



New Medium-Term Business Plan (Fiscal 2018 to Fiscal 2020)

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Nippon Soda Co., Ltd.

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 - ① Pharmaceutical additive “HPC”
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 - ③ Semiconductor photo resist material “VP-Polymer”
 - ④ Agrochemicals

1 Overview of the Previous Medium-Term Business Plan

Initiatives of Previous Medium-Term Business Plan

We planned and executed each policy action to achieve three priority actions.

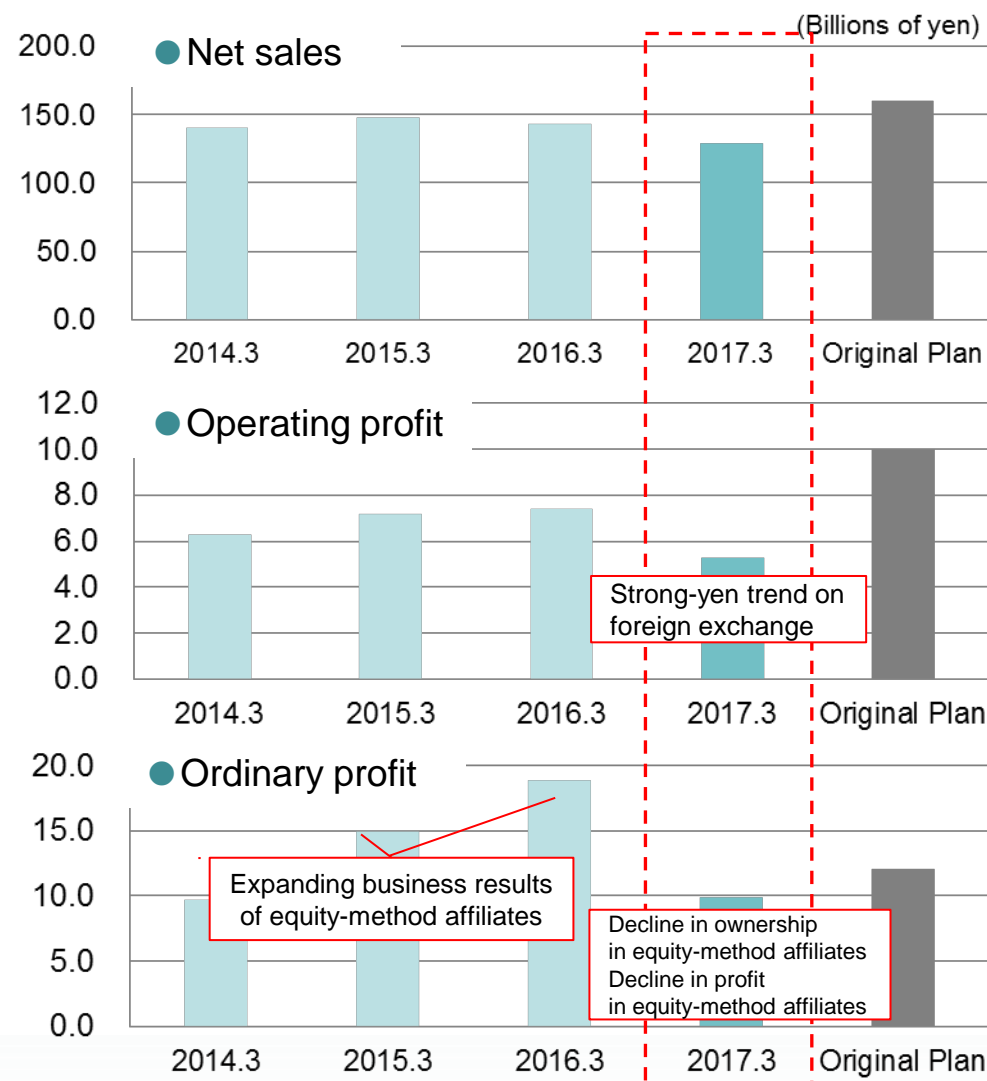
Priority Actions		
Increase the driving force for growth	Strengthen and restructure our business foundation	Enhance the Group's comprehensive capabilities
<ul style="list-style-type: none"> • Expanding priority business • Developing growth business and expanding into peripheral business areas • M&As and business alliances 	<ul style="list-style-type: none"> • Reducing costs on the manufacturing side • Improving profitability in less competitive business • Improving operational efficiency on the management side 	<ul style="list-style-type: none"> • Bolstering collaboration with Group companies • Leveraging the resources of the entire Group

Implementation of the Actions		
<ul style="list-style-type: none"> • Development of three new agrochemicals in parallel • Enhancement and expansion of core product sales (Agrochemicals, cellulose derivatives and functional polymer) 	<ul style="list-style-type: none"> • Enhancement of overseas manufacturing system for major agrochemical substances • Establishment of global sales expansion framework • Change in ownership ratio of Novus International, Inc. (receiving special dividend) 	<ul style="list-style-type: none"> • Turn Sanwa Soko Co., Ltd., which operates transportation and warehousing, into a wholly owned subsidiary • Active investment in transportation and warehousing

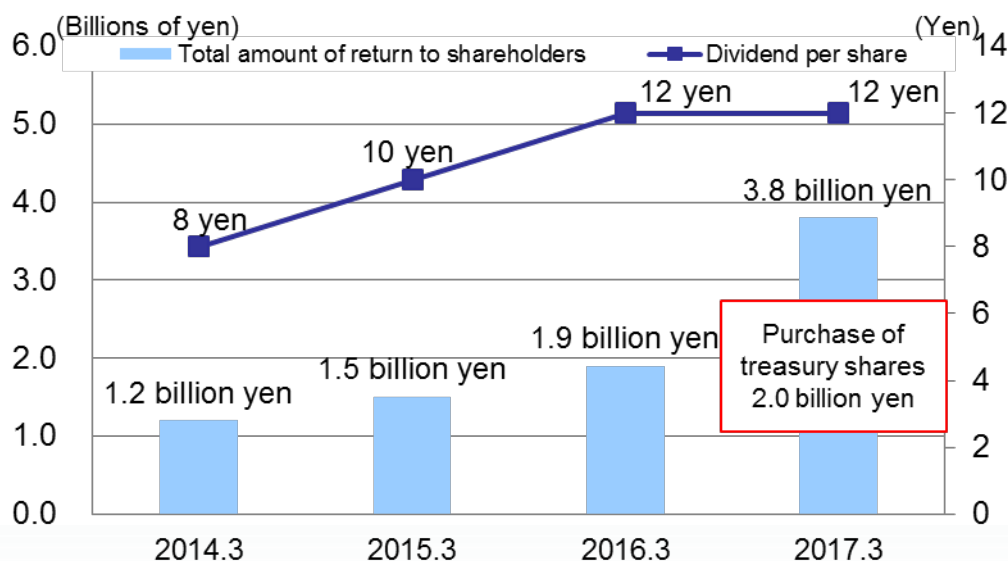
Results of Previous Medium-Term Business Plan

Despite smooth progress, targets were not achieved mainly due to currency fluctuation in the final fiscal year and delays in expanding business fields through M&A.

(Billions of yen)	Original Plan	Results of FY 2017
Net sales	160.0	128.6
Operating profit	10.0	5.4
Ordinary profit	12.0	9.9
Profit	9.0	8.8



● Trends of return to shareholders



Results of Priority Actions -Increase the Driving Force for Growth-

We implemented actions for each business and built global sales expansion framework.

	Implemented Actions	Deficiencies/Issues
Priority business	[Agro Products Business] <ul style="list-style-type: none"> • Development of three new agrochemicals in parallel • Sales expansion of existing products [Chemicals Business] <ul style="list-style-type: none"> • Increased production of pharmaceutical additive “HPC” and establishment of new facility under test • Sales expansion of resin additive “NISSO-PB” • Decision to increase production of semiconductor photo resist material “VP-Polymer” 	[Agro Products Business] <ul style="list-style-type: none"> • Stagnation in sales expansion of existing products at a certain region including Brazil
Growth business /Future business	[Metallic Sodium Related Business] <ul style="list-style-type: none"> • Start production and sales of products including sodium derivatives at Alkaline SAS in France 	[Chemicals Business] <ul style="list-style-type: none"> • Delay in launch of new products • Delay in expansion into peripheral business areas
M&As/ Business alliances	[Agro Products Business] <ul style="list-style-type: none"> • Underwrite a capital increase by IHARABRAS S/A in Brazil • Equity participation in establishment of crop protection distribution company, Summit Agro Vietnam LLC. • Turn Certis Europe B.V. in the Netherlands into equity-method affiliate 	Continue to examine the projects that may produce synergistic effects

Results of Priority Actions

We took on the challenge of improving earning capability through Group synergy.

	Implemented Actions	Deficiencies/Issues
Strengthen and restructure our business foundation	<p>[Agro Products Business]</p> <ul style="list-style-type: none"> • Enhancement of overseas manufacturing system for primary substances to reduce manufacturing costs and expand product sales • Establishment of global sales expansion framework <p>[Chemicals Business]</p> <ul style="list-style-type: none"> • Suspension of manufacture and sales of pharmaceutical substances and functional chemicals (pharmaceutical intermediate AOSA, transparent conductive glass) due to poor profitability <p>[Others]</p> <ul style="list-style-type: none"> • Change in ownership ratio of Novus International, Inc., manufacturer and supplier of methionine (receiving special dividend) • Reduction of system equipment investment and administration costs through promotion of cloud systems • Promotion of recruitment and training under diversity policy 	<ul style="list-style-type: none"> • Optimization of inventory control to suit pluralization of production bases • Establishment of efficient production system (cost/operation/manpower) including overseas production bases • Construction of intra-group personnel exchange, group shared personnel development program
Enhance the Group's comprehensive capabilities	<ul style="list-style-type: none"> • Improvement of Group's synergistic effects by turning Sanwa Soko Co., Ltd. (transportation and warehousing) into a wholly owned subsidiary • Shift to high added value for warehouses through active facilities investment in above business and continuous enhancement and improvement of earning capability 	<ul style="list-style-type: none"> • Construction of integrated group management structure achieved mainly through reorganization of administrative divisions

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New Medium-Term Business Plan

Basic Objectives, Numerical Targets and Management Indices (1)

◆ Basic objectives ◆ “Increase business earning power” and “Create new businesses”

- Expansion of existing businesses centered on growth drivers
- Creation of new businesses and promotion of development
- Enhancement of the Group’s business foundation

◆ Numerical targets and management indices ◆

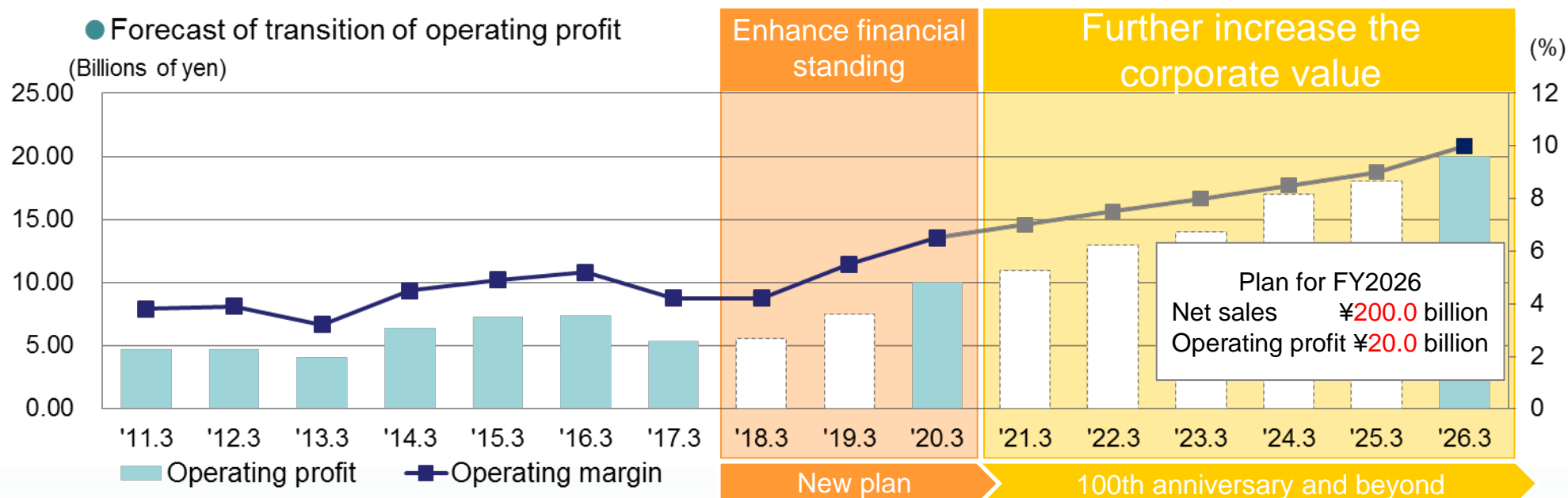
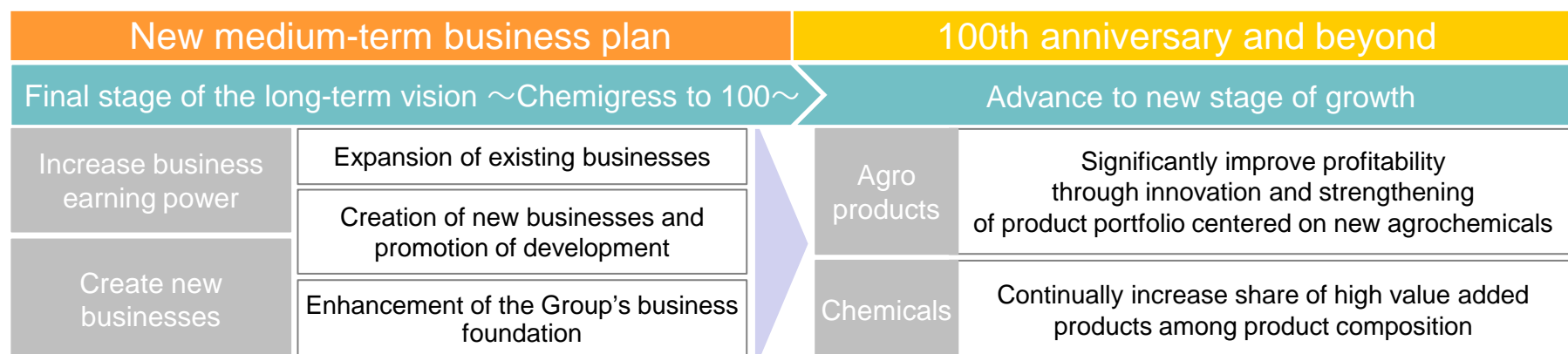
Management Indices	Numerical Target [FY2020]	FY2017 [Results]
Operating margin	6.5% or more (8.0% or more when excluding Trading Business)	4.2%
Ordinary profit	¥13.0 billion	¥9.9 billion
ROE*	7.0% or more	6.6%
Investment (in three years)	¥50.0 billion <div> Growth investment = ¥10.0 billion Maintenance and upgrade investment = ¥20.0 billion M&As, etc. = ¥20.0 billion </div>	

* Each department will improve ROIC (return on invested capital) by continuously improving profitability and efficiency, thereby improving ROE (return on equity) of the entire Group.

Basic Objectives, Numerical Targets and Management Indices (2)

◆ Snapshot of the Group advancing to the 100th anniversary year and beyond ◆

The Group envisions advancing to a new stage of growth by reinforcing the business foundation under the new medium-term business plan.



Map of Basic Objectives and Key Measures

Target	Priority Initiatives		Key Measures			
Increase business earning power and Create new businesses	Expansion of existing businesses centered on growth drivers	Chemicals	Expansion of growth business areas		Upgrading of foundational businesses (Chlor-Alkali business)	
		Agro Products	Creation of new agents developed in-house	Sales expansion of existing products	Enhancement of production framework	
		Transportation/ Warehousing	Expansion of business scale		Construction of stable Group-wide logistics system	
		Construction	Sophistication of core technologies		Increasing earning capability	
	Creation of new businesses and promotion of development		Creation of new businesses		Promotion of research and development	
	Enhancement of the Group's business foundation		Enhancement of the Group's comprehensive capabilities	Capital investments	M&As/ Business alliances	Enhancement of equity-method affiliate business management
	Further development of CSR management		CSR activities to protect the corporate value		CSR activities to improve the corporate value	
	Shareholder return		Distribution of stable and continuous dividend while maintaining financial resources for growth investment and flexible stance on repurchasing treasury shares (targeting a total return ratio of 30%)			

Expansion of Existing Businesses Centered on Growth Drivers -Chemicals-

Measures focused on improving profitability

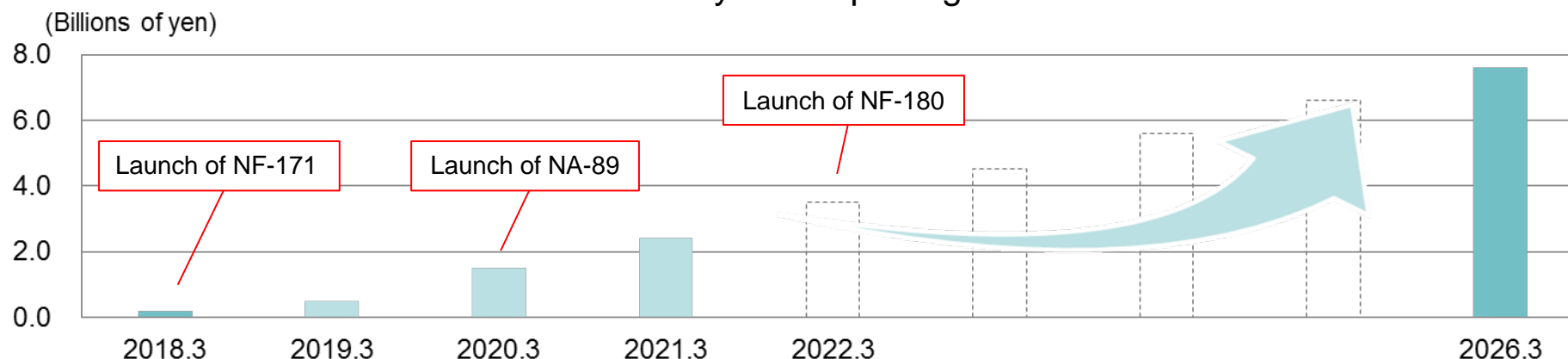
Actions to be Implemented	Main Details
<p>Expansion of growth business areas</p>	<ul style="list-style-type: none"> • Further expanding sales of cellulose derivatives (pharmaceutical additive HPC) and functional polymer (resin additive NISSO-PB) whose demands are growing • Making specific plans for next-stage production increases of above two products • Ramping up production capacity of KrF photoresist material “VP-polymer” to support demand growth in the coming future • Planning and executing sales expansion strategy for inorganic metal alcoholate products through Alkaline SAS in France in consideration of the mercury laws and regulations in Europe
<p>Upgrading of foundational businesses (Chlor-Alkali business)</p>	<ul style="list-style-type: none"> • Making appropriate maintenance and upgrade investments to maintain a structure for stable and inexpensive supply of consumable materials within the Group • Completion of sweeping business structural improvements and initiatives to reduce business operating costs while increasing earning capability from external product sales

Expansion of Existing Businesses Centered on Growth Drivers -Agro Products-

Expansion of earnings from new and existing agents from enhancement of production and sales framework

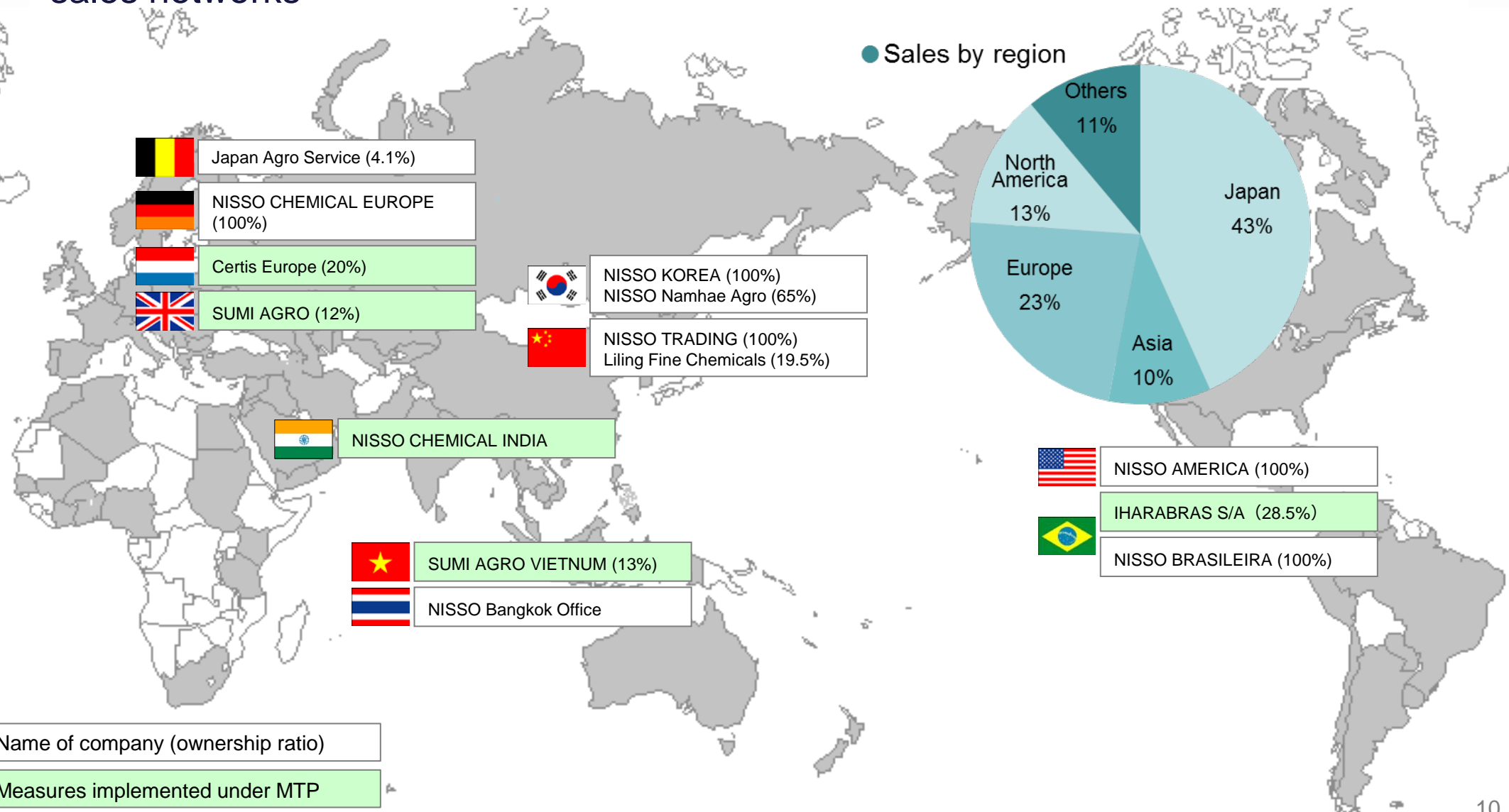
Actions to be Implemented	Main Details
Creation of new agents developed in-house	<ul style="list-style-type: none"> • Launch of new fungicide NF-171 and acaricide NA-89 to acquire market share early • Development to launch the new fungicide NF-180
Sales expansion of existing products	<ul style="list-style-type: none"> • Leveraging of global sales expansion framework (established under previous medium-term business plan) to expand market share of Company's products • Expansion of sales of biological agrochemicals in overseas market
Enhancement of production framework	<ul style="list-style-type: none"> • Higher sales volume of main projects achieved through greater price competitiveness from enhancements in overseas production and strengthened cooperation with Group's manufacturing companies

● Forecast of sales transition of three newly developed agrochemicals



Expansion of Existing Businesses Centered on Growth Drivers -Sales Framework of Agro Products-

Overseas bases of each region developed under MTP, and maximum leveraging of sales networks



Expansion of Existing Businesses Centered on Growth Drivers -Transportation/Warehousing and Construction-

Enhancement of earning capability by further development of existing technologies and expansion into peripheral businesses areas

Business	Actions to be Implemented
Transportation and Warehousing	<ul style="list-style-type: none"> • Maintenance of high operating margins based on expertise in storage and transportation of hazardous items, poisonous materials, and pharmaceuticals • Execution of investments of ¥1.0 billion to enhance functionality and high added value, aiming to expand business scale even further • Construction of stable logistics system as the Group's logistics center
Construction	<ul style="list-style-type: none"> • Differentiation through increased sophistication of core technologies such as powdered chemical handling technology and pharmaceutical GMP validation to increase earning capability

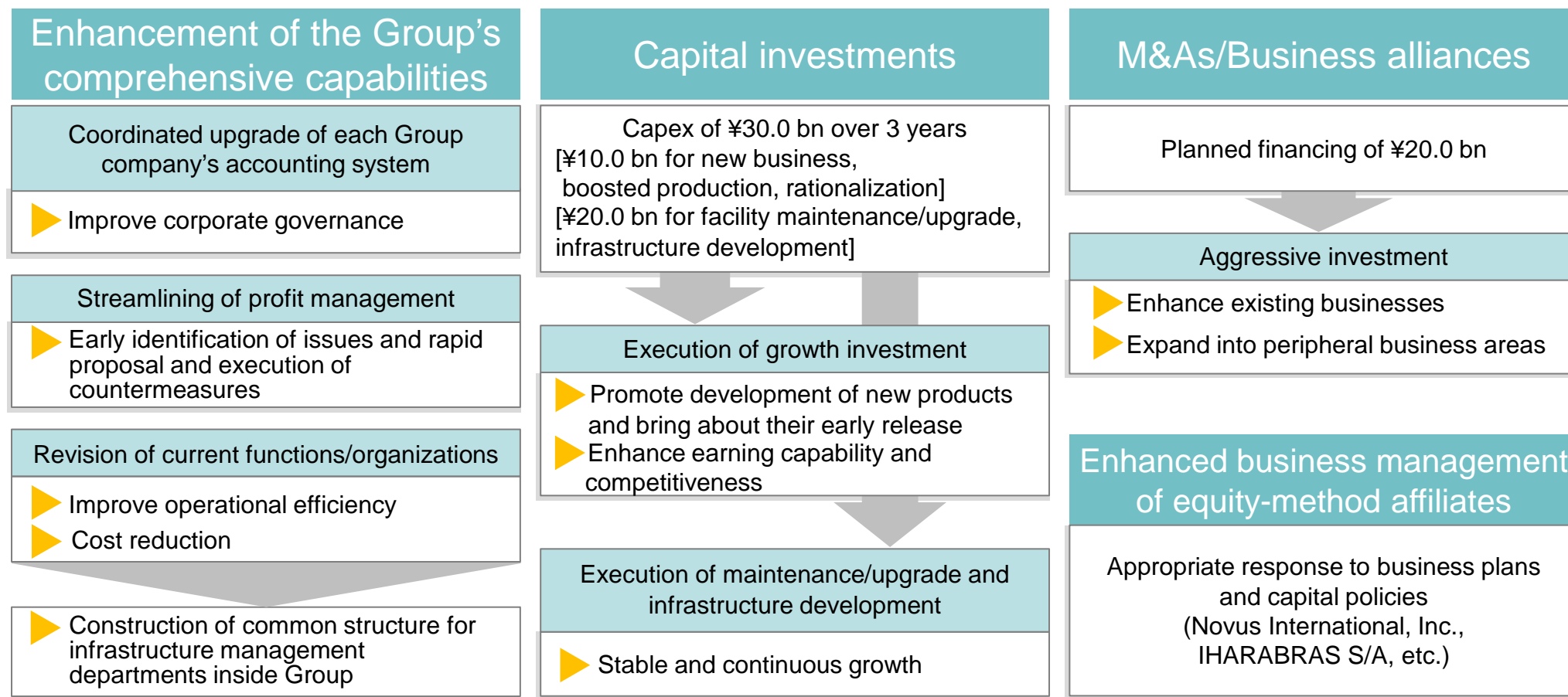
Creation of New Businesses and Promotion of Development

Creation of new businesses with awareness for speed through selection and concentration of core competencies

Actions to be Implemented	Segment and Area	Main Details
Creation of new businesses	<ul style="list-style-type: none"> • Chemicals • Agro products 	<ul style="list-style-type: none"> • Commercialization of new secondary battery materials and start of sales during the period of this medium-term business plan • Promotion of research and development for mass production of environmentally friendly biodegradable polymer (polyamide 4) • Use of Group's distinctive materials and existing technologies to drive advancement into new fields • Consideration of acquisitions as a means of entry into new businesses
Promotion of research and development	<ul style="list-style-type: none"> • Agro products • Cellulose derivatives (pharmaceutical additives) • Functional polymers • Color developer for thermal paper • Chemicals related to environment 	<ul style="list-style-type: none"> • Positioning of "agro products," "cellulose derivatives," "functional polymers," "color developer for thermal paper," and "chemicals related to environment" as its priority business fields and strong promotion of new product development and new commercialization • Rational and swift identification of focus themes in research theme management to streamline research and development

Enhancement of the Group's business foundation

Continual improvement of profitability and efficiency of each department to enhance business foundation



Improvement of ROIC (Return on Invested Capital)

Enhancement of the Group's business foundation

-Improvement of ROIC-

Amount (Millions of yen)		FY 2017	Each Department's Initiatives to Boost Corporate Value
	Net sales	128,647	Expansion of growth business (sales expansion of existing products, launch of new products), promotion of new projects
	Cost of sales	94,755	Development of business foundation (reform business structure, boost earning capability)
	Selling, general and administrative expenses	28,526	Improvement of operational efficiency, cost reduction
Operating profit (Operating margin)		5,365 4.2%	Target operational margin of 6.5% or more (8.0% or more when excluding Trading Business)
	Notes and accounts receivable - trade	40,171	
	Inventories	28,484	Reduction of inventories by appropriate inventories management
	Notes and accounts payable - trade	17,362	
	Working Capital	51,293	
	Non-current assets	110,165	Effective asset utilization, refinement/optimization of investment projects
	(Cash, deposits and other assets)	33,171	Effective asset utilization of special dividend from Novus International, Inc. (allocated for investments) and improvement of financing management structure (advancement of Group financing)
	(Borrowings and other liabilities)	40,671	
Invested capital (Turnover rate)		161,458 0.7 times	
Pre-tax ROIC		3.3%	Continual improvement of profitability and efficiency in each department to improve ROIC

Further Development of CSR Management

Balanced implementation of “CSR activities to protect corporate value” and “CSR activities to improve corporate value”

CSR activities to protect the corporate value

Sound and transparent business management to contribute to the development of society

Further enhance its corporate governance practices

▶ Become a company trusted by all stakeholders

Initiatives to sustain and improve community- and environment-conscious “Nisso Safety” and “Nisso Quality”

Promotion of diversity, work-life balance, career vision and succession plans (preparation for future leaders)

▶ Acceptance of diversity, become rewarding workplace that employees can be proud of
▶ Increasing value of personnel

Constantly perform CSR activities

CSR activities to improve the corporate value

Initiatives for issues of global society in the major domains of agriculture, medicine, environment and information

Agriculture

▶ Contribution to ensuring food safety and security using agrochemicals
▶ Contribution to sustainable agriculture



Medicine

▶ Contribution to providing health to all people through medicine



Environment

▶ Contribution to ensuring the environmentally sound recycling of resources (water and waste) using chemistry



Information

▶ Contribution to the development of information appliances friendly to the environment and people by supplying high-function materials

Aim to achieve sound development as sought-after chemical group

Shareholder Return Policy

◆ Policy ◆

Stable and continuous dividend distribution while maintaining financial resources for growth investment
Flexible stance on repurchasing treasury shares as a shareholder return measure to supplement dividends

◆ Numerical target ◆

Indicator	Numerical Target
Total Return Ratio	30%

* Total Return Ratio = (Total amount of dividends + Total amount of purchase of treasury shares) / Consolidated profit

◆ Cash flow management ◆

Highest priority given to growth investment for measures that result in improved corporate value

Growth investment for future	<ul style="list-style-type: none"> • New product development, speed to market, earning capability and competitiveness • Maintenance/upgrade investment that contributes to stable and continuous growth • M&As and business alliances • Invest ¥50.0 billion in three years
Shareholder return	<ul style="list-style-type: none"> • Implementation of stable and continuous dividend distribution targeting 30% of total return ratio, and purchasing of treasury shares
Financing	<ul style="list-style-type: none"> • Allocation of own capital reserves for investment

(Reference Material)

Net sales and operating profit targets by segment

(Billions of yen)	FY2017 (Results)		FY2020 (Targets)		Change	
	Net sales	Operating profit	Net sales	Operating profit	Net sales	Operating profit
Chemicals	37.15	1.56	42.00	2.90	4.85	1.34
Agro Products	40.07	1.80	43.00	2.10	2.93	0.30
Trading	33.04	0.50	36.50	0.50	3.46	0.00
Transportation and warehousing	4.00	0.41	4.50	0.50	0.50	0.09
Construction	7.95	0.58	14.00	1.00	6.05	0.42
Other	6.43	0.39	7.00	0.50	0.57	0.11
M&As and business alliances	—	—	8.00	2.50	8.00	2.50
Adjustments	—	0.13				(0.13)
Total	128.65	5.37	155.00	10.00	26.35	4.63

Assumption for FY2020 targets: Exchange rates of ¥110/\$, ¥115/EURO

3 Growth Drivers of the Company

Pharmaceutical additive

HPC (Hydroxypropyl cellulose)

Promotion of sales expansion
in global markets



● Features

- Extremely high functionality (binding strength, moisture resistance, etc.)
- One of the few additives soluble in water and alcohol, and has a wide choice of manufacturing method

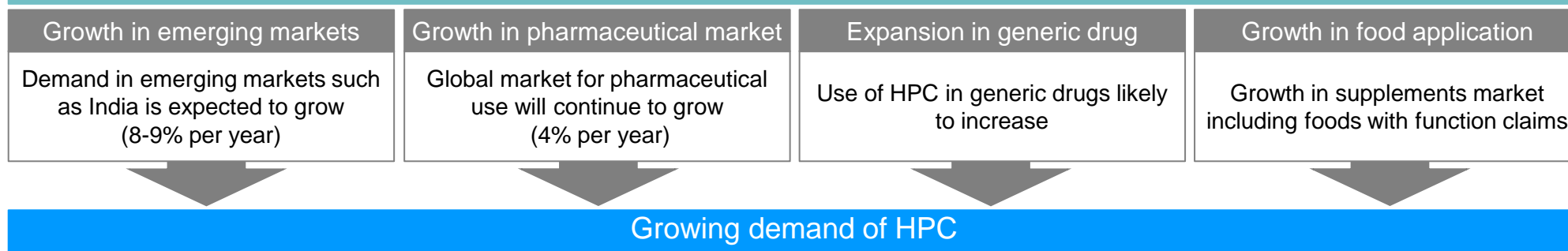
● Purpose

- Molding of pharmaceuticals and supplements
- Thickener in food and personal care products

● Trends

- High level of quality management is required
- ▶ Barriers to entry
- Demand is increasing with expansion of pharmaceutical and supplement market

Outlook



Implementation of measures for sales growth

Enhance production capacity (2014) [1,500 → 2,000 t/year]	Establishment of medium-scale experimentation facility	Expansion of generic brands and launch of proprietary brands	Development of new research	Sales activities shaped to market environment
<ul style="list-style-type: none"> ▶ Support robust demand ▶ Establish a stable supply system 	<ul style="list-style-type: none"> ▶ Develop new brands tailored to customers needs 	<ul style="list-style-type: none"> ▶ Expand generic brands to grow share ▶ Find new demand niches for proprietary brands 	<ul style="list-style-type: none"> ▶ Promote R&D aimed at making HPC a standard substance in frontier fields 	<ul style="list-style-type: none"> ▶ Establish Indian arm and boost sales staff (JP, US, EU, IND) ▶ Drive sales with local staff and boost technical services

Resin additive NISSO-PB

Meeting of growing demand
for flexo printing, etc.



● Features

- Nippon Soda's proprietary liquid polybutadiene, derived by means of living anionic polymerization
- Superior water-resistance, good chemical-resistance, and electrical properties

● Purpose

- Used in a wide variety of products, such as resin modifiers, electronic materials and adhesives
- Demand is increasing for use as an additive in flexographic printing plate materials*

● Trends

- Few suppliers (each supplier produces products with unique characteristics)
- Demand is growing globally
▶ Producers are poised to increase production

Outlook

Electronic materials

Expansion in new applications

Flexo printing

Demand for use related to flexography is likely to keep increasing amid growing worldwide prevalence of flexo printing

Measures for sales expansion

Promote sales expansion

Realize plans for production increase

Aim for further revenue increases

* Flexo printing... A printing process which utilizes a flexible relief plate. The relief plate is a photosensitive resin plate made from synthetic rubber and synthetic resin.



Features

- Mainly using water-based inks
▶ More eco-friendly than solvent-based inks
- Low energy consumption due to low printing pressure
- Low cost and high efficiency
▶ Suitable for small lot production

Outlook

Together with offset and gravure printing, flexo printing quality is improving, and there is an ongoing shift to flexo printing in Europe and other countries, which have strong environmental concerns.

Semiconductor photo resist material VP-Polymer

Sales expansion and development
of new materials for further growth

● Features



- Nippon Soda's proprietary polymer product, derived by means of living anionic polymerization
- Excellent solubility

● Purpose

- KrF photoresist material for semiconductor

● Trends

- Rising needs for increased storage capacity and speed for semiconductors
- ▶ Growing demand

Outlook

Changes in semiconductor needs

Growing demand
due to the trend of
moving from i-Line resist
to KrF

Growing demand for 3D
NAND flash memory

Growing demand for KrF photoresist material

Increasing demand for VP-polymer

Growing demand for VP-polymer
Increase in demand is expected to continue

Measures for sales expansion

Enhance production capacity (2018) (150% stronger than before)

- Support growing demand for VP-polymer
- Stabilize supply structure
 - ▶ Boosting Chiba Plant facilities (invest ¥1.0 bn)
 - ▶ Scheduled completion date of spring 2018



Full view of Chiba Plant

Provide new polymer materials suited to needs

- Promote R&D of new polymer materials suited to customer needs using living anionic polymerization



Agrochemicals

(New agents)

Steady launch of new products scheduled from 2017 onward
Maximization of new products' contribution to profit



Pipelines for new agrochemicals			
	Product [Scheduled year of launching]	Features	Sales target
Fungicide	NF-171 [2017]	<ul style="list-style-type: none"> • New class of fungicide • Effective against existing fungicide-resistant fungi • Potential for development of business in the field of seed disinfection overseas (corn, soybeans, wheat and barley, rapeseed, etc.) • Aiming to further expand sales by increasing applications through the development of combination products 	¥3.0 billion
Acaricide	NA-89 [2019]	<ul style="list-style-type: none"> • New action mechanism, No cross-resistance with existing agents • No effect on beneficial insects and natural enemies • Under development in Japan and South Korea • Plans for expanding into other overseas markets under consideration 	¥3.0 billion
Fungicide	NF-180 [2021]	<ul style="list-style-type: none"> • New action mechanism, Effective against existing fungicide-resistant fungi • Expected to be a large agent given its effectiveness against a broad spectrum of diseases 	¥4.0 billion

New Medium-Term Business Plan	Medium- and long-term target
Launch of NF-171 and NA-89 to secure early share	Aim for sales of ¥10.0 billion for three pipelines

Agrochemicals

(Existing agents)

Expansion of global sales volume by
boosting overseas production framework

Status of existing agents

Product [Year of launch]		Sales and advertising status		Product [Year of launch]		Sales and advertising status	
Fungicide	TOPSIN-M [1971]	<ul style="list-style-type: none">• Sales firm for soybeans (US) and wheat (Europe)• Sales expansion in emerging markets in Asia for paddy rice• Further sales expansion using combination products		Biological agrochemical	AGROCARE [2010]	<ul style="list-style-type: none">• The first biological pesticide developed in-house	
Insecticide	MOSPILAN [1995]	<ul style="list-style-type: none">• Use for cotton and fruits is widespread• Entry into new markets through development of combination agent in US		Biological agrochemical	MASTERPIECE [2014]	<ul style="list-style-type: none">• Biological pesticide developed in-house• Overseas development is underway	
Fungicide	PANCHO [2003]	<ul style="list-style-type: none">• Use for wheat, grape and vegetables widespread in Europe• Development underway for expansion into US, Asia and Africa		<div><div>Growing share using global sales framework</div><div>Expanding sales into overseas markets for biological agrochemicals</div></div>			
Acaricide	NISSORUN [1985]	<ul style="list-style-type: none">• Sales firm for corn and nuts in North America and fruits in Europe• Start of sale of new environmentally friendly agents					

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