019)

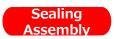
Semiconductor packaging OEM startup with technology for low-temp., low-pressure packaging

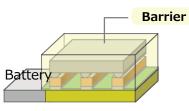
Elephantech



CONNECTEC JAPAN







Features

✓Forms electronic circuits by inkjet only where needed (saves resources and energy)
✓Functional printing like biosensors

Features

- √Possible to use heat-sensitive base films and chips by enabling low-temp. bonding at less than 80°C
- ✓Damage-free bonding

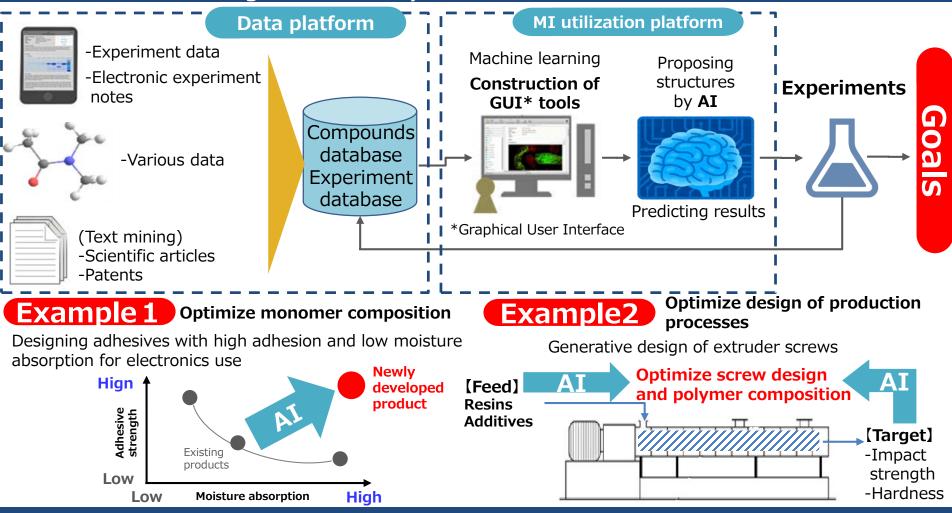
Accelerate new ICT material development in collaboration with innovative process technology startups

Digitalization of R&D – Materials Informatics (MI)



Promote digitalization of R&D process using AI

- Launched MI Development & Promotion Dept. in Nov.2018
- Training 40 data analysts for FY19



Use cases and scope of application are rapidly expanding, driving R&D efficiency

Digitalization of Manufacturing - Next-Gen Factory

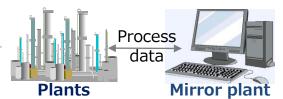


Advance foundational technology evaluation to help digitalize factories Build next-gen factories where people and machines work in harmony

Evaluation/demonstration of foundational technologies

Online simulator

AI operating guidance



- -Real-time simulation of entire plant in virtual space
- →Prediction and optimization

High-sensitivity camera for gas detection

Wearable camera

VR safety training

Eye tracking

Tablet for operation

Operator global communication

Operating support using wearable devices







Appearance inspection svstem

AI & soft-sensors quality prediction



Successful future quality prediction (20 min. forward) with an error of $\pm 3\%$

Anomaly detection using big data

Wireless sensor

Tablet for maintenance

Drone for inspection





Efficiency

analysis

Inter-

<u>م</u>

network

Quality

tenance Main-

> Move into trial stage at model plant after FY20 Training 40 data analysts for FY19



Making powered exoskeleton lighter



Power Assist International (Wakayama University venture)

Using plastic for structural materials and reducing number of parts to make for drastic reduction in weight



- **✓ Light-weighting and fewer number of parts**
- ✓ Proposed optimal form to allow for complex movements
- ✓ Proposed optimal designs to allow for easy equipping and removal

Sales launched in Oct.2018





Eyeing full-scale adoption

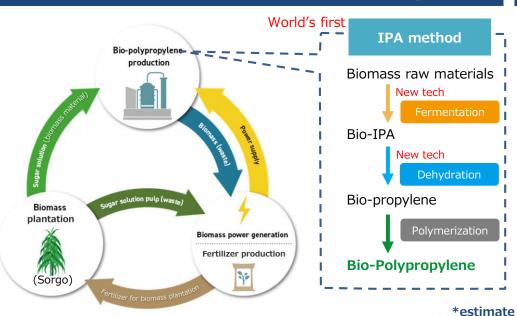


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World's first bio-PP project



Collaboration with UNEP

*United Nations Environment Programme

Plan to participate in "Low carbon, low waste" program to support **Asian innovative startups**





United Nations Land Tons Environment Programme Mitsui Chemicals Group

CO₂ emissions

Process

World's first

IPA method

Commercialization

Target

Per ton of

propylene A

2024

In 2030 **Target output**

100KTA

Adopted for MOE*-commissioned project (Sep.2019)



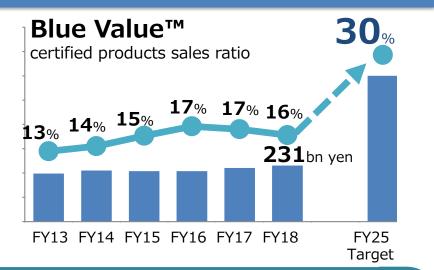


Blue Value™

Reducing CO₂

Conserving Resources

Coexisting with Nature



Contributing to "Coexisting with Nature"

ICROS™ Tape

(Water-based type)

Reduces environmental impact by not using toluene

GHG emissions (compared to existing products)

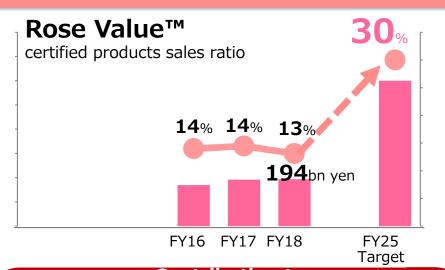
1/3

Rose Value™

Declining Birth Rate & Aging Population

Extending Healthy
Life Expectancy

Food Problem



Contributing to "Extending Healthy Life Expectancy"

SWPTM

(Polyolefin fiber with fibril structure) Adds filter functionality by controlling hole

diameter and adhesiveness



For clean water filters

Helps provide safe, reliable water via adsorption and removal of heavy metals and other harmful substances

For plasma filters

Compatible with plasma separation, contributing to advance of medical diagnosis technology



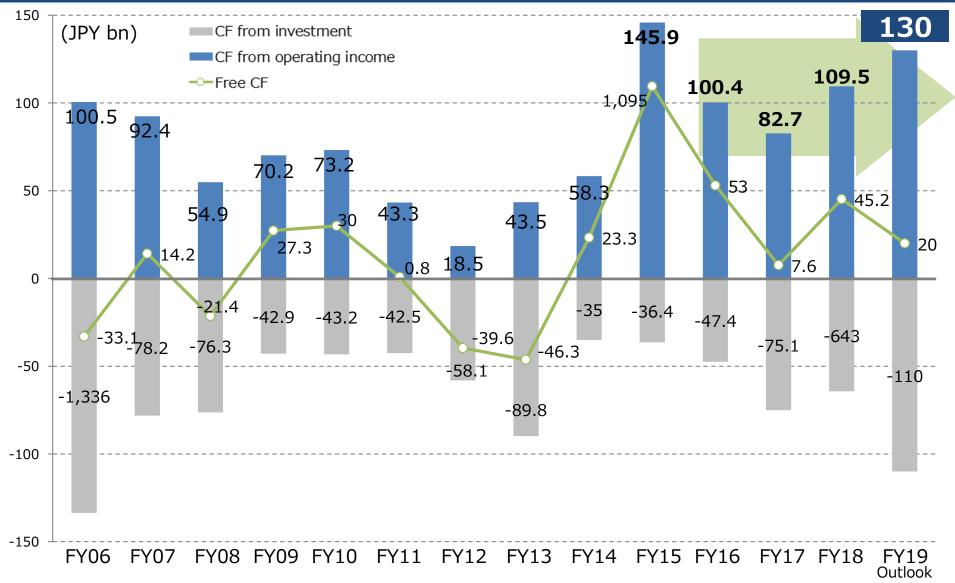
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Cash Flow

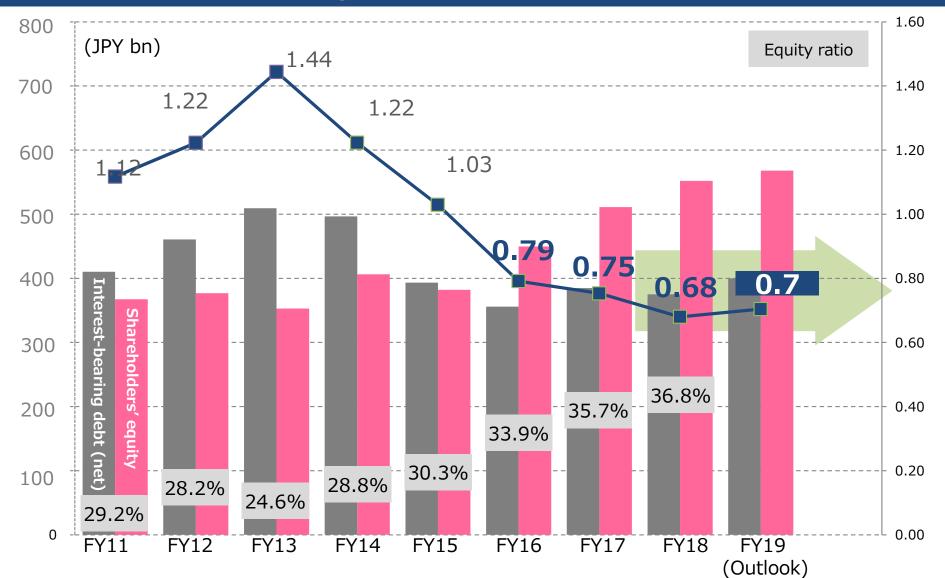


- Cash flow from operating income remains high
- Maintain active investment phase



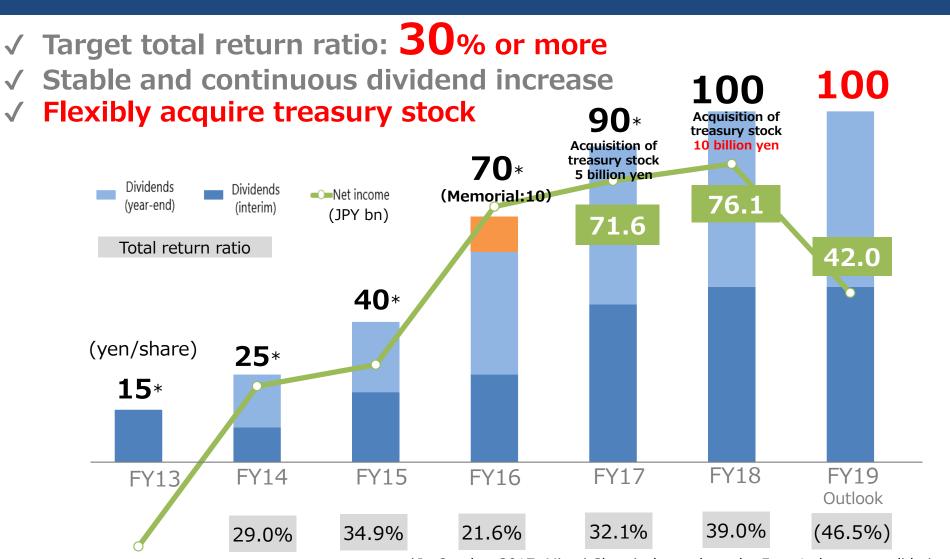


- Improve Net D/E and continue active investments
- Further enhance corporate value





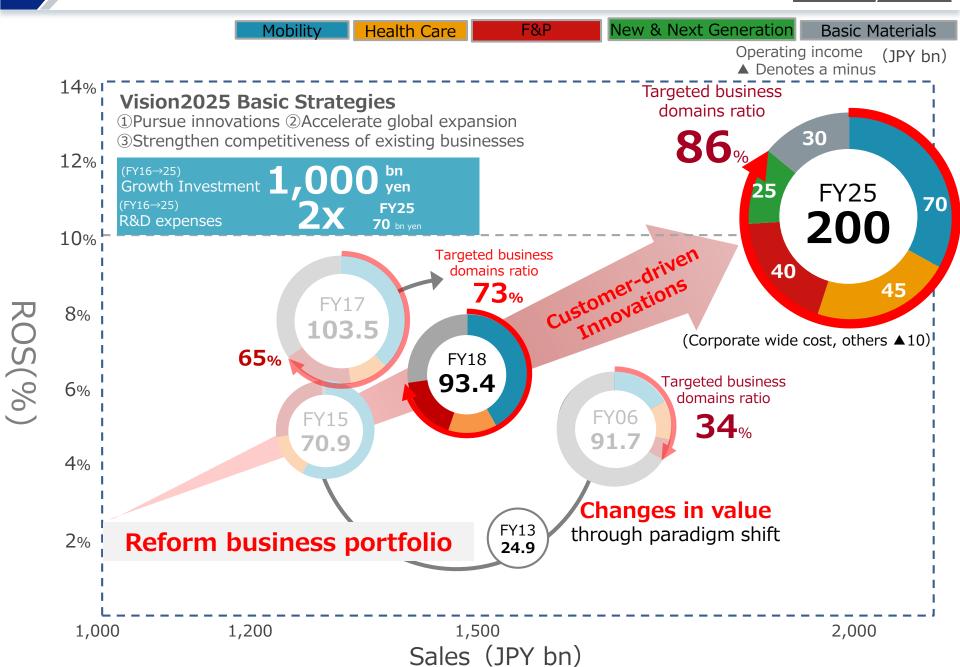
Sustain returns to shareholders for FY19



*In October 2017, Mitsui Chemicals conducted a 5-to-1 share consolidation. All dividends are re-calculated based on the share consolidation.

Targeted Position





Creating new customer value and solving social challenges through business activities



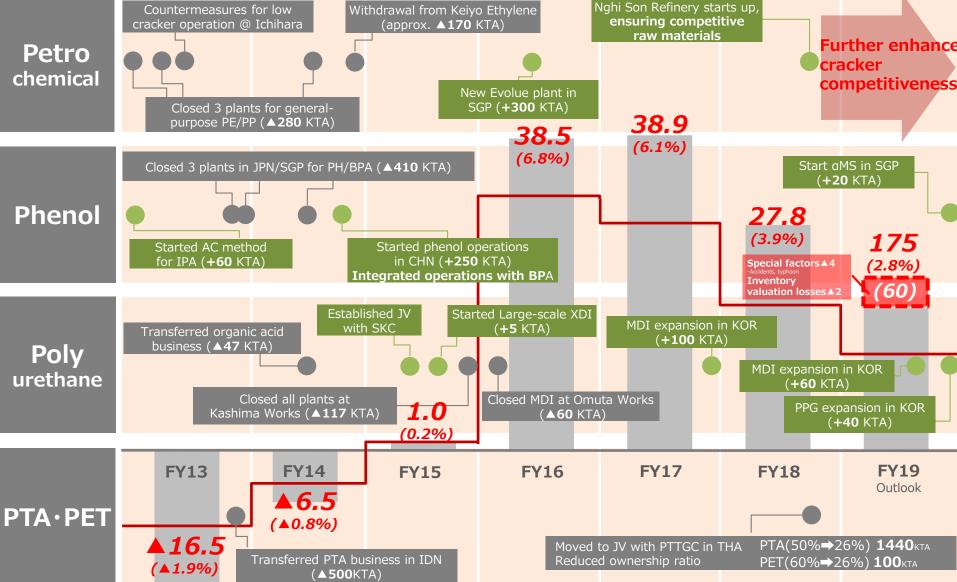


Build a Stable Profit Base

■Operating income(JPY bn) Mitsui Chemicals

—ROS(%) Nov 15, 2019

-Reduce volatility through restructuring-Establish stable profit base for around 30 billion yen







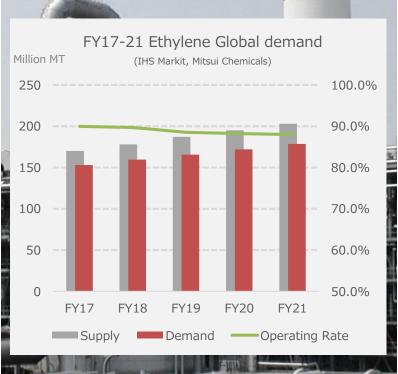
Reduce Volatility











Resistance to market fluctuation

Phenol, Polyurethane, PTA

Local production for local consumption

80%

√Restructure and establish sales strategies tailored to each region

Polyolefin, Phenol, Polyurethane, PTA

Formula-based pricing

70%

✓Establish sales strategies that are more resilient to market fluctuations

Preparing for impact of shale products

In-house ethylene consumption

80%

✓Export ratio is 10% or less

High value-added ethylene-based polymers

90%

✓Closed general-use PE plants

✓Expand high value-added polymers such as Evolue[™] and Elastomers

Reduce volatility and establish stronger profit base





Further Strengthen Cracker Competitiveness



Energy efficiency

New gas turbine facilities (30 MW, Osaka)

- ✓ Cut costs by improving proportion of private power generation and recycling waste heat
- ✓ Reduce CO₂ emissions by 70,000 tons/year

Removing bottlenecks

Expand cracking furnace (Ichihara)

- ✓ Cut costs by improving olefin yield
- ✓ Improve stability and facilitate maintenance of cracker facilities

FY18 FY19

FY20

FY21

FY2

FY23

Expand sales of olefin-based polymers; New plants; Improve on C3 shortage positon

For derivatives

Increase capacity for high-purity propylene (Ichihara)

- ✓ Boost propylene purification capacity for polymers
- ✓ Prepare for bolstering propylene-based polymers
- √ Address propylene shortage position

Diversifying raw materials

Increase propane cracking capacity (Osaka)

- √ Shale-derived propane cracking
- ✓ Diversify raw materials at Osaka (23% → 40% of total raw materials)

Maintain world-leading naphtha cracker by further boosting cost competitiveness

0→1 MAKE IT HAPPEN



Challenge Diversity One Team

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