

Change and Innovation

# Business Strategy for the Petrochemicals & Plastics Sector

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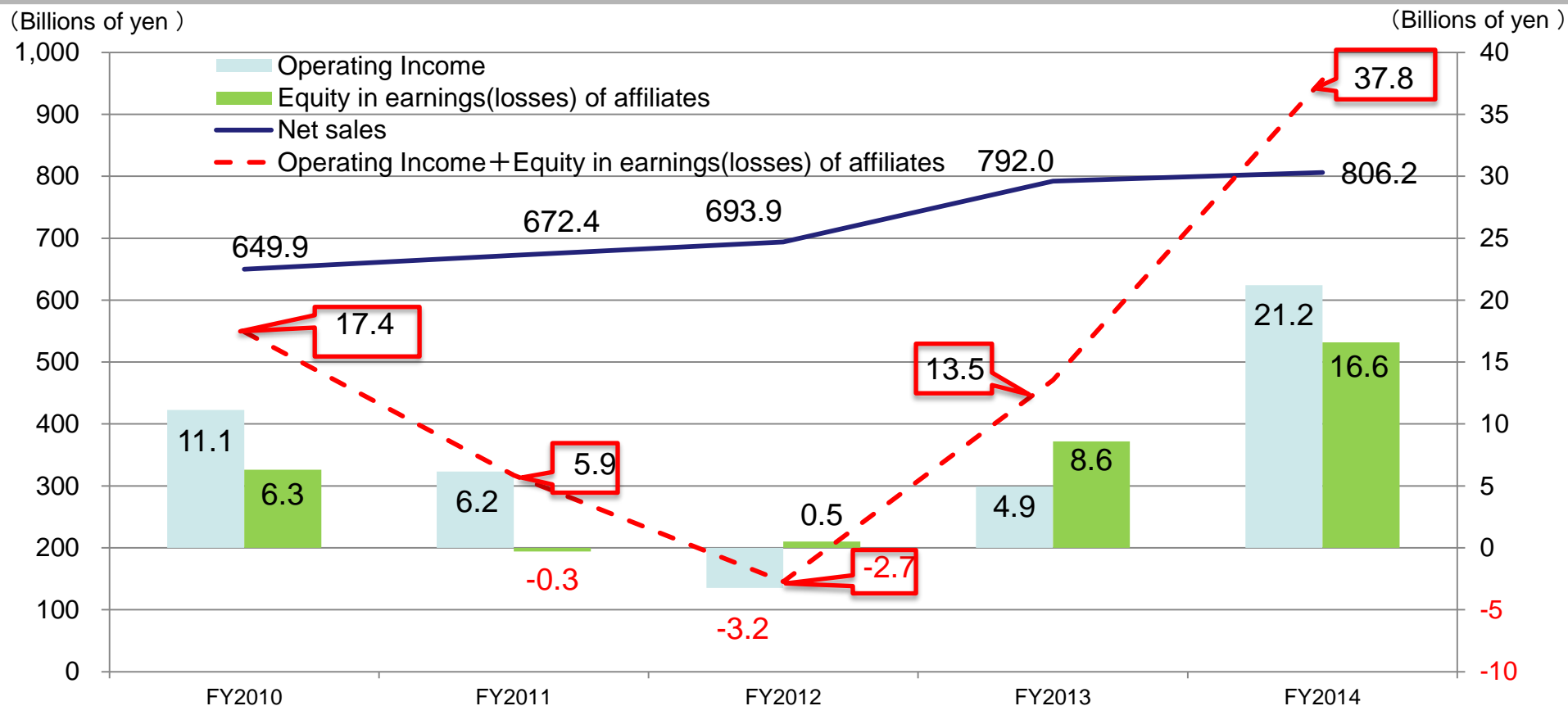
- 1. Overview of Our Petrochemicals & Plastics Business**
- 2. Petrochemicals & Plastics Business Climate**
- 3. Business Strategy for Each Location**
  - (1) Domestic Operations**
  - (2) Singapore**
  - (3) Saudi Arabia**
- 4. Technology Development Strategy**
- 5. Final Words**

# 1. Overview of Our Petrochemicals & Plastics Business



# Consolidated Results

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## After-tax Earnings of Major Group Companies

(US\$ MM)	FY2010	FY2011	FY2012	FY2013	FY2014
PCS	130	23	-60	62	121
TPC	70	49	-12	-13	40
PRC	56	18	130	96	182

# FY2014 Results (consolidated basis)

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(Billions of yen)

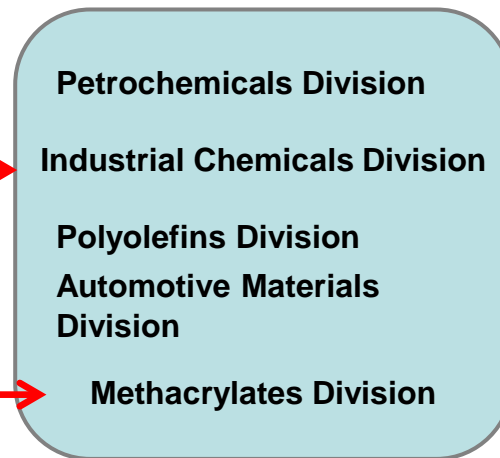
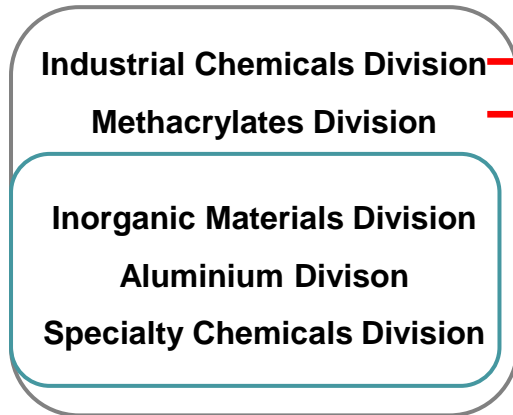
	FY2014 (Old Sector)	FY2014 (New Sector)	FY2015 Forecast (New Sector)
Net Sales	806.2	932.3	715.0
Operating Income	21.2	20.8	17.0

# Change in Business Sector (Effective as of April 1, 2015)

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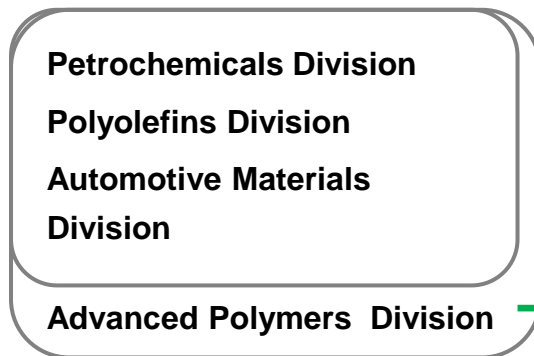
The Basic Chemicals Sector was eliminated and businesses in this sector were split up and transferred to the Petrochemicals & Plastics Sector and the Energy & Functional Materials Sector, which was established as a new business sector. In addition, a part of businesses in the Petrochemicals & Plastics Sector was transferred to the Energy & Functional Materials Sector. Inorganic chemicals, raw materials for synthetic fibers, organic chemicals, and methyl methacrylate, which had been included in the Basic Chemicals Sector, were transferred to the Petrochemicals & Plastics Sector. Synthetic rubber, which had been included in the Petrochemicals & Plastics Sector, was transferred to the Energy & Functional Materials Sector.

## Basic Chemicals



## Petrochemicals & Plastics Sector

## Petrochemicals & Plastics



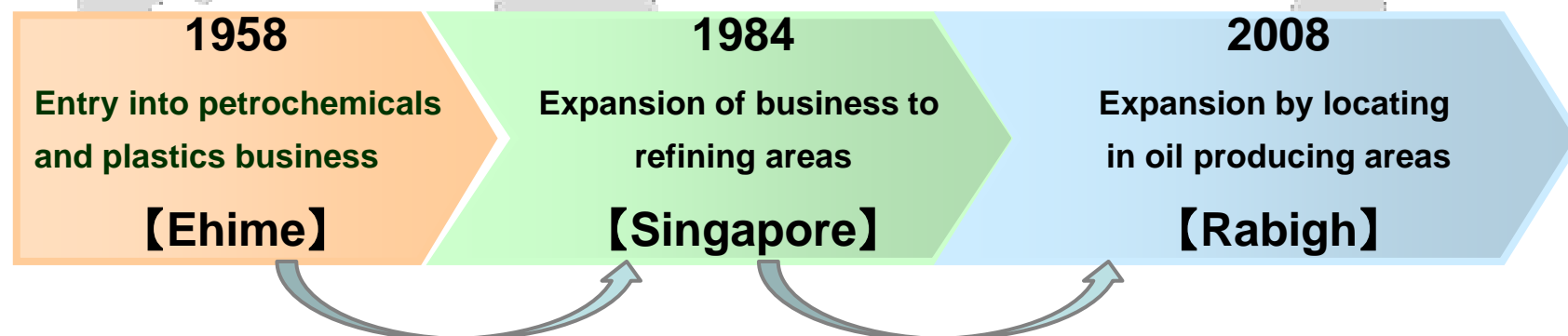
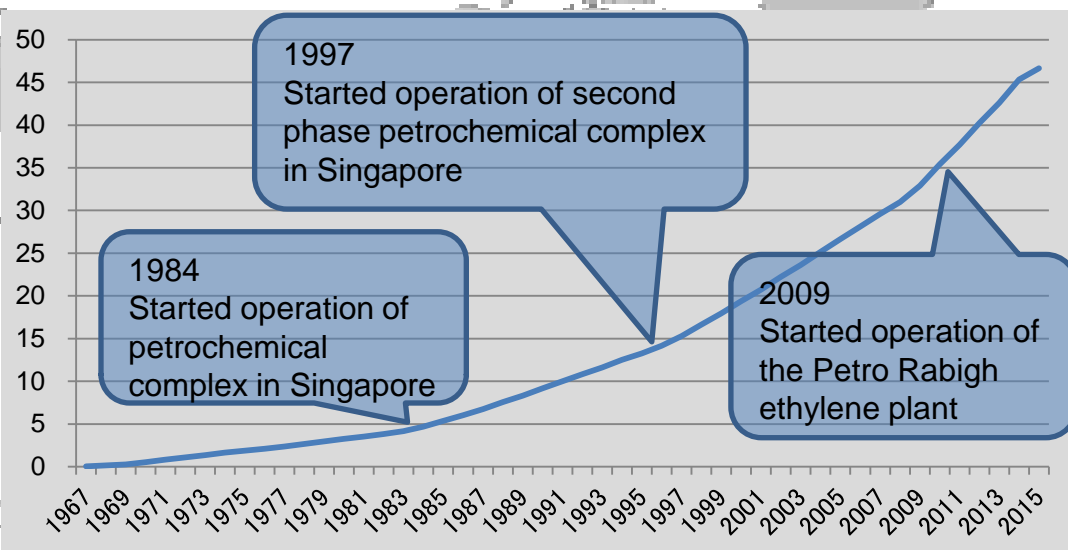
## Energy & Functional Materials Sector

# Global Strategy for Petrochemicals Business

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Cumulative ethylene production volume by our petrochemical complexes

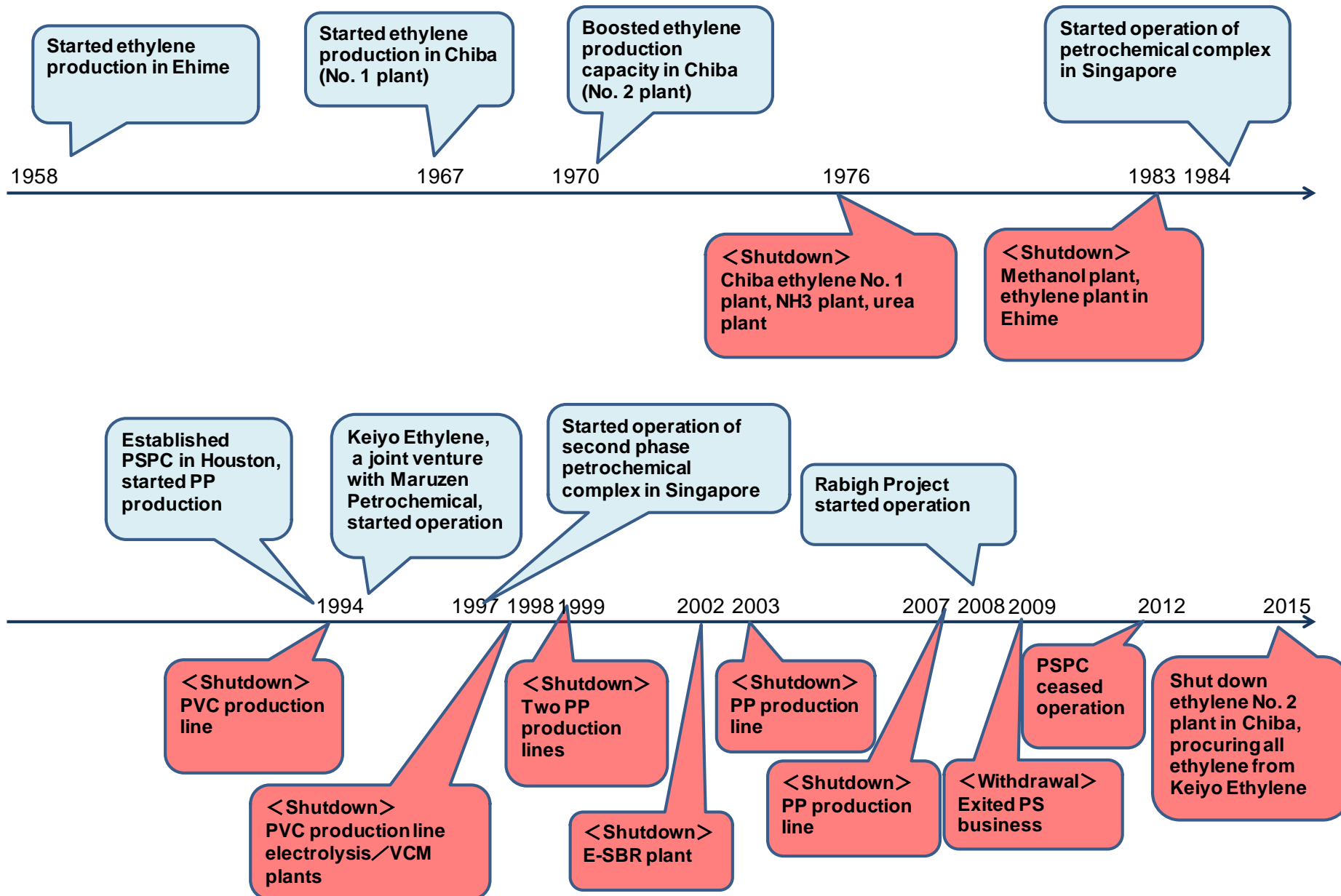
(million tons)



A cycle of about 25 years

# History of Our Petrochemical Business (New businesses and withdrawal from unprofitable businesses)

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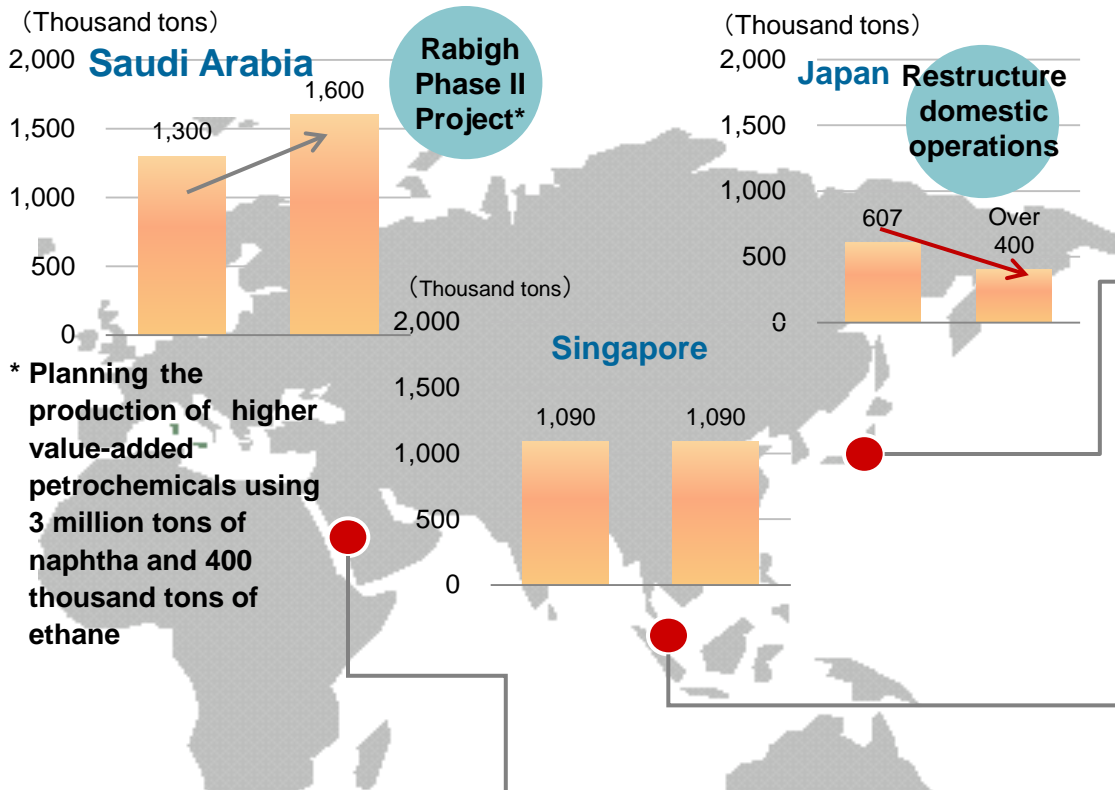




# Petrochemical Products by Region

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## Ethylene production capacity by area



Location	Saudi Arabia
<b>Advantage</b>	Robust cost competitiveness, taking advantage of low-cost feedstocks and fuels
<b>Priority</b>	Maximize Petro Rabigh's profitability (achieve more stable operations)

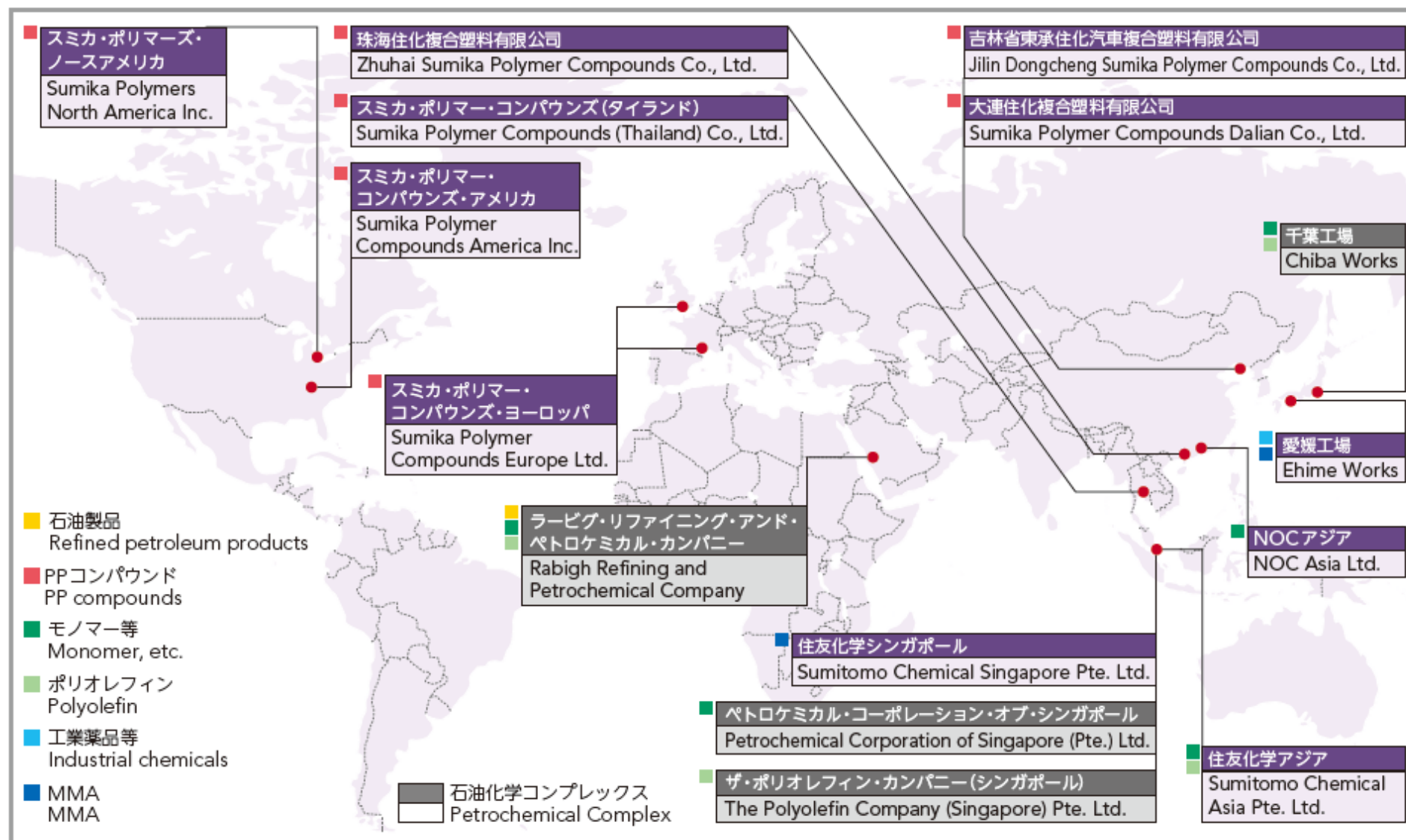
Location	Japan
<b>Advantage</b>	"Mother plant/laboratory," leading the effort to develop high value-added new technologies, products and know-how
<b>Priority</b>	Restructure domestic operations (exit underperforming businesses and restructure production operations)

Location	Singapore
<b>Advantage</b>	A solid customer base and high-value added products meeting the needs of key customers in Asian markets
<b>Priority</b>	Strengthen competitiveness by enhancing higher value-added petrochemicals business

# Global Petrochemical Operations

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## ✦ グローバル展開 Globalization



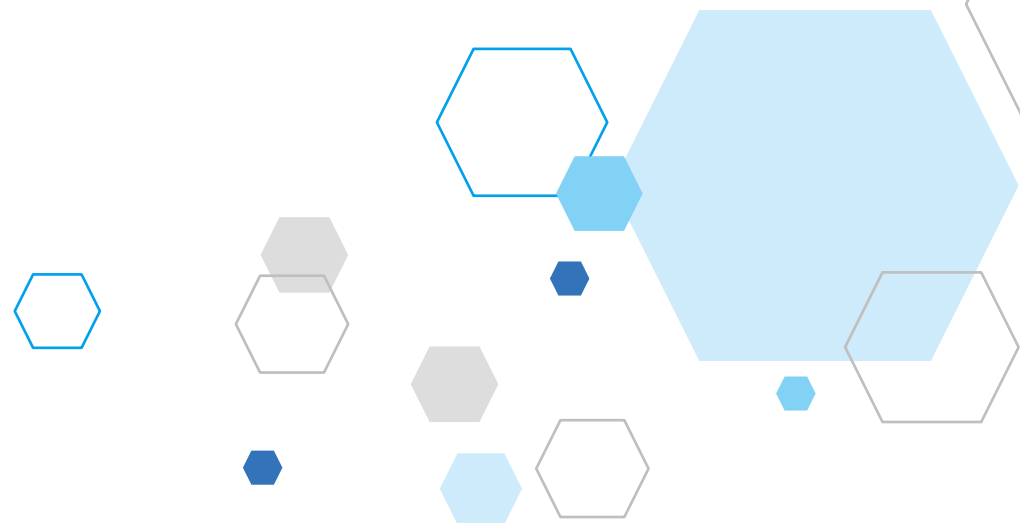
# Net Sales by Region (Old Sector)

	Net Sales (billions of yen)	Japan	China	Other Asian nations	Europe	Others
FY2005	486.1	60%	20%	15%	1%	4%
FY2012	693.9	45%	25%	23%	3%	4%
FY2014	806.2	40%	25%	25%	5%	5%

※Figures in fiscal 2005 were results before the launch of the Rabigh Project.

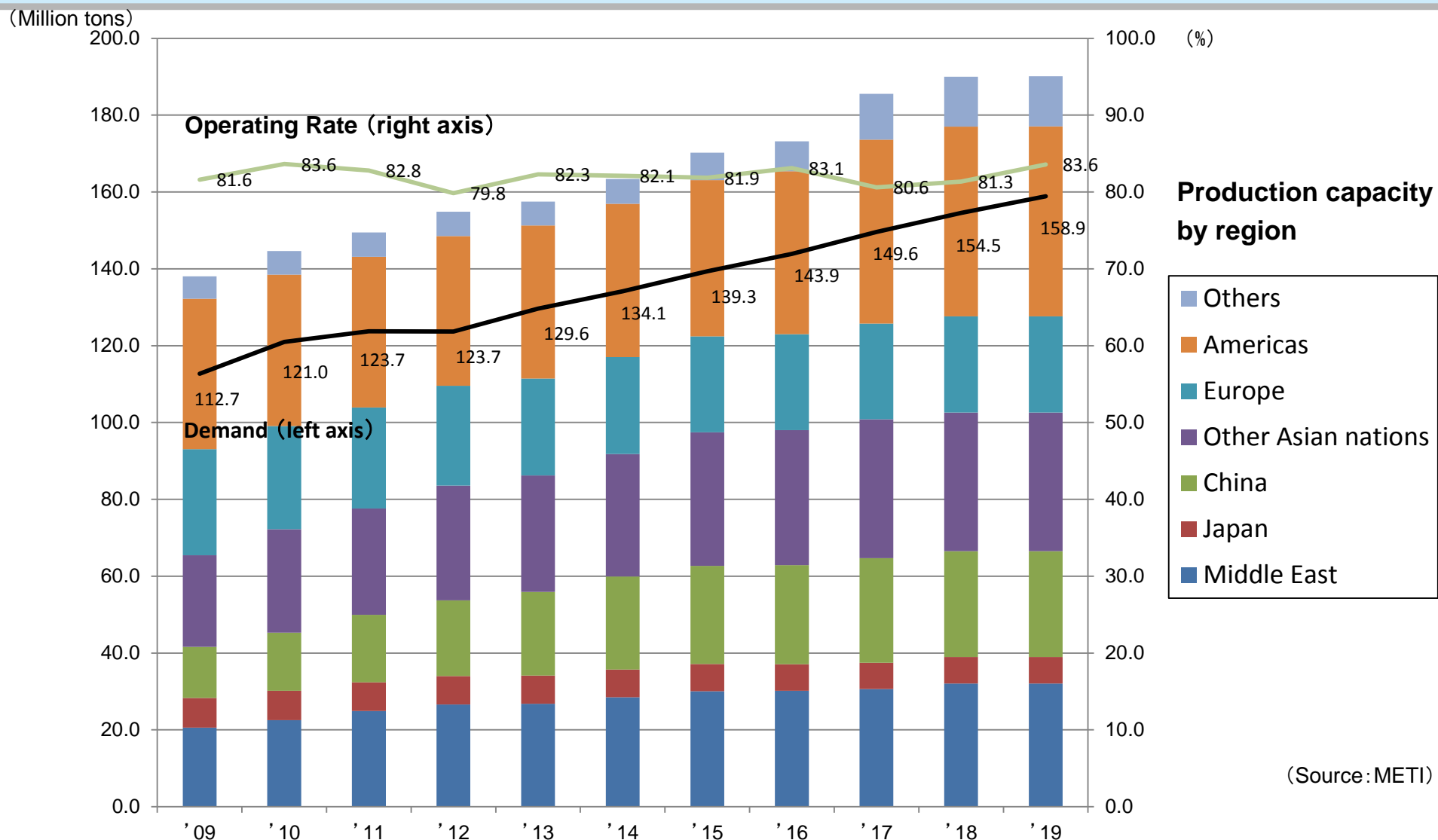
A large portion of the sales is to Asia, including Japan and China, due to having a Singapore base. Even so, there is no over-dependence on Japan and China, as significant sales to Southeast Asia and other areas have been achieved.

## 2. Petrochemicals & Plastics Business Climate



# World Demand Forecast (Ethylene Derivatives)

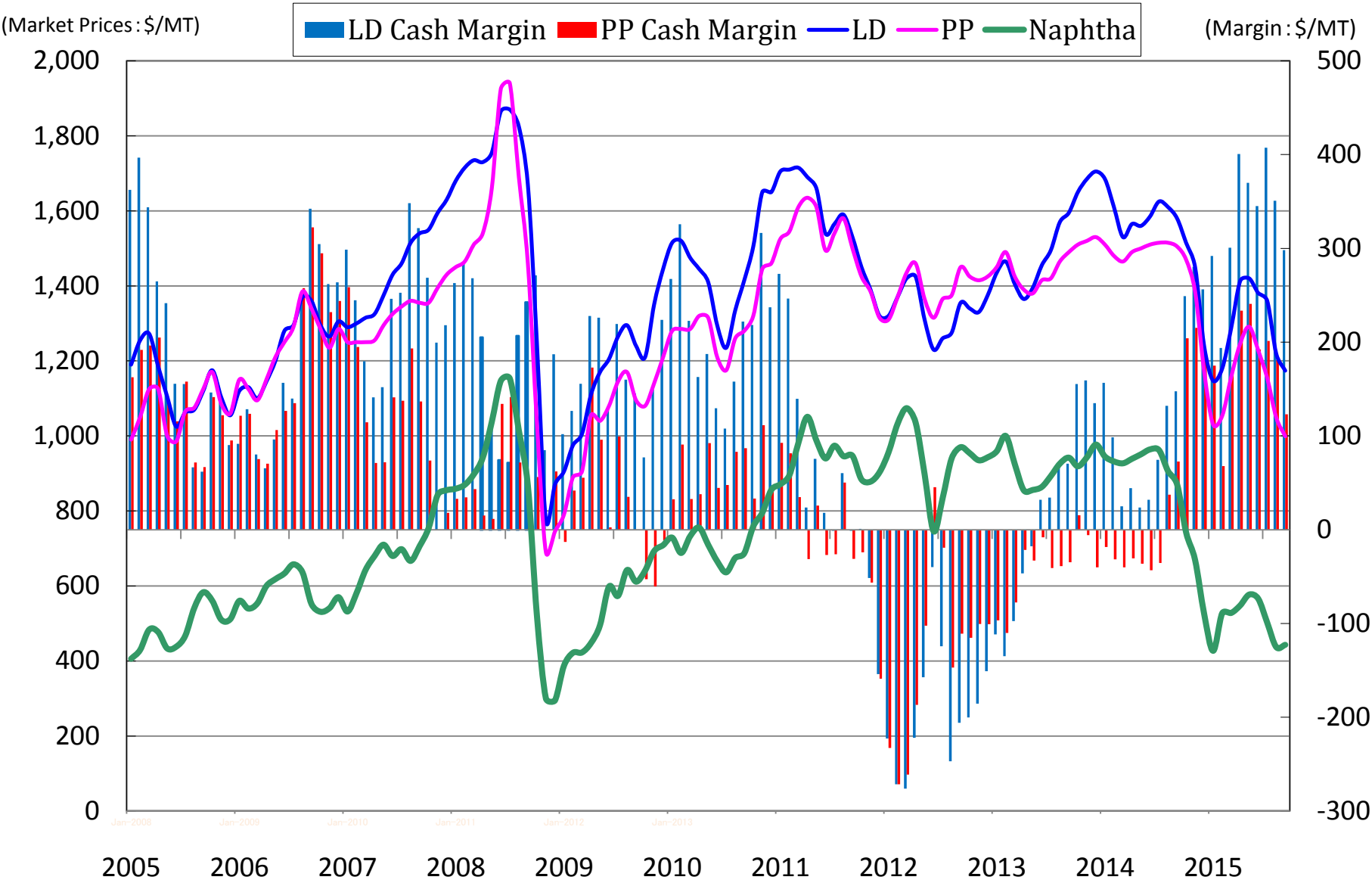
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**Overall global demand growth for petrochemicals and plastics is not going to stop any time soon. Growth trends are especially strong in newly emerging economies.**

# Asian Polyolefin Market Trend and Estimated Cash Margin from Naphtha

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A number of uncertainty factors can be seen currently.

1. Drop in crude oil prices

2. Slowing of growth in China

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1. Drop in crude oil prices

The drop in crude oil prices is eroding the cost advantages of shale gas and CTO/MTO projects.

Also, the growth in demand for petrochemical products is likely to exceed the growth in the production volume of those manufactured from shale gas. Even if these make it into Asian markets, their impact on the supply-and-demand balance and on market conditions will be limited.

2. Slowing of growth in China

By promoting a further move to higher added value, our Group will shift to fields not readily impacted by such a slowdown. We will also seek to avoid over-dependence on the China market through wider development of Asian markets.

### 3. Business Strategy for Each Location



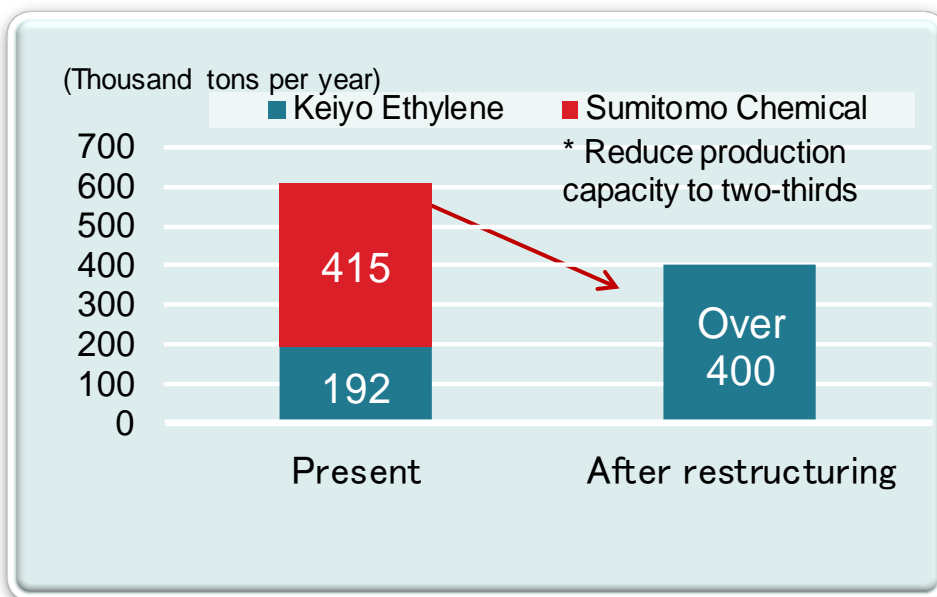


# Restructuring of Chiba Works:

## Shut down ethylene plant and procure ethylene from Keiyo Ethylene

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### Reduce our ethylene production capacity in Japan (May 2015)



### Our ethylene production capacity in Japan

	Start of operations	Annual production capacity
Keiyo Ethylene	1994	768,000 tons*
Sumitomo Chemical	1970	415,000 tons

\* Includes 192,000 tons of allotment to Sumitomo Chemical

- Keiyo Ethylene's plant is the newest and largest ethylene production facility in Japan.
- Sumitomo Chemical's ethylene plant came on stream more than 40 years ago.

### Keiyo Ethylene: Allocation and Equity Share Holding

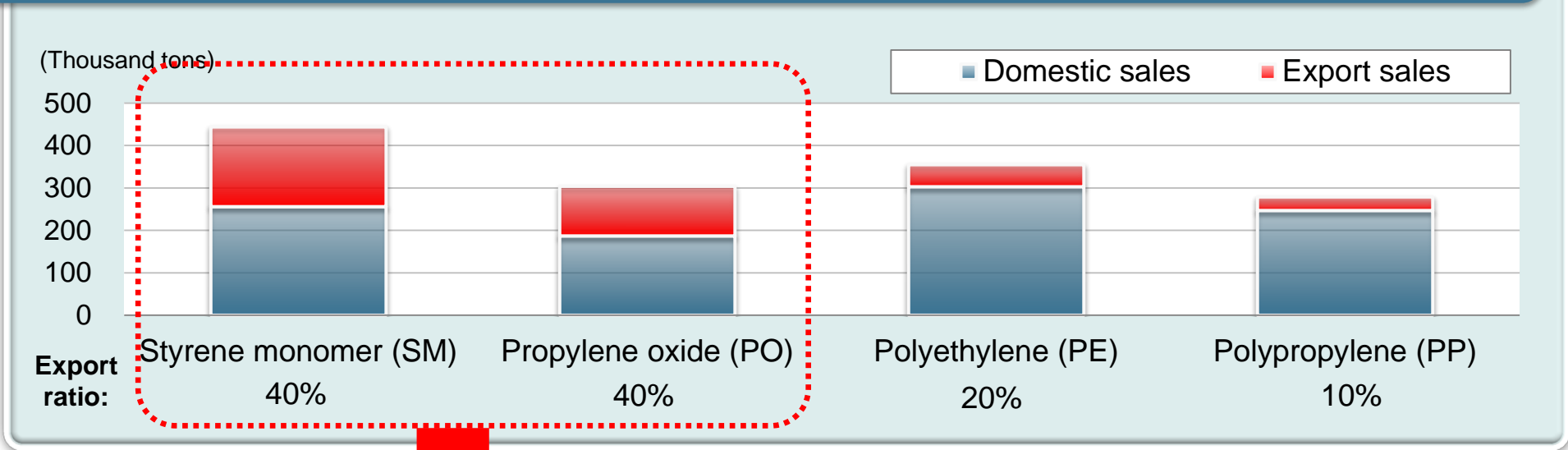
	Allocation	Shareholdings		Allocation	Shareholdings
Maruzen Petrochemical	50.0%	55.0%	➔	40.6%	55.0%
Sumitomo Chemical	25.0%	22.5%		59.4%	45.0%

# Restructuring of Chiba Works: Downsize/exit underperforming businesses

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**Export sales have significantly fluctuated, generating lower-than-expected profits**  
**>>> Decided to exit businesses with a high export ratio**

## Sales volume of major products: domestic vs. export sales (FY 2012)



## Exit businesses with a high export ratio

**April 2012**      **Dissolved joint venture Chiba Styrene Monomer**  
**May 2015**      **Stopped SM and PO production at Nihon Oxirane\***

\*Acquired entire stake in Nihon Oxirane in December 2013

## Products and Production Capacity

	Products	Production capacity
Chiba Styrene Monomer	SM	108,000 tons*
Nihon Oxirane	SM	425,000 tons
	PO	181,000 tons
Sumitomo Chemical	PO	200,000 tons**

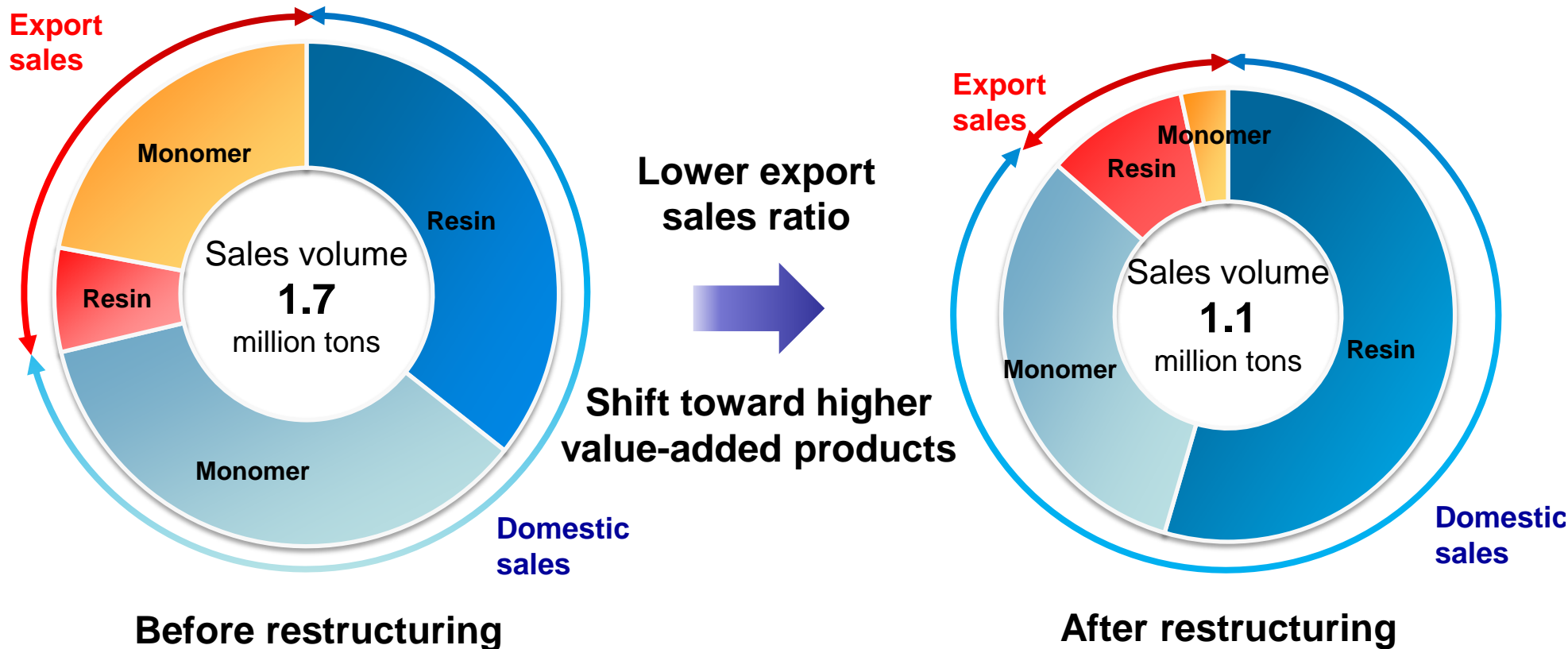
\*Allotment to Sumitomo Chemical    \*\*Continued production after restructuring

The core businesses of  
PE (Polyethylene)  
PP (Polypropylene)  
PO (Propylene Oxide) will remain in Japan



To facilitate continued overseas expansion, retain the mother factory role  
Promote faster development of next-generation processes and advanced-function catalysts  
(PE) Accelerate the shift to high-profit fields like extruded laminates and protection films  
(PP) Specialize in fields where we have strength that have strong growth prospects (automotive industry, films)  
(PO) Build a stable profit structure not subject to the vagaries of the SM market situation; make this the pillar of license revenue

## Sales of major products: domestic vs. export sales



**Revitalize and maintain petrochemical business in Japan  
by optimizing production operations**

## MMA Business

### Current state

Increase in demand in China and other Asian countries  
Sharp decline in the demand for use in light-guide plates, the major application of PMMA

### Restructuring measures under consideration

- Shift production, sales and research bases to Singapore
  - Stopped PMMA production in Ehime in December 2013 (capacity 45,000 tons)
- Develop new applications (Optimize product portfolio)

## Caprolactam Business

### Current state

Change in the supply-demand structure due to large increases in supply in China

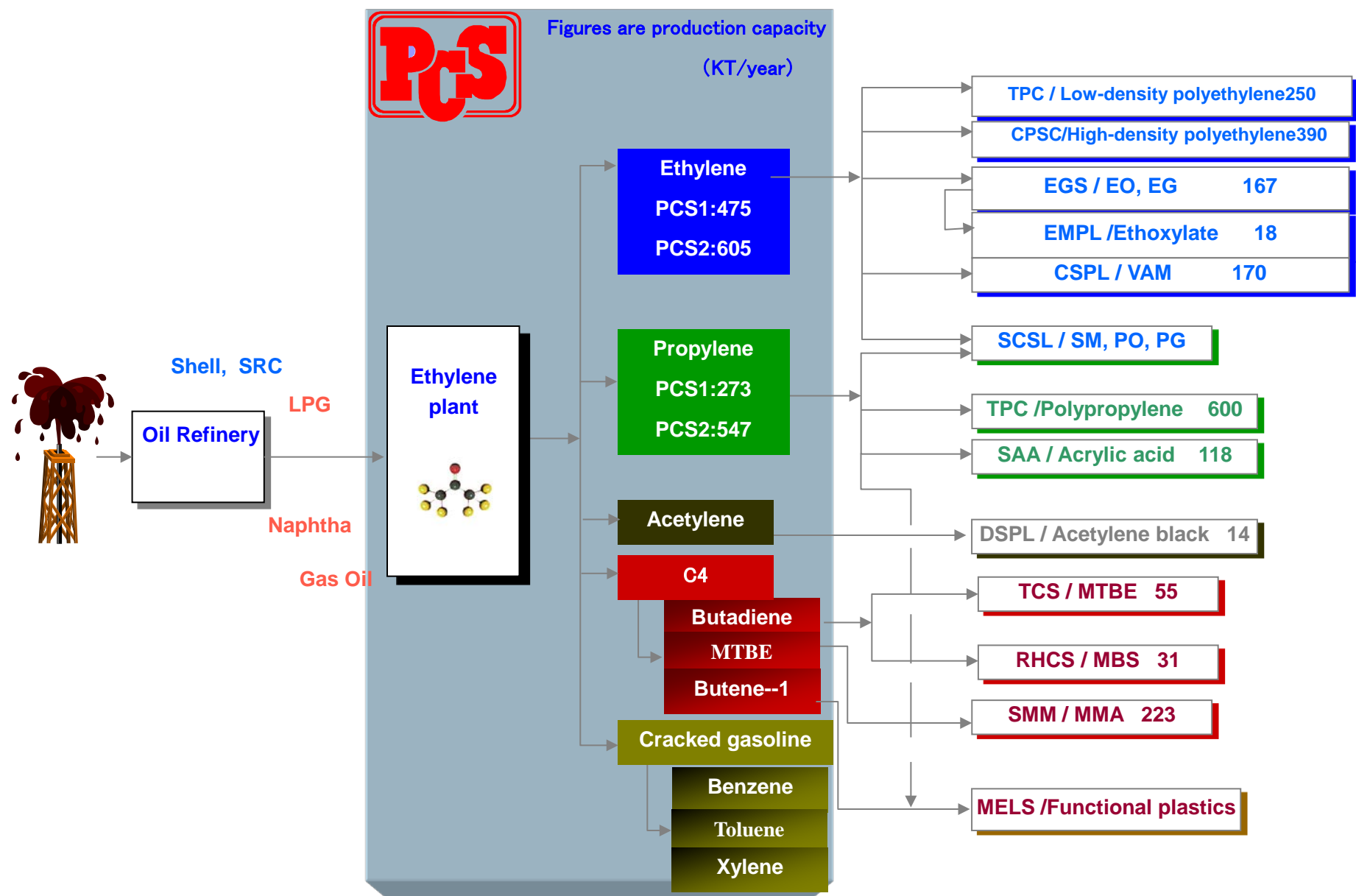
### Restructuring measures under consideration

- Measures to improve competitiveness
  - Drastically reduce raw material costs
  - Build business alliance with upstream and down-stream players
- Optimize production operations (Closed down liquid-phase process plant with a production capacity of 95,000 tons in September 2015)

**Radically improve competitiveness and profitability**

# Present System of the Petrochemical Complex in Singapore

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## PCS

- Shareholders:  
Japan Singapore Petrochemicals Co. 50%, QSPS 50%
- Ethylene center  
Production capacity First phase 465,000 tons  
Second phase 635,000 tons
- Supply of ethylene, propylene, and utility supply inside the complex
- Started operation in 1984. Started operation of second phase petrochemical complex in 1997

## TPC

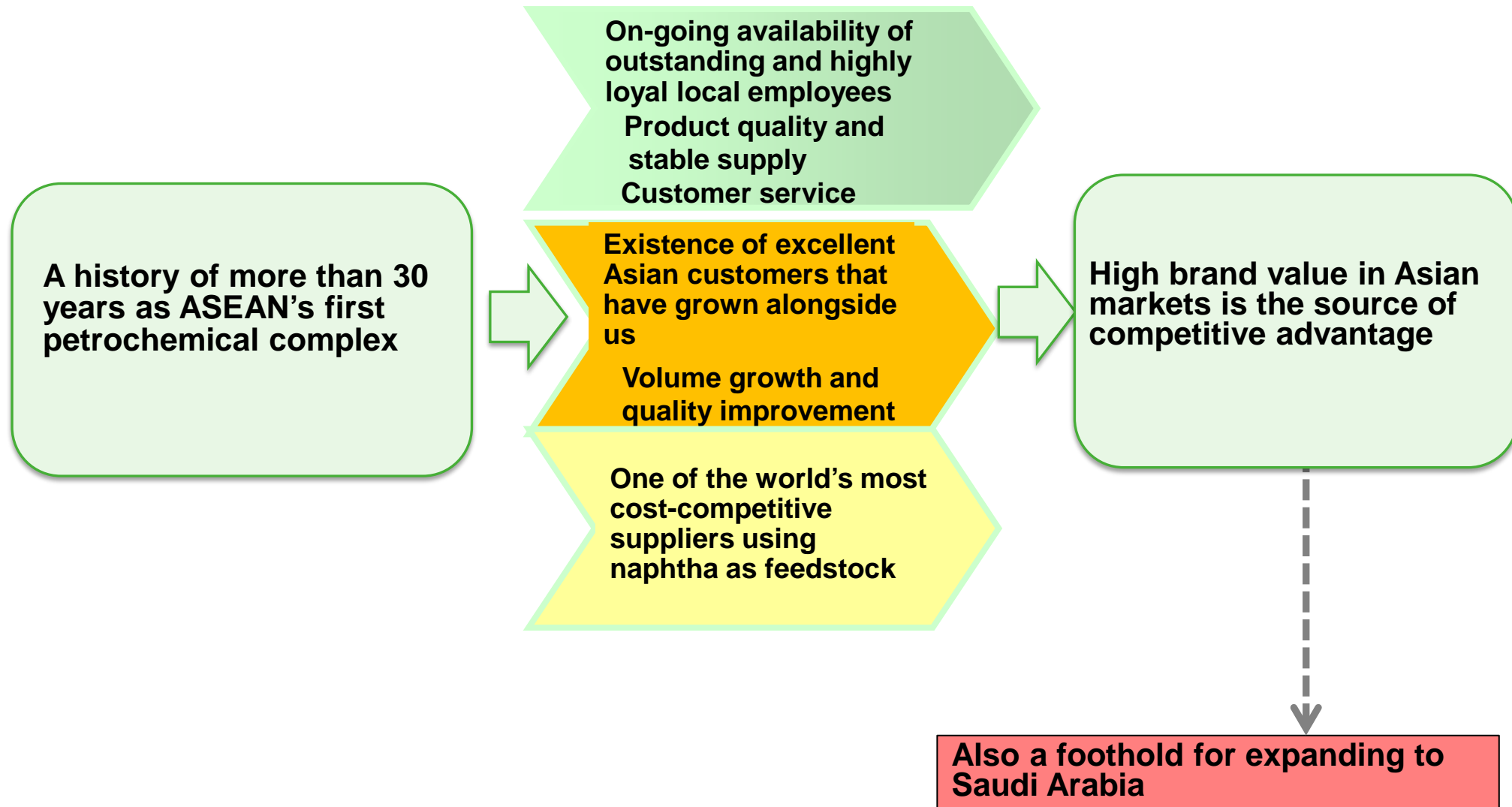
- Nihon Singapore Polyolefin Co. 70%, QSPS 30%
- Production and sale of polyethylene and polypropylene  
Production capacity LDPE 235,000 tons  
PP 650,000 tons
- Started operation in 1984

## SCS

- Sumitomo Chemical 100%
- Production and sale of MMA monomer and polymer  
Production capacity Monomer 223,000 tons  
Polymer 150,000 tons
- Started operation in 1999

## SCA

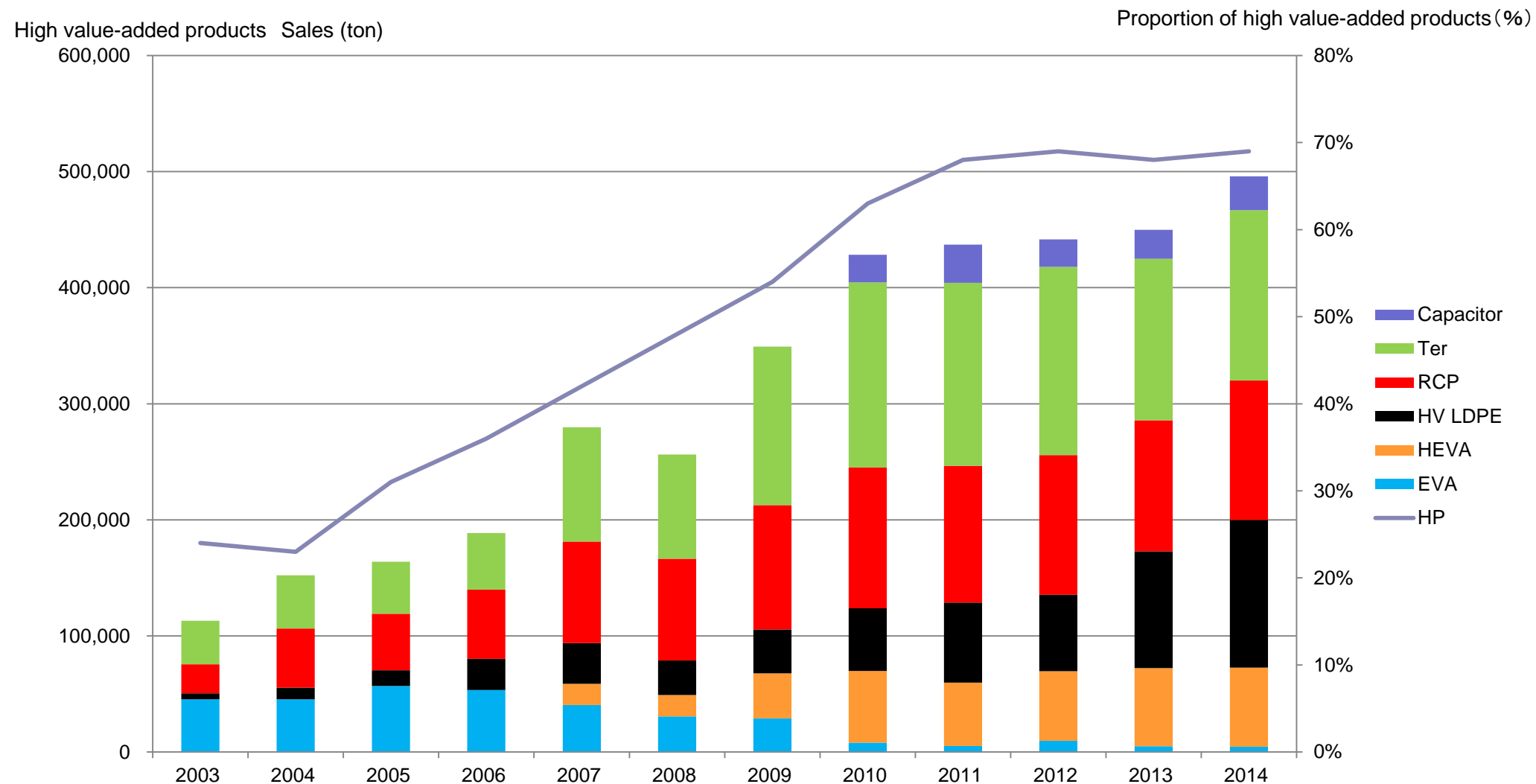
- Sumitomo Chemical 100%
- Sale of Petro Rabigh's products and production and sale of S-SBR
- Products  
PE, PP, MEG, PO,  
caprolactam, resorcinol,  
S-SBR
- Started operation in 2006





# TPC Shift to High Value-added Products

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Shifted production at GLS plant from PE to PP in 2006

Launched and expanded sales of a new grade of RCP and terpolymer

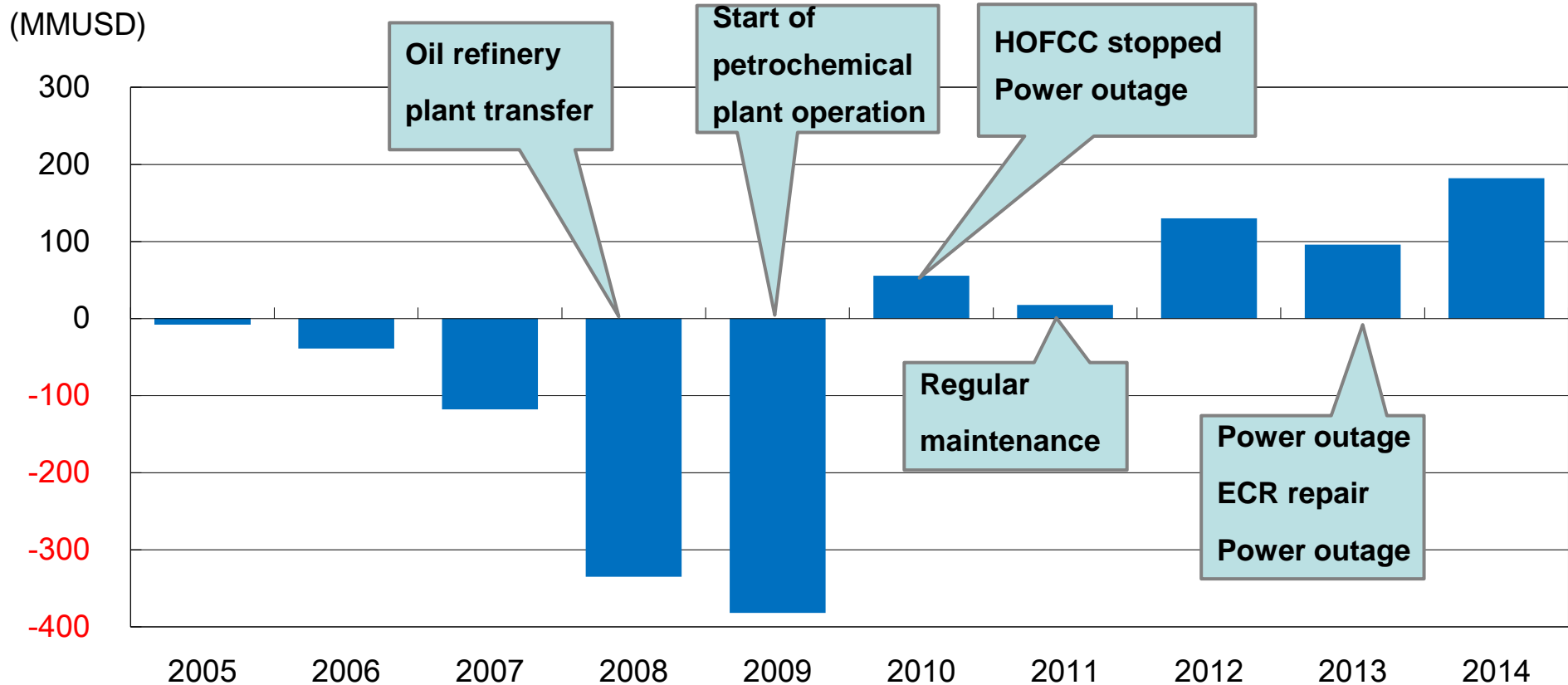
Launched HEVA for solar cells in 2007

Launched a new grade of capacitor in 2009

Remodeled SPP production line for capacitor

# Petro Rabigh's Performance

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	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
After-tax profit/loss	-8	-39	-118	-335	-382	56	18	130	96	182
Cumulative losses	-8	-47	-165	-500	-882	-840	-821	-707	*42	193

\*In 2013, legal reserves (in the amount of \$663 million) were tapped to cover cumulative losses.

# Measures to Improve Petro Rabigh's Performance

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Issue	Measures
Shortage of personnel	<ul style="list-style-type: none"><li>• Review hiring policy and system</li><li>• Make use of recruitment agencies and strengthen overseas hiring activities</li></ul>
Raising skill levels of existing human resources	<ul style="list-style-type: none"><li>• Thoroughly implement basic education ⇒ Document basic knowledge and rules necessary for operators</li><li>• Redo assessment by parent companies to cover the entire organization</li><li>• Assign outstanding experienced persons and aim for human resource development through OJT</li></ul>

★In addition, boost the program of dispatching experts from both parent companies.

**Accomplishments have emerged as a result of parent company support for Petro Rabigh and the presentation of various solution measures.**

**Improve  
operating  
rate**

Improved operation of ECR cracking furnace  
(longer furnace life)

Improved plant control (longer catalyst life achieved by  
improvement to operating conditions)

More stable refinery operation

**Improve  
yield**

Improvement in proportion of on-spec polymer products

**☆ These measures have improved financial performance  
by more than \$20 million.**

## 1 Construction schedule

- ✓ **Production facilities will start operations one after another as planned, from the first half of 2016.**
- ✓ **Utility plants, an ethane cracker, and derivative plants will come on stream in stages.**

## 2 Marketing

- ✓ **Marketing by Sumitomo Chemical Asia mainly in China and other Asian countries, as well as in the Middle East and Europe**

## 3 Value of Rabigh Phase II Project

- ✓ **Effective use of newly allocated cost-competitive ethane**
- ✓ **Production of high value-added petrochemical products from naphtha**

## 4. Technology Development Strategy



**For stable operations of aging chemical plants in Japan, early discovery and prevention of corrosion and other problems are vital.**

- **Focus on inspections of aging plants and common pipes**
- **Consider and adopt new inspection methods**
- **Take corrosion prevention measures**

**Through these efforts,**

- ✓ **Improve inspection efficiency**
- ✓ **Increase accuracy of inspection**
- ✓ **Prevent problems**
- ✓ **Extend the life of plants**
- ✓ **Continue safe and stable operations**

**Safe and stable operations of plants are the largest source of long-term competitiveness. Only the companies that continuously improve operations and maintenance survive.**

**R&D strategy supporting business strategy**  
**“Pursue customer value and cost advantage based on our products and technologies accumulated over the years”**

## Pursue customer value

Development of differentiated products

Polyolefin  
Elastomer

Development of new manufacturing technology

Catalyst, process

Technology, products  
Existing ↔ New

## Early development of technologies to maintain and expand business

High quality, stable supply, rationalization

**Development of new technology and products**

**Foundation for the future**

## Create and pursue theme for the future

Consider both technology and marketing

(Restructured research organization and established Resin-related Business Development Dept.)

**Market development**

## R&D in response to globalization of business (technological refinements)

Provide materials with functions that match local customers' needs

Technological development supporting licensing business (catalysts, processes, products)

**Market penetration**

Existing ↔ New  
**Market**



## Increase profits by taking advantage of the strengths of manufacturing bases in Japan, Singapore and Saudi Arabia

### ➤ Domestic operations

The role of the Japanese base as the mother factory and mother laboratory is becoming stronger in developing new technologies for safe and stable operations as well as high value-added products. The Japanese base also focuses on the efficient management, differentiation, and licensing activity for existing businesses including PO and polyolefin.

### ➤ Singapore

Remain a front runner in the Asian market by reinforcing current strengths in personnel, customer assets and costs, while strengthening a structure less affected by market conditions, as a steady source of profit and added value to customers.

### ➤ Saudi Arabia

Establish solid profitability effects of scale and low costs, by maintaining stable operation of Rabigh Phase I Project facilities and smoothly launching Rabigh Phase II Project facilities.

	Company name and business	Ownership ratio
PCS	<b>Petrochemical Corporation of Singapore (Pte.) Ltd.</b> Ethylene center in petrochemical complex in Singapore	39.3%
TPC	<b>The Polyolefin Company (Singapore) Pte. Ltd.</b> Manufacturing and sales of polyethylene and polypropylene	67.0%
SCA	<b>Sumitomo Chemical Asia Pte Ltd.</b> Manufacturing and sales of petrochemical products	100.0%
SCS	<b>Sumitomo Chemical Singapore Pte. Ltd.</b> Control over manufacturing and sales of MMA monomer and polymer Sales of chemical products	100.0%
PRC	<b>Rabigh Refining and Petrochemical Company</b> Manufacturing and sales of refined petroleum products and petrochemicals	37.5%

# Creative Hybrid Chemistry



### Cautionary Statement

Statements made in this document with respect to Sumitomo Chemical's current plans, estimates, strategies and beliefs that are not historical facts are forward-looking statements about the future performance of Sumitomo Chemical. These statements are based on management's assumptions and beliefs in light of the information currently available to it, and involve risks and uncertainties.

The important factors that could cause actual results to differ materially from those discussed in the forward-looking statements include, but are not limited to, general economic conditions in Sumitomo Chemical's markets; demand for, and competitive pricing pressure on, Sumitomo Chemical's products in the marketplace; Sumitomo Chemical's ability to continue to win acceptance for its products in these highly competitive markets; and movements of currency exchange rates.