



Innovation by Chemistry

# Medium-term Management Program “Project AP-G 2019”

February 9, 2017

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Toray Industries, Inc.

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# Position of the New Medium-term Management Program



# Position of the New Medium-Term Management Program



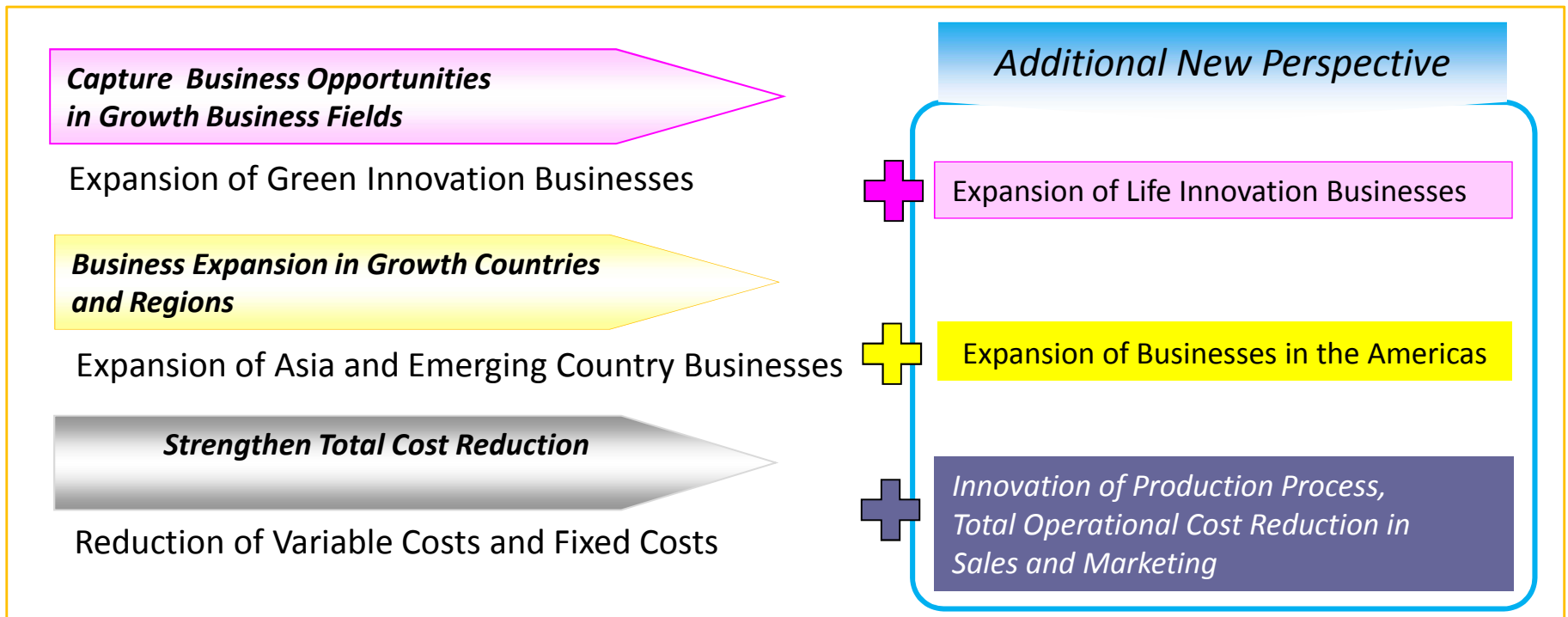


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**Results of Medium-term Management Program  
“Project AP-G 2016”  
(FY 2014 – FY 2016)**

# Key Principles of “AP-G 2016”

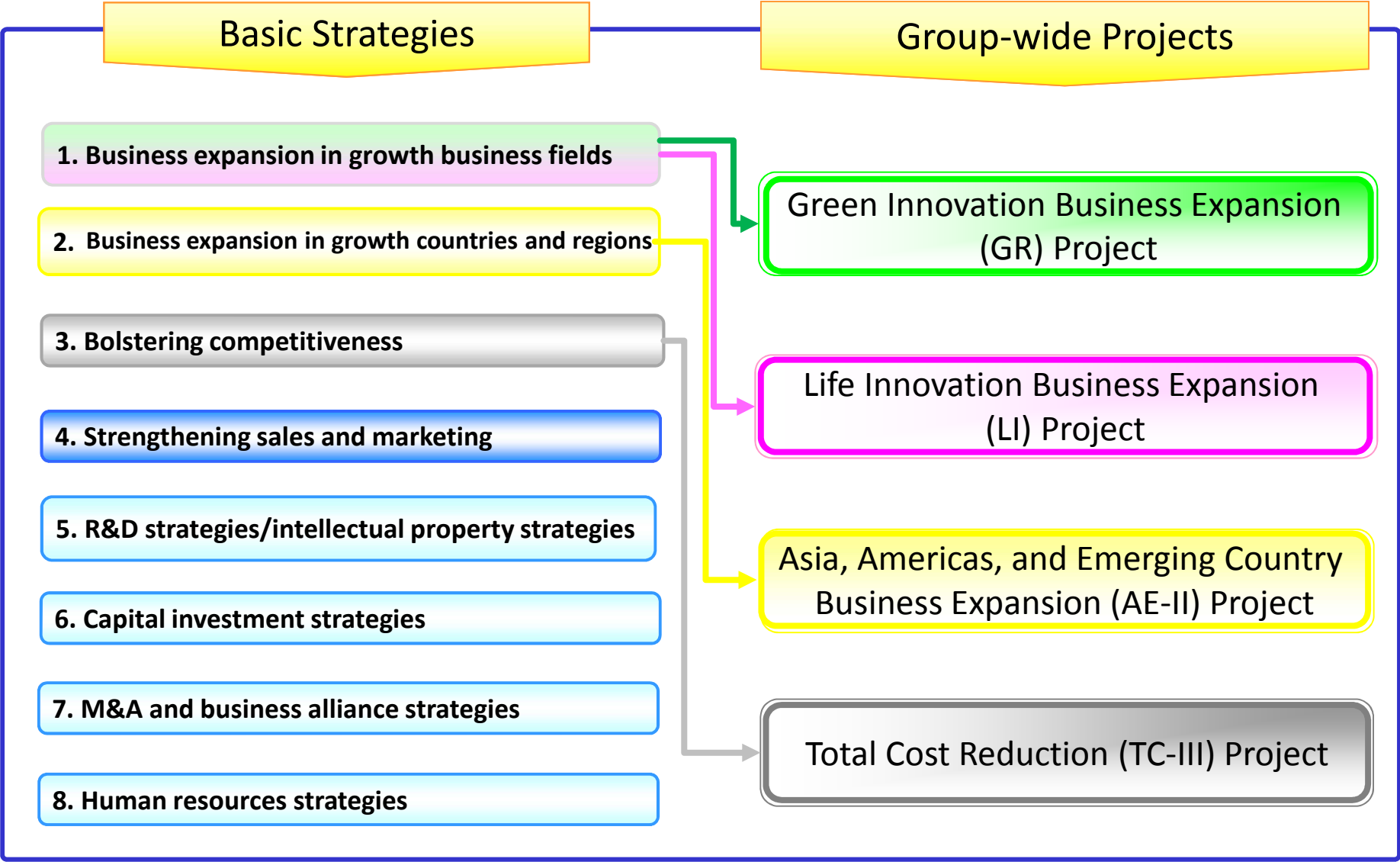
*In addition to the key principles of “AP-G 2013, ” devised a new growth strategy in realizing the long-term corporate vision “AP-Growth TORAY 2020”*



**Strive for business growth in areas that can leverage strengths of Toray Group**

**Devise strategies and action plans to make each businesses the **number-one worldwide****

# Basic Strategies and Group-wide Projects



# Green Innovation Business Expansion (GR) Project

## <Topics>

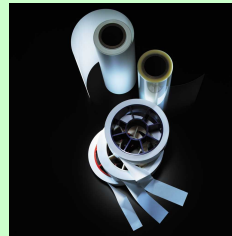
### <Carbon Fiber Composite Materials>

- Signed a comprehensive long-term agreement with The Boeing Company to supply carbon fiber prepreg and started a new joint development (November 2015)
- Decided to construct an integrated production line for carbon fiber and prepreg in South Carolina, USA (November 2015)
- Started to supply carbon fiber composite materials to Toyota and Honda for use in fuel cell vehicles (November 2014, April 2016)
- Acquired prepreg manufacturers in Italy and established an integrated supply chain for carbon fiber composite materials in Europe (December 2014, September 2015)



### <Battery Materials>

- Increased production capacity of lithium-ion battery separator in Japan and the Republic of Korea (September 2015, December 2016)
- Started operation of battery separator coating process business in the Republic of Korea (January 2016)
- Acquired a fuel cell material manufacturer in Germany (July 2015)

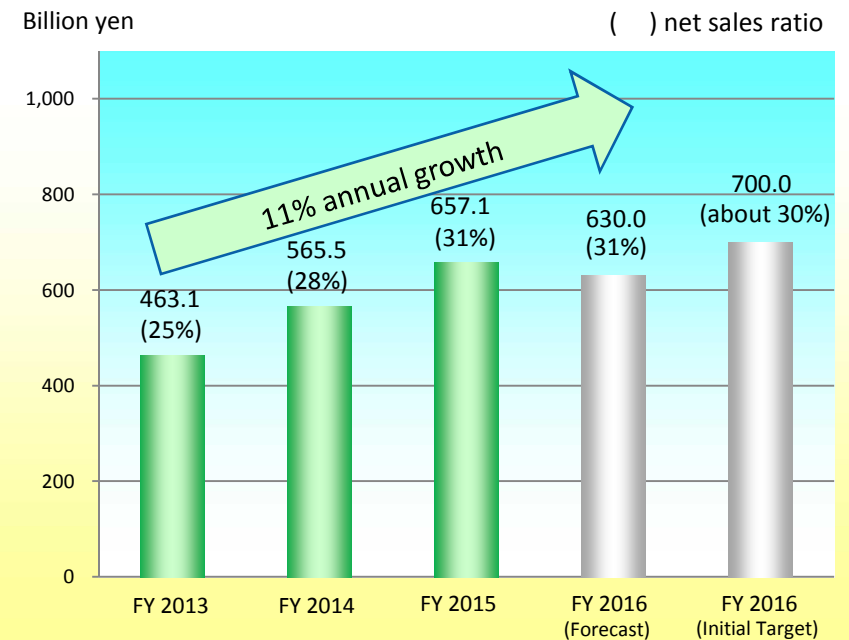


### <Water Treatment Membranes>

- Received an order to supply hollow fiber ultrafiltration membrane (UF) module to the largest membrane-based water purification facility in the Republic of Korea (April 2015)



## Trends in Net Sales of Green Innovation Businesses





# Life Innovation Business Expansion (LI) Project

## <Topics>

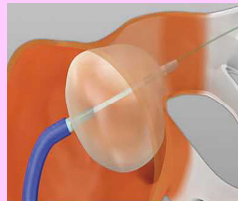
### <Advanced Materials>

- Participated in the industry-academia-government collaboration project for the development of early-diagnosis technology of cancer (August 2014)
- Increased production capacity of PP spunbond for hygiene products in China and Indonesia (December 2014, September 2016)
- Put "hitoe," a functional material for vital signs monitoring, into practical use (January 2014)

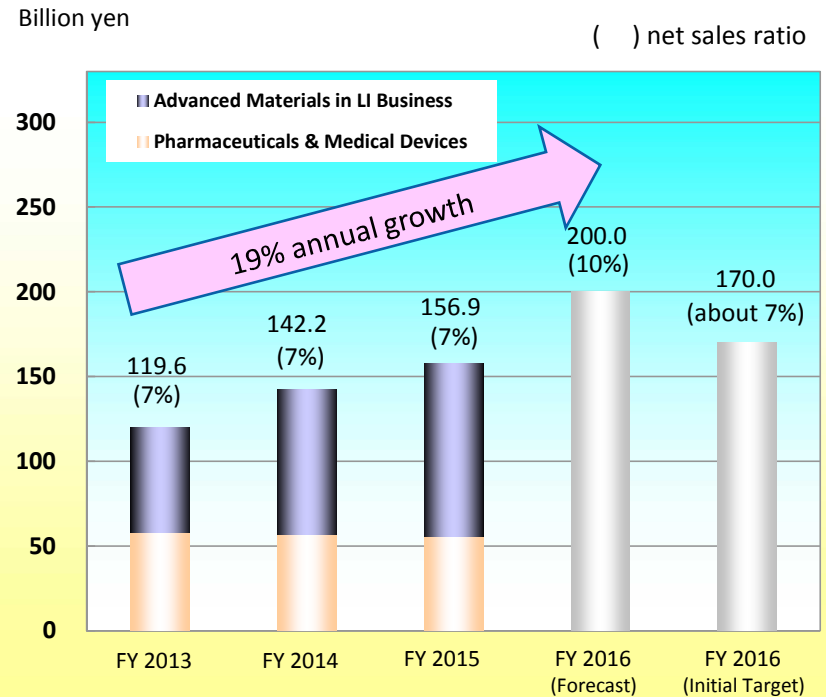


### <Pharmaceuticals / Medical Devices>

- Received approval for a new product and additional indication of an oral anti-pruritus drug (May 2015)
- Received approval of a catheter ablation system for the treatment of paroxysmal atrial fibrillation (November 2015)



## Trends in Net Sales of Life Innovation Businesses



# Asia, Americas, and Emerging Country Business Expansion (AE-II) Project

## <Topics>

### <China>

- Increased production capacity of PP spunbond for hygiene products (December 2014)
- Established a joint venture for water-treatment business (June 2016)

### <Americas>

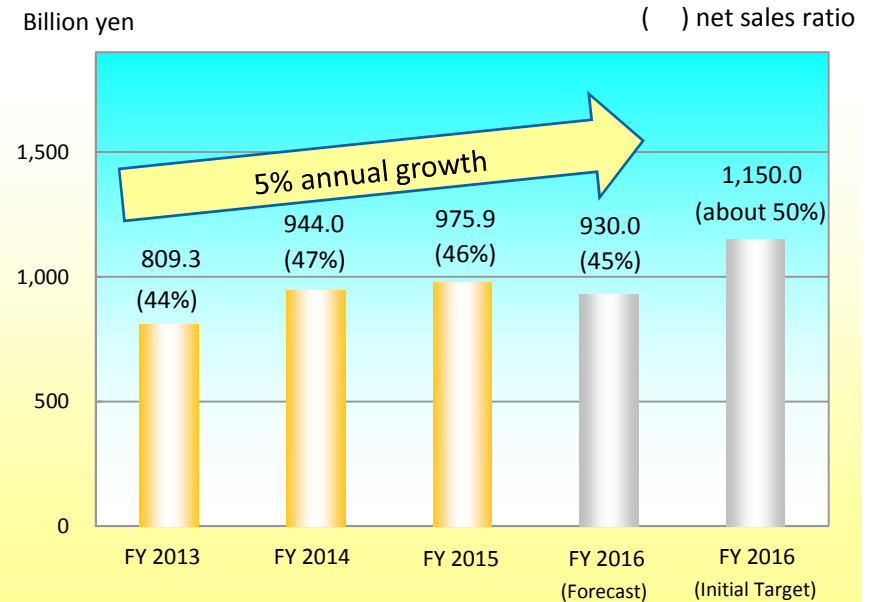
- Decided to construct an integrated production line for carbon fiber and prepreg in South Carolina, USA (November 2015)
- Established a resin compounding company in Mexico (October 2014)
- Increased production capacity of large tow carbon fiber in Mexico (March 2016)
- Decided to establish a new integrated plant to manufacture fiber and textiles for automobile airbags in Mexico (July 2016)



### <Emerging Countries, Other regions>

- Increased production capacity of PP spunbond for hygiene products in Indonesia (September 2016)
- Established a joint venture for the production of automobile airbag textiles in India (September 2014)
- Established a joint venture for water-treatment business in Saudi Arabia (November 2014)

## Trends in Net Sales in Asia, Americas, and Emerging Countries



# Total Cost Reduction (TC-III) Project

Target to reduce 200 billion yen in 3 years from FY 2014 to FY 2016

## Continuation of TC-II

- ◆ Continue activities of variable costs reduction (over 3% each year and over 10% in 3 years)
- ◆ Control fixed costs through P-ratio(\*) accounting method (P-ratio = under 0.96 each fiscal year)
- ◆ Activities involve employees groupwide

## Innovation of Production Process

- ◆ Set up innovative production processes to achieve drastic cost reductions based on new perspectives and approaches
- ◆ Collaboration between research, technical, production and engineering departments to pursue innovation groupwide

## Total Operational Cost Reduction in Sales and Marketing

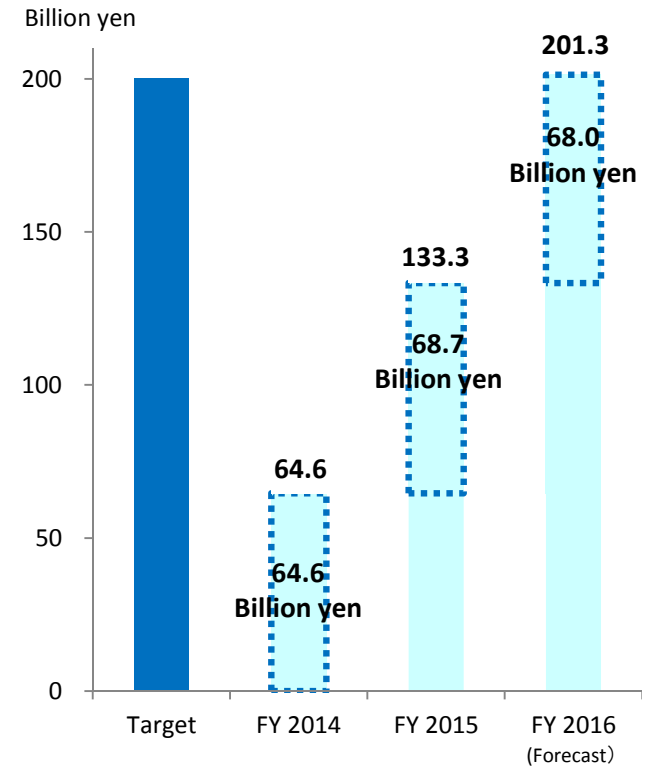
- ◆ Establish a highly competitive supply chain, by analyzing and understanding the operational costs and logistics systems

## Forecast (total of 3 years)

- ◆ Variable Costs: Reduction of 94.4 billion yen (Reduction ratio 11%)
- ◆ Fixed Costs: Reduction of 45.4 billion yen (P-ratio=0.99)

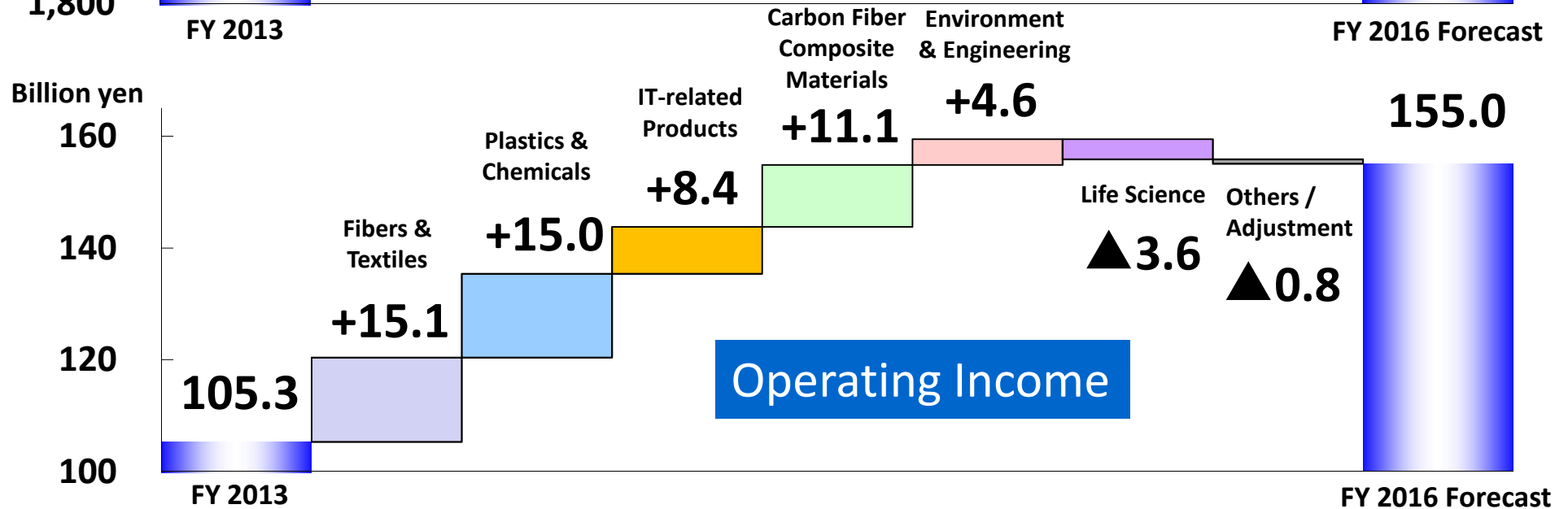
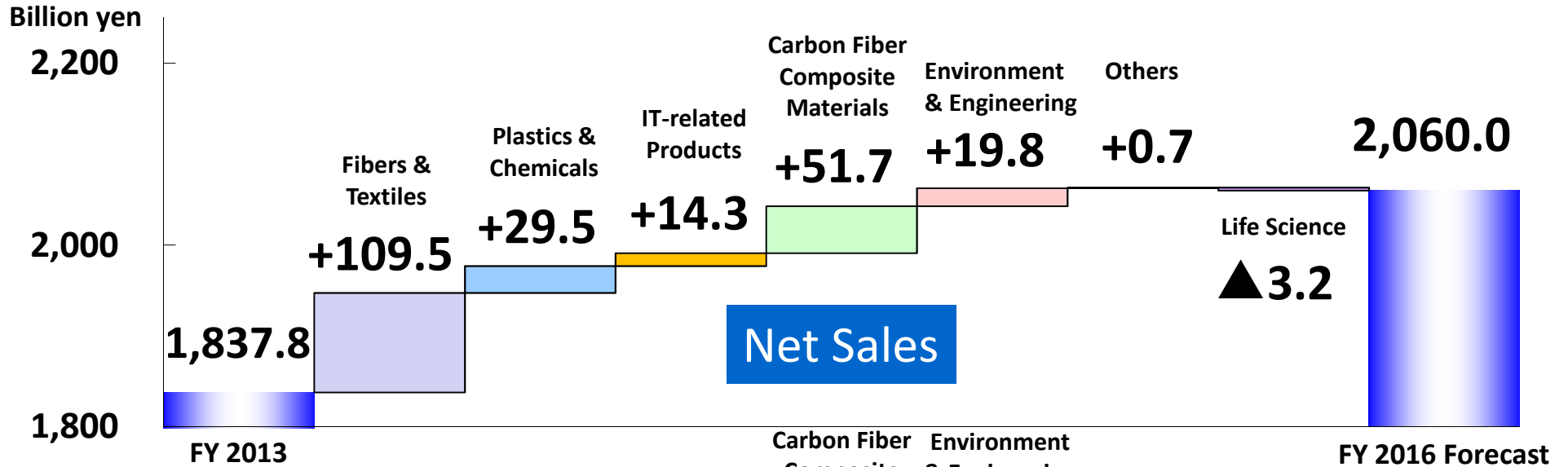
Effects from Innovation of Production Process and Total Operational Cost Reduction in Sales and Marketing  
Total: 61.6 billion yen

## Progress

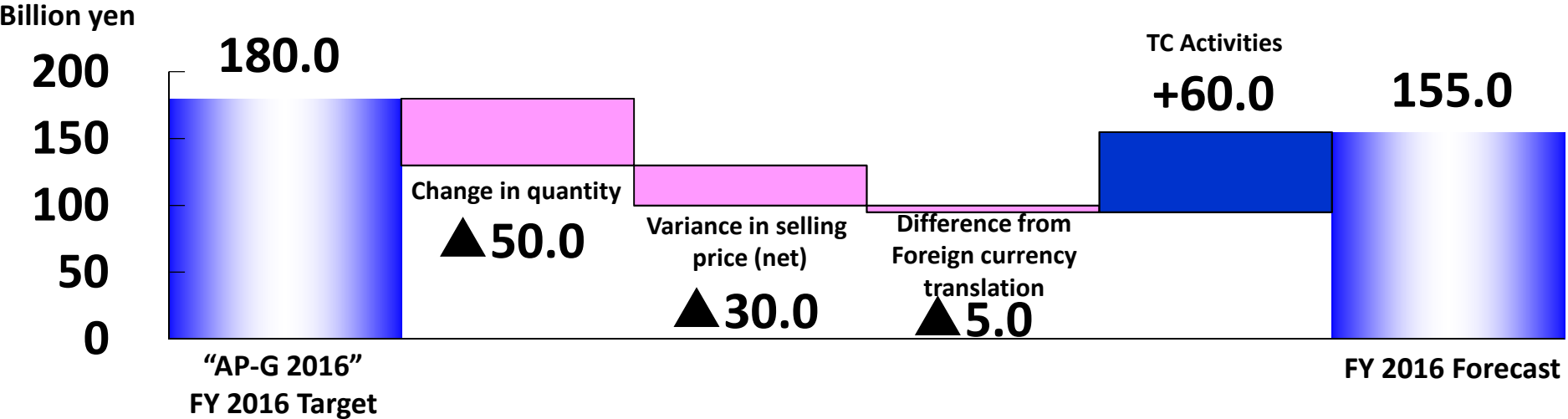
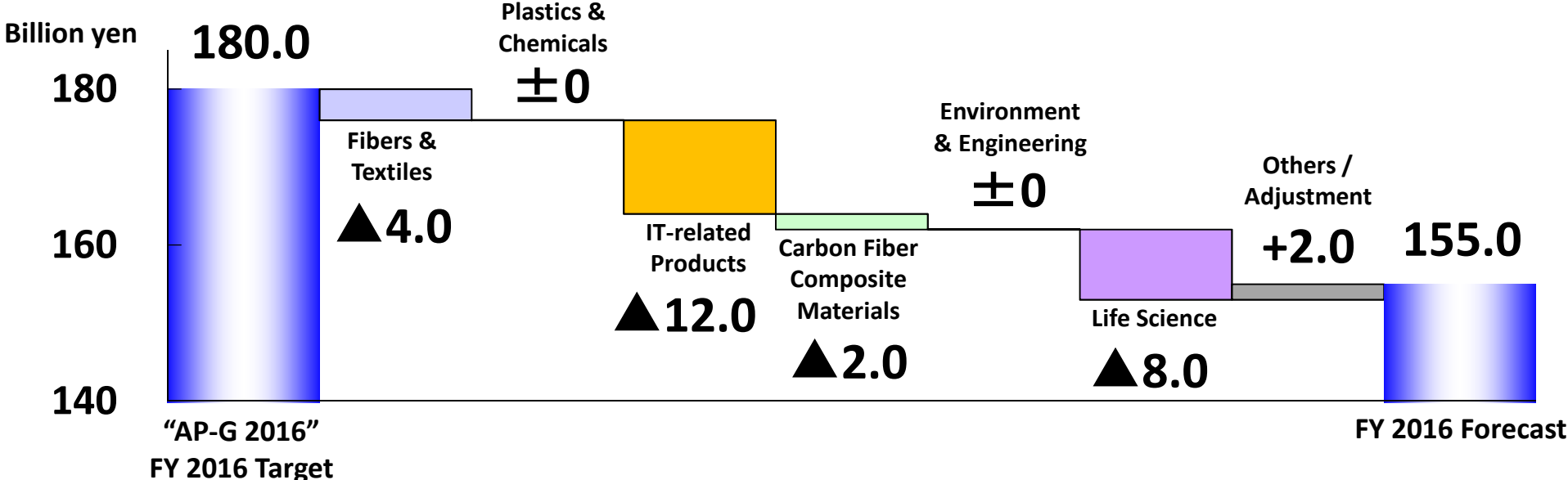


\*P(Performance)-ratio= fixed cost growth rate/ marginal profit growth rate. Target: less than 1.0 or monitored by division under budget.

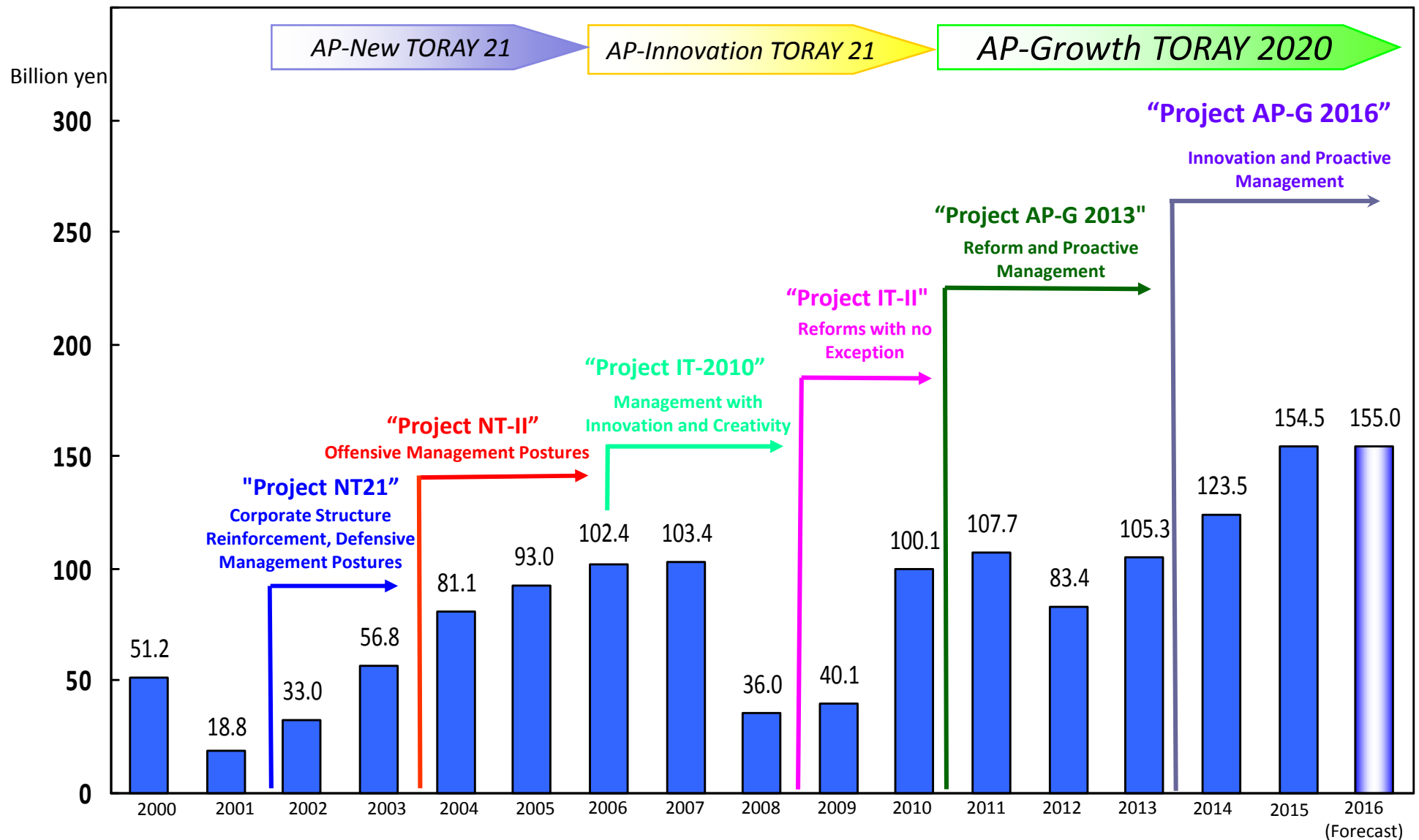
# Variance Analysis of FY 2013 Actual and FY 2016 Forecast



# Variance Analysis of "AP-G 2016" Income Target and FY 2016 Forecast



# Trends in Operating Income





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**Medium-term Management Program**  
**“Project AP-G 2019”**  
**(FY 2017 – FY 2019)**

*Innovation and Proactive Management*  
*- To Achieve the Vision 2020 Goals -*

# Long-term Corporate Vision and Medium-term Management Program

Long-term Corporate Vision

*AP-Growth TORAY 2020 (Vision 2020 (abbr.))*

Medium-term Management Program

**AP-G 2013**

**Reform and Proactive  
Management**

**- A New Growth Track -**

**AP-G 2016**

**Innovation and  
Proactive Management**

**- Implementation of  
Growth Strategy -**

**AP-G 2019**

**Innovation and  
Proactive Management**

**- To Achieve the  
Vision 2020 Goals -**

2011  
April

2014  
April

2017  
April

2020  
March



# The Vision of Toray and Basic Issues

## The Vision of Toray

- A corporate group that continually increases revenues and profits
- A corporate group that provides high values to all stakeholders

## Basic Issues

1. Proactively expand business in **growth fields, countries and regions**
2. Improve profitability by **continuously creating and expanding differentiated products**
3. Steadily realize profit improvements through **radical reforms both in business and organizational structures**
4. Continue **“strengthening of cost competitiveness”** to reinforce and strengthen earning structure
5. Continue **“pursuit of the ultimate limits”** for the creation of new and innovative materials and create large-scale new businesses
6. Thoroughly implement **“safety, accident prevention, and environmental preservation”** and **“business ethics and legal compliance”** globally
7. Secure and develop human resources that can contribute to **“strong workplace capability”**

# Basic Strategies and Key Initiatives

## AP-G 2016

### 8 Basic Strategies

1. Business expansion in growth business fields
2. Business expansion in growth countries and regions
3. Bolstering competitiveness
4. Strengthening sales and marketing
5. R&D strategies / intellectual property strategies
6. Capital investment strategies
7. M&A and business alliance strategies
8. Human resources strategies

## AP-G 2019

### 3 Basic Strategies

1. Business expansion in growth business fields
2. Expansion and advancement of global business
3. Strengthening competitiveness

### 5 Key Initiatives

1. New business creation
2. R&D and intellectual property
3. Capital investment
4. M&A and business alliances
5. Human resources

## Business Expansion in Growth Business Fields

*Contribute to resolve social issues utilizing Toray Group's advanced materials and core technologies, respond to increasing demand, and create new demand*

### Green Innovation Businesses



**Contribute to resolve global environmental issues and energy and resources issues**

### Life Innovation Businesses



**Improve quality of healthcare, ease burden on medical professionals and contribute to health and longevity**

*Toray Group will continue to promote business expansion comprehensively and actively through group-wide projects*

# Expansion of Green Innovation Businesses

*Contribute to society by providing solutions to issues such as the global environment, energy and resources, and support sustainable growth of Toray Group*

**Toray Group Green Innovation Businesses  
Net Sales in FY 2015 657.1 billion yen**

## Air Purification

- Dust collecting filter/Air filter

## Recycling

- Regeneration-type recycling , circulation-type recycling / Material, chemical recycling

## Water Treatment

- RO, MBR, MF/UF membrane
- Home water purifier



## Low Environmental Load

- Non-halogen flame-retardant material
- Toray Waterless Plate®



© LUXFER GAS CYLINDERS



© BOEING

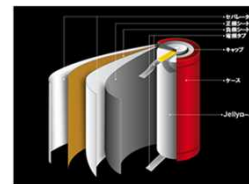


Image from TOYOTA Motor Corp.



## Reduction of GHG Emissions

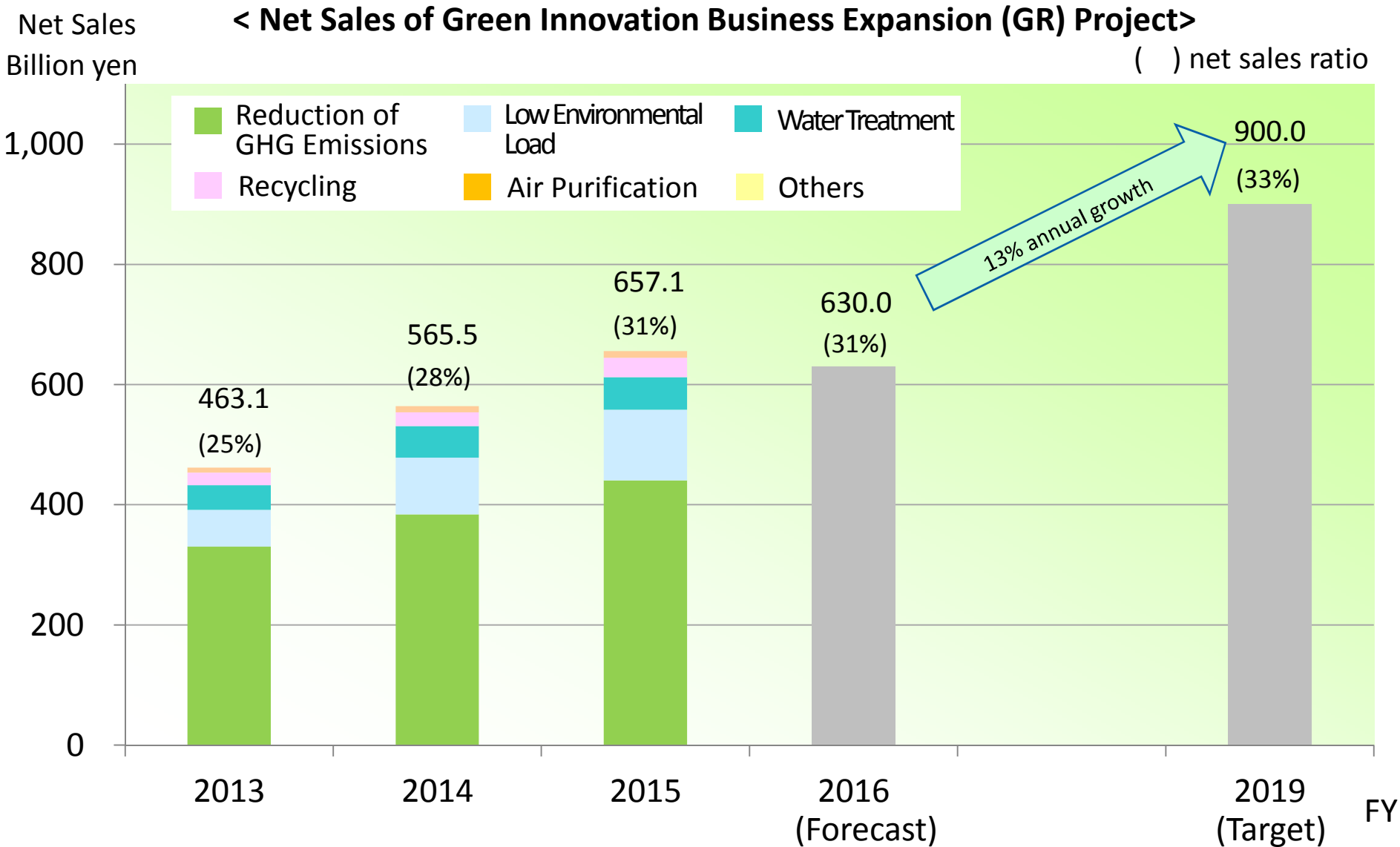
- Carbon fiber for aircraft, automobiles, wind-turbine blades, pressure vessels, etc.
- Lithium-ion battery separator



Lithium-ion battery separator for automobiles



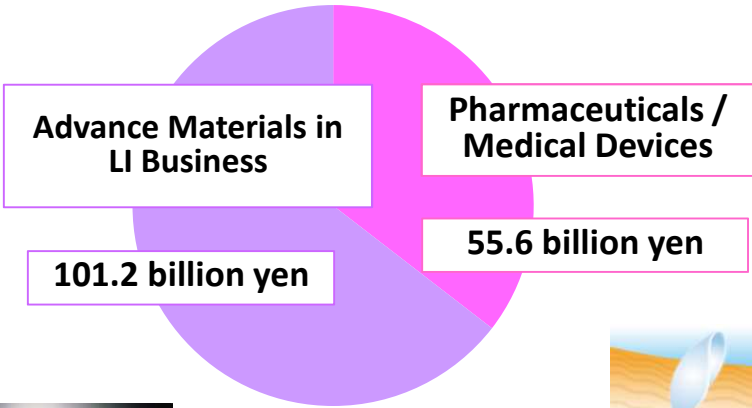
# Expansion of Green Innovation Businesses



# Expansion of Life Innovation Businesses

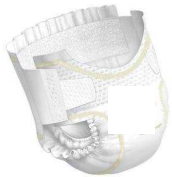
*Improve quality of healthcare, ease burden on medical professionals, and contribute to health and longevity with Toray Group's management resources*

**Toray Group Life Innovation Businesses  
Net Sales in FY 2015 156.9 billion yen**



Functional materials for vital signs monitoring

PP spunbond for hygiene products



Fabric for sportswear



Disposable protective clothing



Air filter



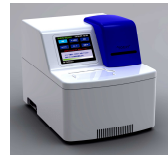
X-ray CT cradle, Cartridge



DNA chip



Contact lens



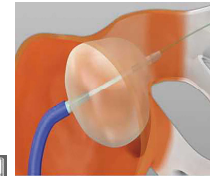
High-sensitivity protein detection system



Pharmaceuticals



Catheter



Artificial kidney



Dialysis machine



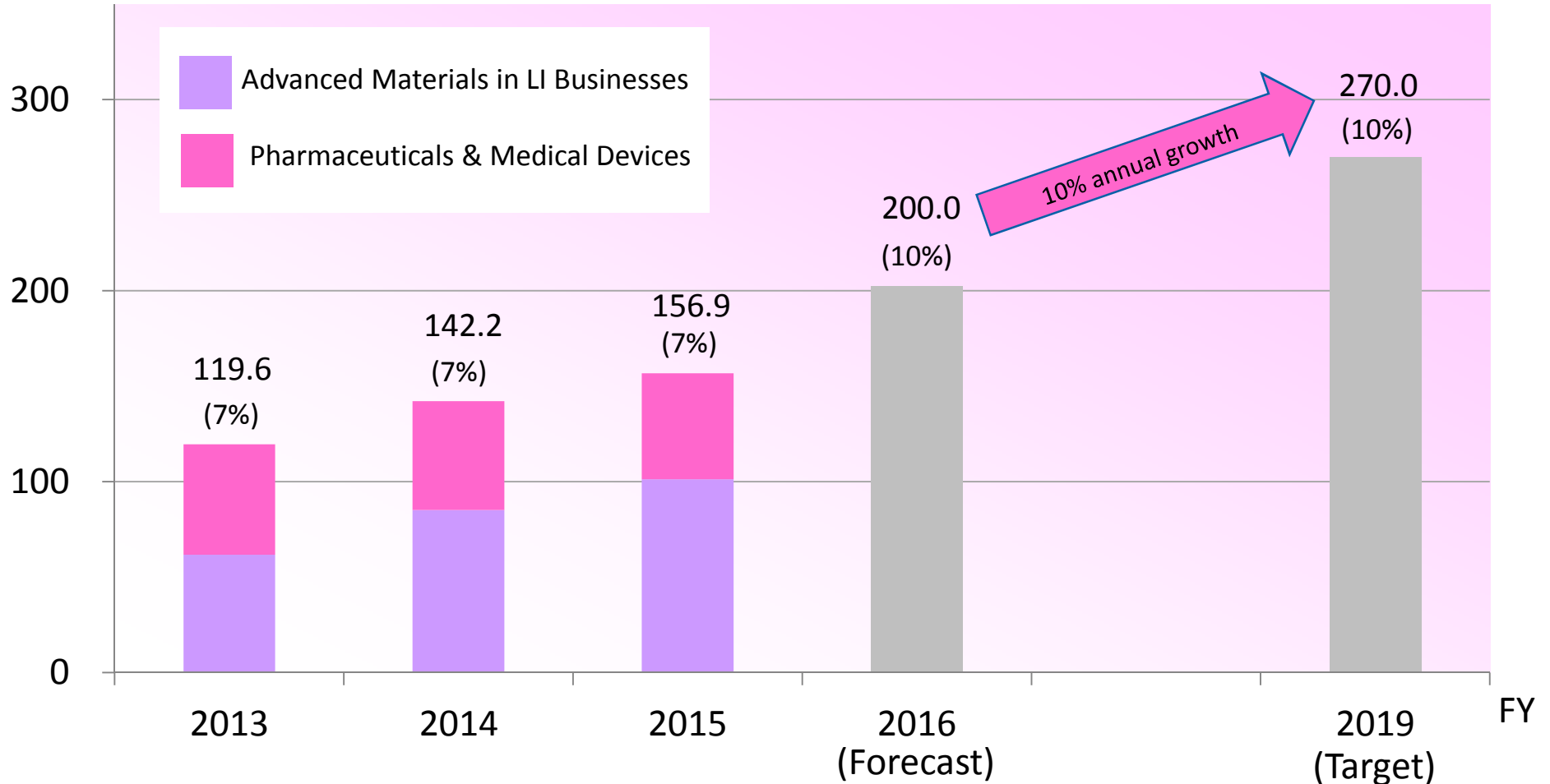
Extracorporeal circulation therapeutic columns

# Expansion of Life Innovation Businesses

<Net Sales of Life Innovation Business Expansion (LI) Project>

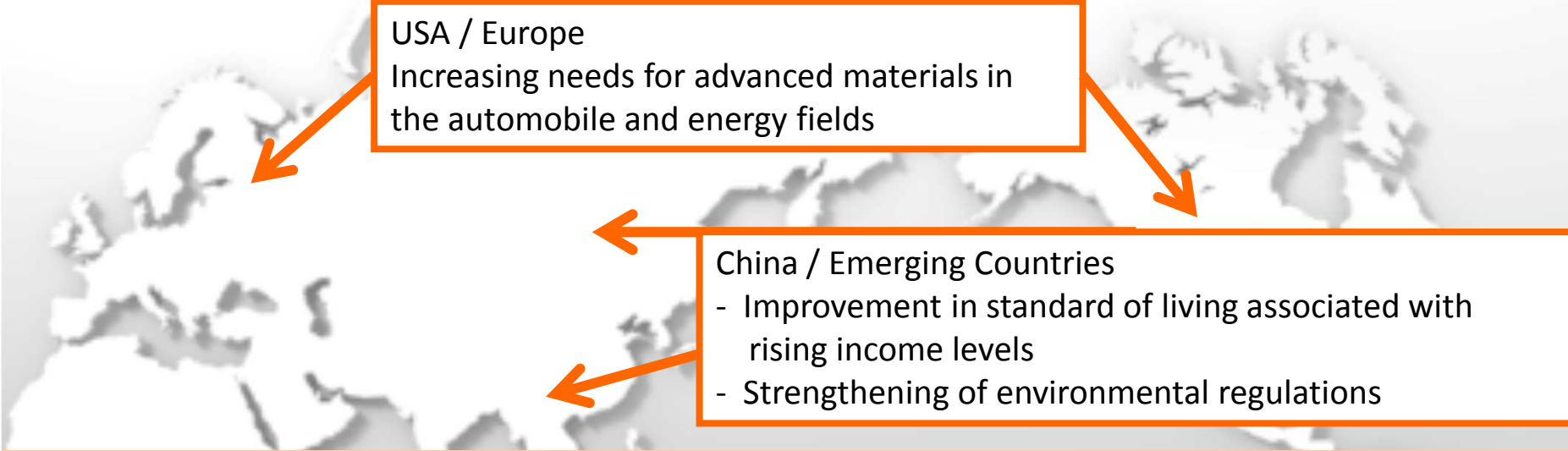
Net Sales  
Billion yen

( ) net sales ratio



# Expansion and Advancement of Global Business

*Expand business globally by capturing profit opportunities  
In growth countries and regions*



USA / Europe  
Increasing needs for advanced materials in  
the automobile and energy fields

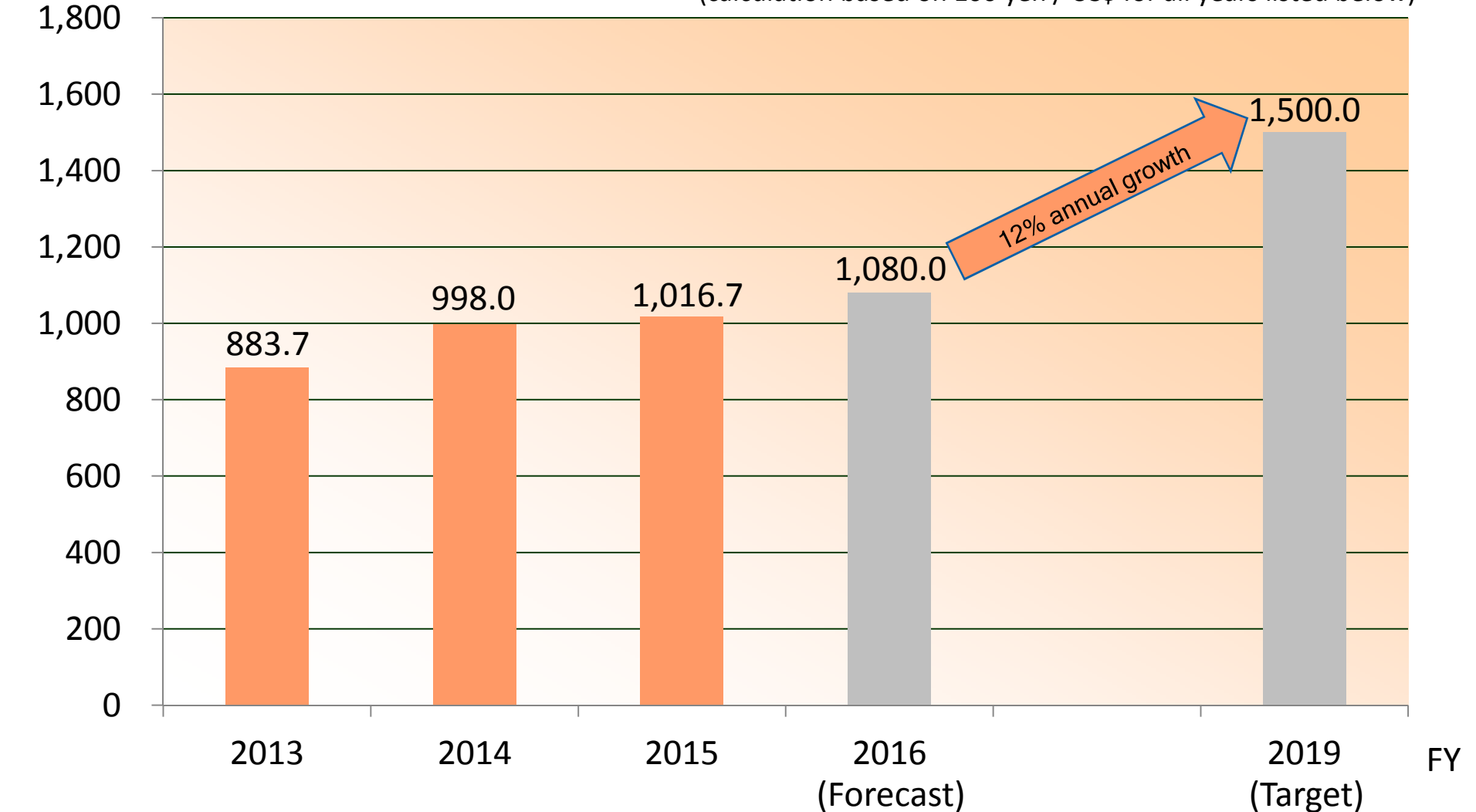
China / Emerging Countries  
- Improvement in standard of living associated with  
rising income levels  
- Strengthening of environmental regulations

- Promote “AE (Asia, Americas, Europe, and Emerging Regions) Project” targeting overseas businesses, on a group-wide basis
- Prioritize allocation of capital investment and R&D resources to growth countries and regions
- Establish a supply system for cost competitive products
- Radically reform business and organizational structures for advancement of business
- In the businesses which have global platform, differentiated products, and core technologies, will implement brand initiatives based on integrated business strategies and establish supply chain



# Expansion and Advancement of Global Business

Net Sales Billion yen <Trends in Overseas Net Sales (Total of Overseas Consolidated Subsidiaries)>  
 (calculation based on 100 yen / US\$ for all years listed below)



# Strengthening Competitiveness

*Pursue total cost reduction, and strengthen corporate structure and sales and marketing*

## *Total Cost Reduction*

- Promote Total Cost Reduction (TC) Project on a group-wide basis
- Activities of variable cost reduction (annual target at over 3.6%)
- Control fixed costs through P-ratio ( \* ) accounting method (P-ratio = under 0.96 each fiscal year)
- For innovation of production process, identify themes by category in terms of “innovative cost reduction” “large-scale total cost reduction” and “capacity increase of existing facilities” to achieve reduction effects by more than 50 billion Yen in 3 years

\*P(Performance)-ratio= fixed cost growth rate/ marginal profit growth rate. Target: less than 1.0 or monitored by division under budget.

*Target to reduce 220 billion Yen in 3 years from FY 2017*

## *Strengthening Corporate Structure*

- Clarify issues of companies and businesses with profitability problems, and gather Toray group’s collective efforts to improve revenue and profit
  - options include reducing or withdrawing from businesses with limited growth potential or excessive competition
- Manage the group’s assets effectively and expand revenue and profit

## *Strengthening Sales and Marketing*

- Sales and marketing leads to build a “profit-making system” in cooperation with production, technology, R&D departments, and external partners
- Maximize revenue and profit of existing businesses through improvement in price policies, distribution systems and brand initiatives

# New Business Creation

*In order to make sources of earnings for the next growth stage, identify several large scale items which leads to the creation of new business domain in the 2020s  
Accelerate product development and business formation by allocating the resources selectively*

## Future TORAY- 2020s (FT) Project

### Targeting Theme

- R&D items in which a creation of a new business domain can be expected in the 2020s
- Rapid growth of existing business in which leads to creation of a business domain in the 2020s

### Examples

To resolve environmental issues on a global scale and realize safety, security, health and longevity, “hydrogen and fuel cell-related materials”, “non-fossil resources based products and technologies”, “eco-friendly printing materials”, “safety and health care-related products”, “sensing device-related materials”, etc.

Create New Businesses with Revenue of 1 trillion Yen in the 2020s

# R&D and Intellectual Property

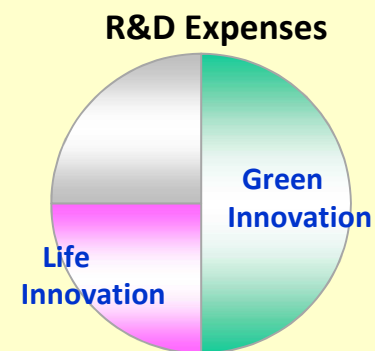
*Create new technologies and materials focusing on “Green Innovation” and “Life Innovation” businesses*

## Basic Policies

- Create new technologies and materials focusing on growth fields
  - Identify essential value of Toray’s technologies and materials, and transform them into earnings by creating new customer value
  - Enhance collaboration among sales, production, technology and R&D, while actively utilizing external resources
- 
- Investment of 220 billion Yen of R&D expenses in 3 years from FY 2017
  - Allocate resources for key products in which rapid growth is expected
  - Enhance R&D by close collaboration within Toray Group
  - Promotion of initiative research for creation of new materials, devices and systems in the “R&D Innovation Center for the Future” to be established in 2019

## Intellectual Property

- Management of globally competitive intellectual property
- Enhance strategic patent applications



1/2 of R&D expenses will be allocated to Green Innovation, and 1/4 to Life Innovation

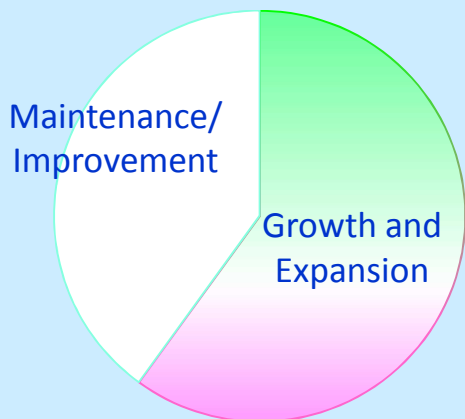
# Capital Investment

*500 billion Yen of capital investment planned in 3 years from FY 2017*

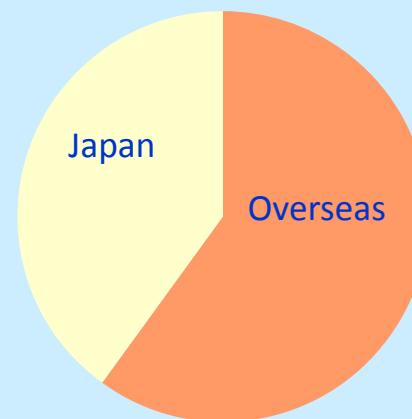
## Basic Policies

- Invest to growth fields, countries and regions
- Strengthen global supply chains by accurately determining the “optimal location for production” of each business
- Enhance efficient capital investments

**Allocate 60% of Total Capital Expenditures to Growth and Expansion Fields**



**Allocate 60% of Total Capital Expenditures to Overseas**



*Focus on the balance between capital investment and expansion of revenue/earnings in order to increase cash flow , improve ROA and ROE*

# M&A and Business Alliances

*To increase and to complement growth of existing businesses, proactively utilize M&A and business alliances as means to adjust to the changing business environment and to attain sustainable growth*

## Basic Policies

- Target businesses in growth fields, countries and regions, in which can expect sustainable growth
  - Applied in cases where Toray Group's core technologies, advanced materials and global business platforms can be utilized to generate synergies
  - In case of business alliances, the partner must have unique strengths and characteristics and can cultivate a win-win relationship with Toray Group
- 
- M&A and business alliances will be carried out based on the basic policies  
Funds will be held separate from capital expenditures and will be strategically invested

# Human Resources

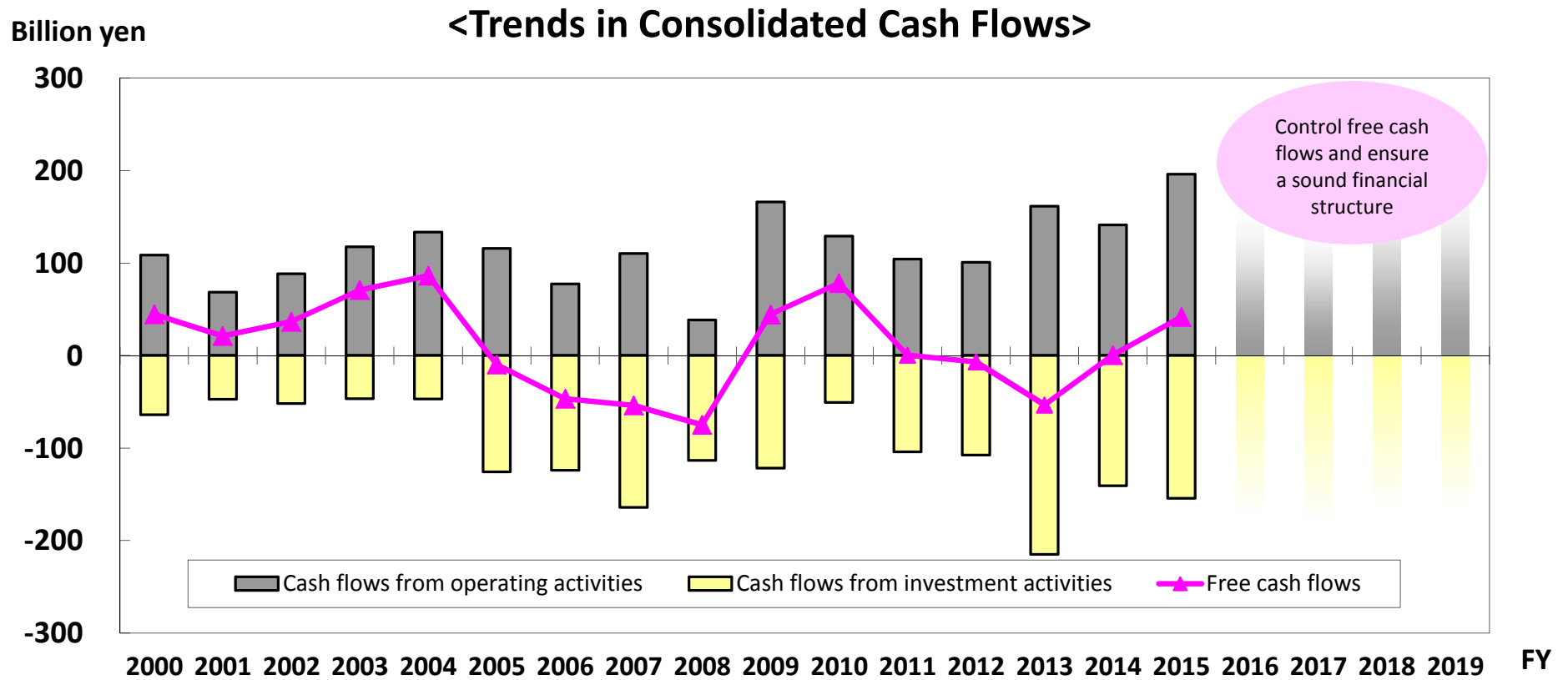
*Develop leaders at management level for the next generation, secure and develop core human resources who will exhibit “strong operational competency” at the frontlines*

## Basic Policies

- Human resources are the key drivers of growth
- Secure and develop human resources in order to implement “Strong operational competency”
- Secure and develop human resources based on Toray Group Mid-term Human Resources Plan
- Pursue active engagement by Top Management in strategic human resources development
- Pursue promotion of talented national staff to improve the management competencies of overseas subsidiaries
- Enhance various systems to complement the human resources development plan, such as group training

# Trends in Cash Flows

*Generate free cash flow to invest for growth and make effort for shareholder returns*





# Financial Targets

<Billion yen>

	FY 2015 Actual	FY 2016 Forecast	FY 2019 Target
Net Sales	2,104.4	2,060.0	2,700.0
Operating Income	154.5	155.0	250.0
Operating Income to Net Sales Ratio	7.3%	7.5%	9%
ROA	6.7%	about 7%	about 9%
ROE	9.3%	about 10%	about 12%

Exchange rate for FY 2019 Target : 100 yen / US\$

ROA = Operating Income / Total Assets  
ROE = Net Income / Owners' Equity

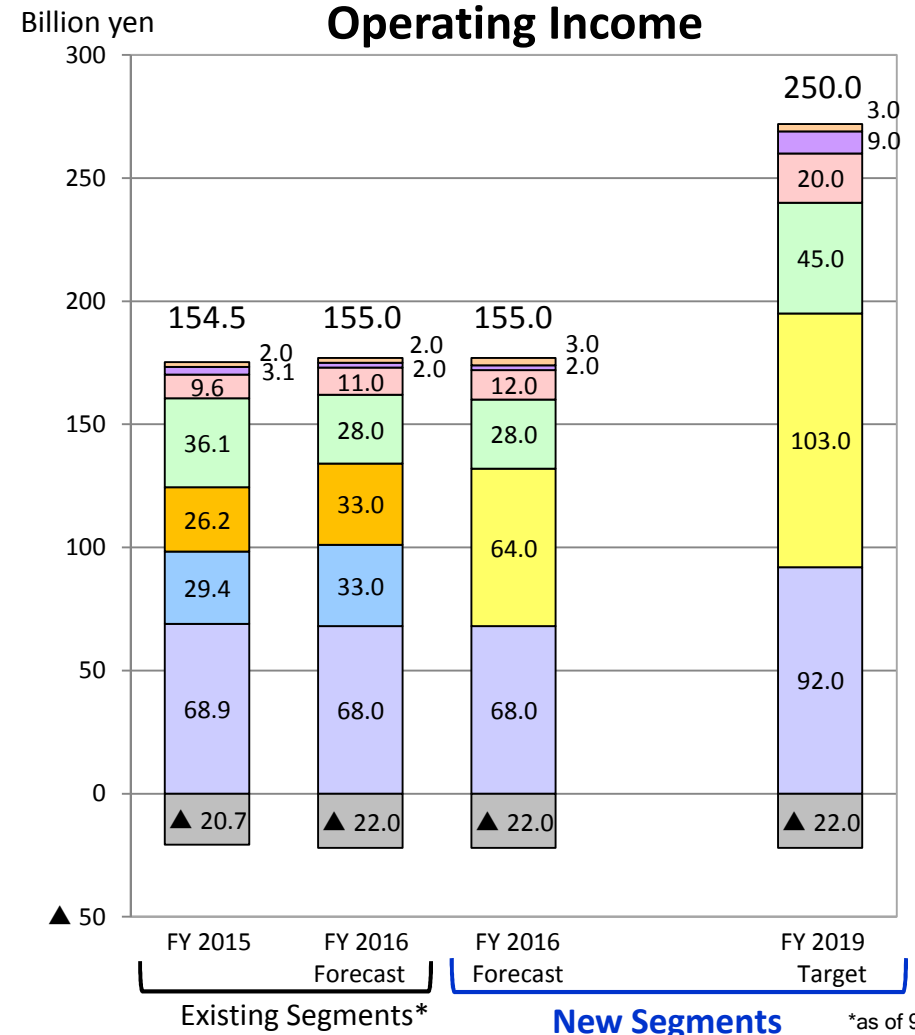
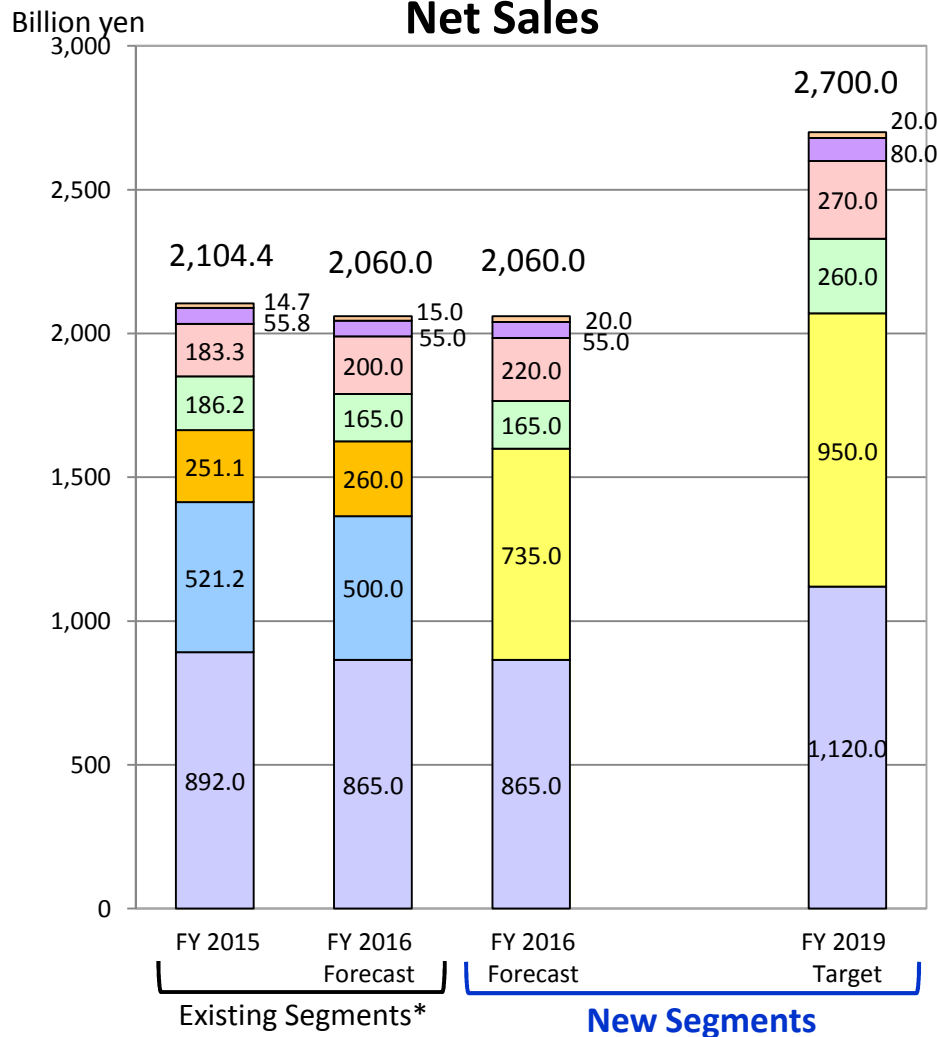
- Dividend policy: Aim for sustainable dividend increase linked to business performance
- Guideline of D/E ratio : Below 1

# Change in Segments

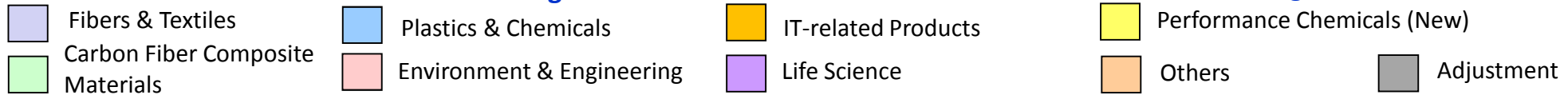
Business Categories	Existing Segments*	New Segments
Core Growth Driving Businesses	Fibers & Textiles	Fibers & Textiles
	Plastics & Chemicals	Performance Chemicals
Strategically Expanding Businesses	IT-related Products	
	Carbon Fiber Composite Materials	Carbon Fiber Composite Materials
Intensively Developing and Expanding Businesses	Environment & Engineering	Environment & Engineering
	Life Science	Life Science

\*As of 9<sup>th</sup> Feb. 2017

# Net Sales / Operating Income Targets by Segment



\*as of 9<sup>th</sup> Feb. 2017



# Strategies by Segment

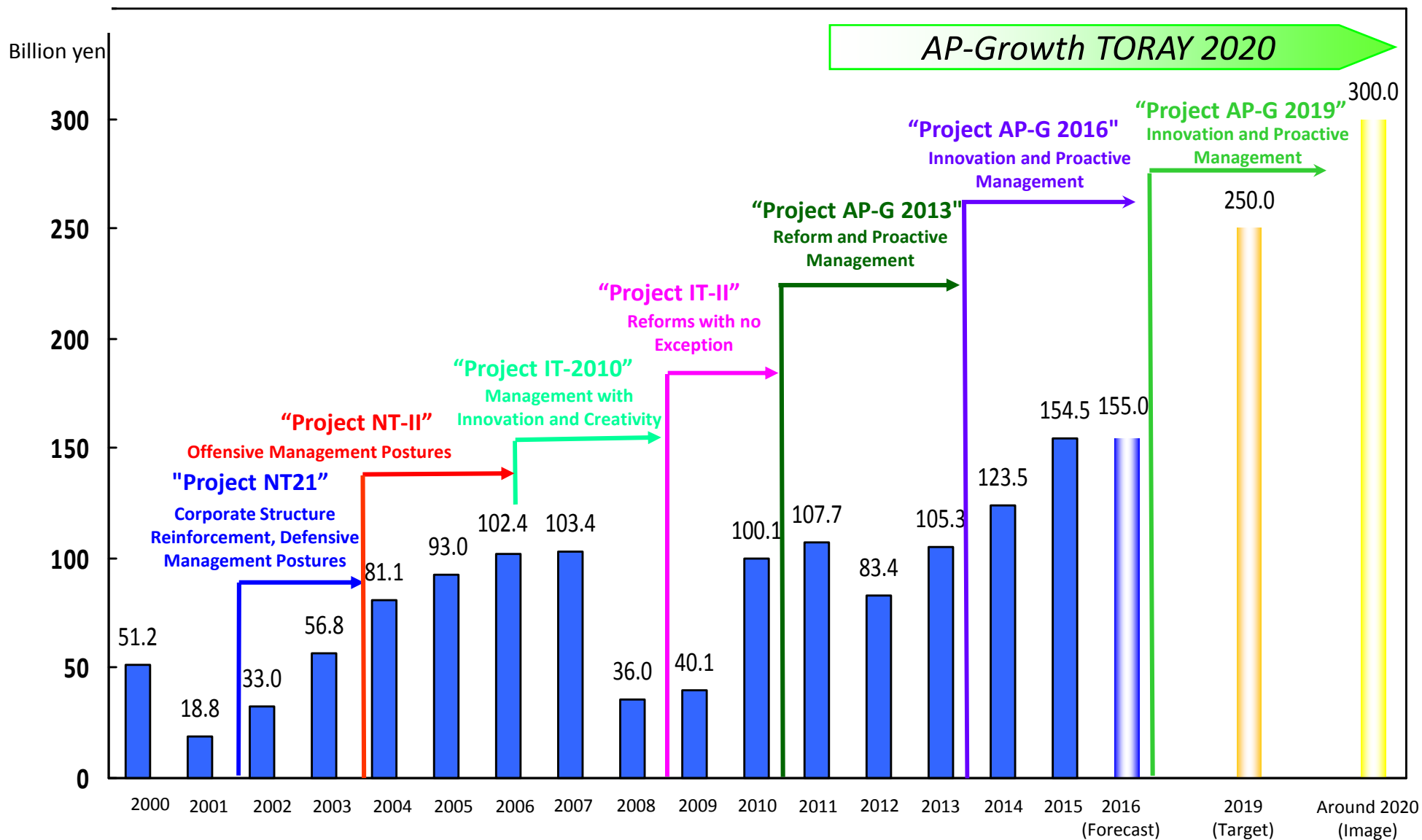
Segment	Major Issues in “AP-G 2019”	Growth Products and Applications
<b>Fibers &amp; Textiles</b>	<ul style="list-style-type: none"> <li>- Further strengthen earnings structure, expand business in growth business fields and regions</li> <li>- Enhance global operations</li> <li>- Strengthen global SCM of the fibers/textiles/final products integrated business format, expand new business domain</li> </ul>	<ul style="list-style-type: none"> <li>- Functional materials for apparel and garment</li> <li>- Fiber and textile for airbags</li> <li>- PP spunbond for hygiene products</li> <li>- Suede-texture artificial leather</li> </ul>
<b>Performance Chemicals</b>	<p>&lt;Resins, Chemicals&gt;</p> <ul style="list-style-type: none"> <li>- In resins, strengthen global supply chains and total solution proposal capabilities, expand sales and create demand using high value-added products</li> <li>- In chemicals, strengthen competitiveness of core businesses, accelerate commercialization and development of new businesses</li> </ul> <p>&lt;Films&gt;</p> <ul style="list-style-type: none"> <li>- Focus on allocation of management resources, business structure reform</li> </ul> <p>&lt;Electronic &amp; Information Materials&gt;</p> <ul style="list-style-type: none"> <li>- Expand business in growth areas of the display market</li> <li>- Accelerate technology development and commercialization of products beyond the LCD display</li> </ul>	<ul style="list-style-type: none"> <li>- Resin compound for automotive use</li> <li>- PPS resin, Transparent ABS resin</li> <li>- High-functional packaging film</li> <li>- Lithium-ion battery separator film</li> <li>- Films for electronic components</li> <li>- OLED related materials</li> <li>- Printing materials</li> </ul>

# Strategies by Segment

Segment	Major Issues in “AP-G 2019”	Growth Products and Applications
<p><b>Carbon Fiber Composite Materials</b></p>	<ul style="list-style-type: none"> <li>- Expand high-quality and high-functional regular tow products, expand cost-competitive large tow products, and accelerate market development with mutual synergy effects</li> <li>- Globally expand the vertically integrated business format through strengthening and securing of profit in the supply chain</li> </ul>	<ul style="list-style-type: none"> <li>- Regular tow (high-functional, high-quality TORAYCA®)</li> <li>- Large tow (ZOLTEK™)</li> <li>- Composites for automobile parts</li> </ul>
<p><b>Environment &amp; Engineering</b></p>	<ul style="list-style-type: none"> <li>- Strengthen competitiveness in water treatment membrane business, achieve top share in the global market</li> <li>- Strengthen business foundation in system and plant business</li> <li>- Expand business in growth areas such as “IOT” and “LI”, etc. by taking measures such as collaboration outside Toray Group</li> </ul>	<ul style="list-style-type: none"> <li>- RO, UF</li> <li>- Water-treatment and plant systems</li> <li>- Plant systems for pharmaceuticals and new energy</li> </ul>
<p><b>Life Science</b></p>	<ul style="list-style-type: none"> <li>- Implement business structure reform</li> <li>- Expand sales of medical devices overseas</li> <li>- Expand dialysis business in China</li> </ul>	<ul style="list-style-type: none"> <li>- REMITCH®</li> <li>- TORAYMYXIN®</li> <li>- Dialyzers (hemodiafiltration-related products)</li> </ul>

\* REMITCH® is a registered trademark of Torii Pharmaceutical Co., Ltd.

# Trends in Operating Income





Innovation by Chemistry

**<Reference>**

# **Medium-term Business Strategies by Segment**



# Fibers & Textiles

## Basic Policy

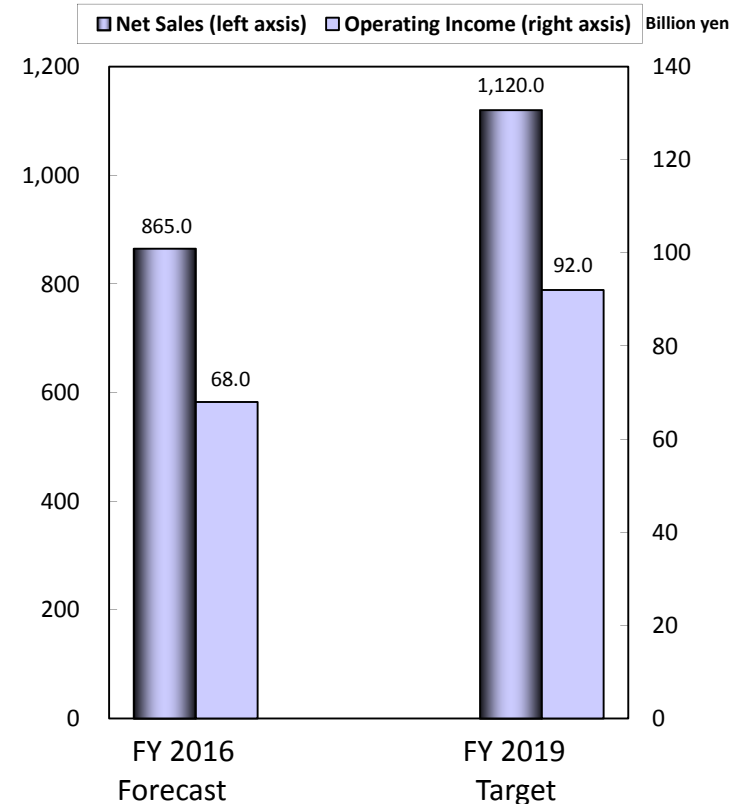
*As a core growth driving business of Toray, Fibers and Textiles segment's challenges are to achieve significant growth by strengthening its earnings structure, expand business in growth business fields and regions, and further enhance its global operations*

## Basic Strategies

- Maintain and reinforce domestic business foundation and processing platform, and further strengthen business competitiveness
- Reinforce business foundation of its existing operations at overseas locations, and expand business in growth business fields and regions
- Strengthen Toray Group's global operations and create new business areas by developing and expanding business on multiple levels combining its strengths in diverse product lines, supply chain, and global sales

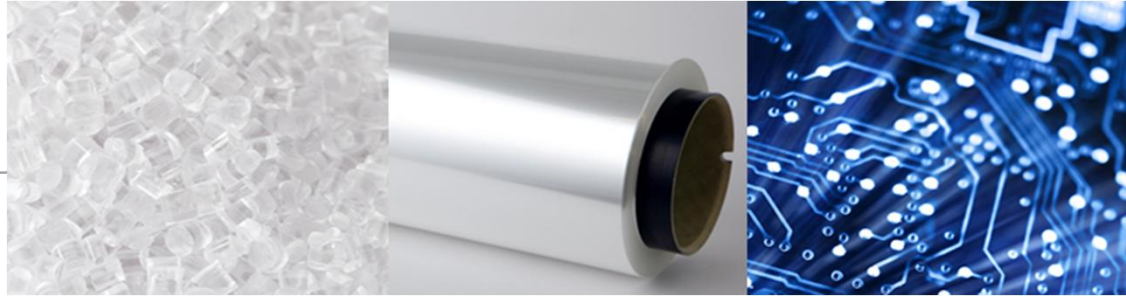


Aim to achieve significant growth by the global fibers/textiles/final products integrated business format and SCM, reinforce value chain of strategic products, and expand new business areas





# Performance Chemicals



## Basic Policy

*Expand business by sales expansion of high value-added products in growth business fields and maximum utilization of global bases, strengthen earnings base by business structure reform*

## Basic Strategies

### ■ Resins, Chemicals Business

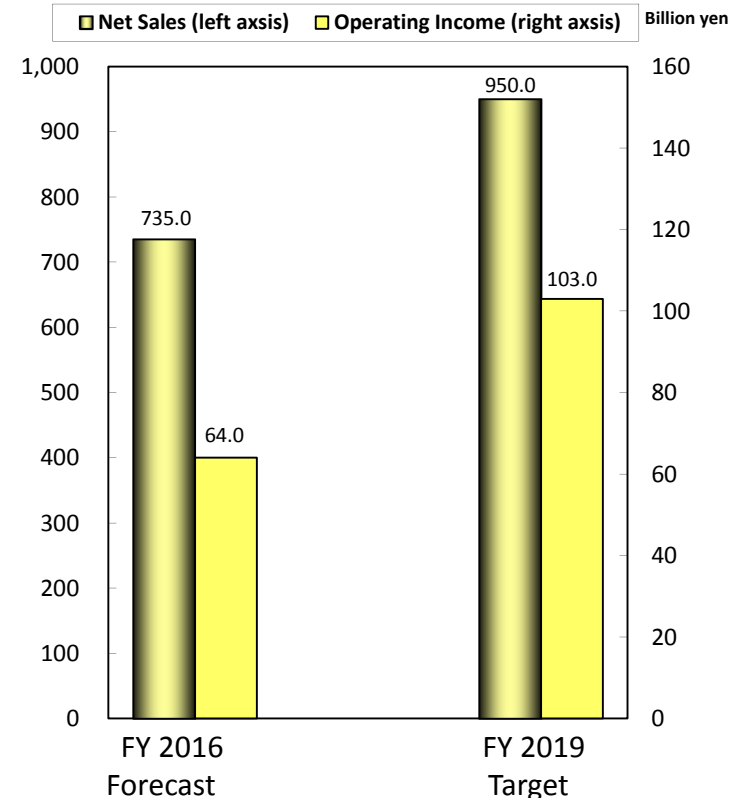
- Allocate management resources and promote business expansion in growing businesses including PPS resin, resin compounds overseas and automotive materials

### ■ Films Business

- Invest in lithium-ion battery separator films and promote sales expansion through product development
- Reorganize manufacturing of PET film, increase value of existing products by utilizing global operations, and enhance sales expansion

### ■ Electronic & Information Materials Business

- Expand sales of organic EL-related materials and accelerate technology development and commercialization of products beyond the LCD display field



# Carbon Fiber Composite Materials

## Basic Policy

*Further expand the business as the world's number-one manufacturer of carbon fibers.*

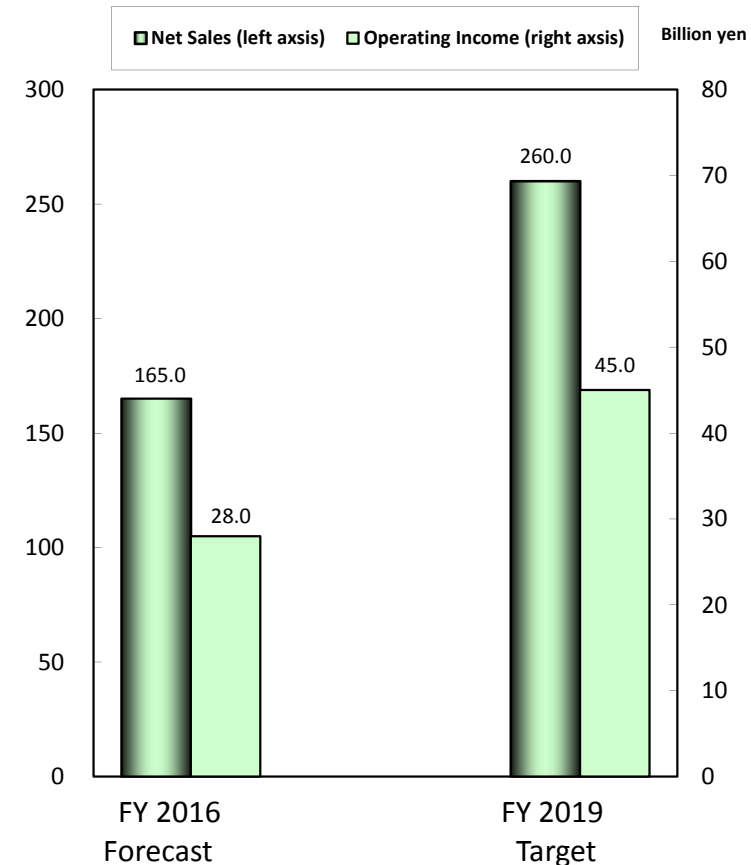
## Basic Strategies

### ■ Aerospace Applications

- Further strengthen existing partnerships
- Capture new programs

### ■ Industrial Applications

- Reinforce the overwhelming top position in the market by leveraging comprehensive strength with lineups of regular tow and large tow products
- Reinforce the overwhelming top position in the wind-turbine application market through strengthening alliance with major customers, supported by the cost competitiveness in large tow products
- Develop intermediate products / molding technology and enhance the supply chain to meet the full-scale expansion of demand for automotive applications



# Environment & Engineering

## Basic Policy

*Expand business in the environment and energy field with focus on water treatment membranes and facility design capabilities.*

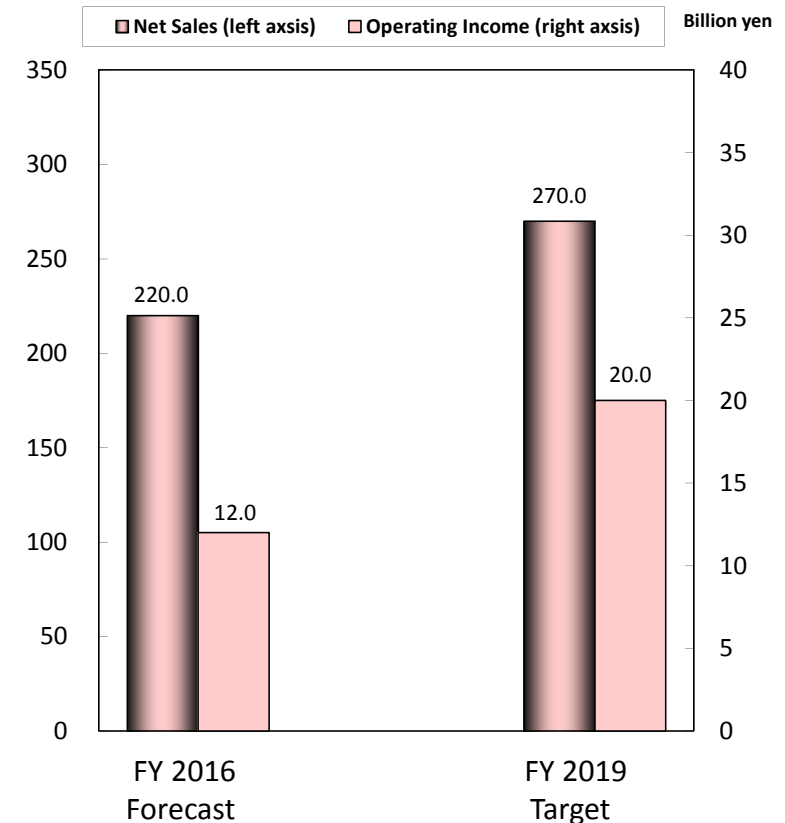
## Basic Strategies

### ■ Water Treatment Business

- Expand business and improve revenue and profit in the membrane business
- Enhance new development of reverse osmosis membrane products and strengthen cost competitiveness
- Expand sales of UF membranes in China and the USA
- Strengthen business foundation in the water treatment system and plant business

### ■ Engineering Business

- Expand plant business and industrial machinery (in the environment and energy fields, and life science field)
- Make use of external resources in growth areas
- Strengthen cost competitiveness
- Accelerate overseas expansion



# Life Science

## Basic Policy

*Expand sales of strategic products globally, enhance effective product development*

## Basic Strategies

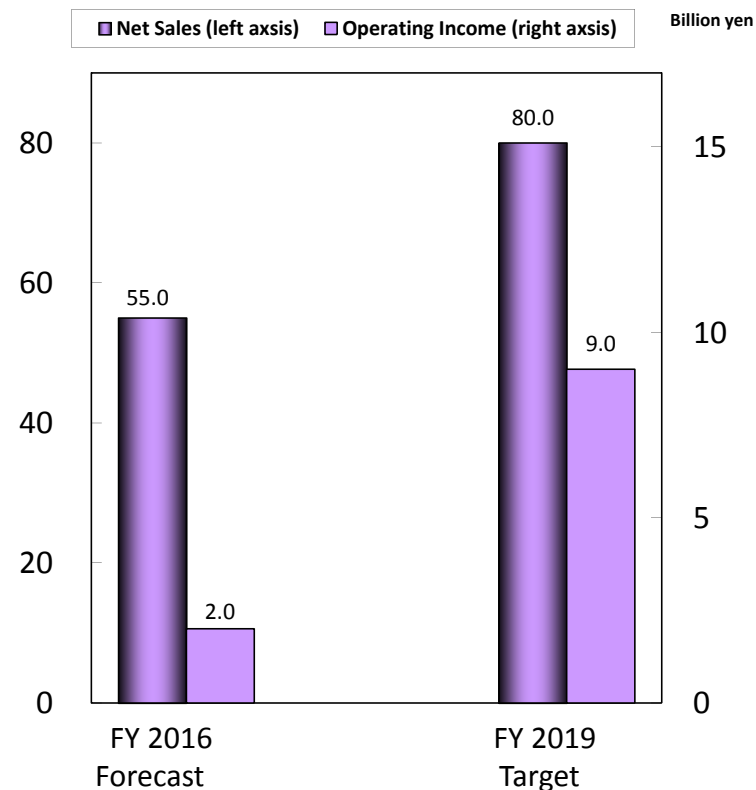
### ■ Pharmaceutical Business

- Expand sales of oral antipruritus drug, \*REMITCH®
- Create next-generation drug with new process
- Adjust management system associated with downsizing of existing pharmaceutical business

### ■ Medical Devices Business

- Expand sales of emergency and intensive care products
- Develop dialyzer products and expand sales in Japan and overseas
- Enhance expansion of bio-tools

\*REMITCH® is a registered trademark of Torii Pharmaceutical Co., Ltd.



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**Descriptions of predicted business results, projections and business plans contained in this material are based on assumptions and forecasts regarding the future business environment, made at the present time.**

**The material in this presentation is not a guarantee of the Company's future business performance.**

**'TORAY'**

**Innovation by Chemistry**