

FY2023 1st Half Results (from April 1, 2023 to September 30, 2023) October 30, 2023

This is a translation of materials used for the analyst meeting held online, Japan on October 30, 2023

President
Shigeru Kobayashi



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NGK INSULATORS, LTD.

This document contains forward-looking statements that are based on management's expectations, estimates, projection and assumptions that were available and reasonable at the time of release. Actual future results and trends may differ materially from those in the forecasts due to a variety of factors.

Summary of financial results for FY2023
(1st Half results/Forecasts for FY2023)

Forecasts for Each Business Segment

Improving Enterprise Value
Capital Profitability and Growth Potential of Existing Business
Aiming for creation of new products & businesses

R&D/ Capital Expenditures & Depreciation Costs

Promoting ESG Management

Capital Policy (Treasury Shares Purchase /Sustainable Finance)

Total Assets•Dividend/Summary of Cash Flow

Summary of Financial 1st Half Results for FY2023

	(Bln. Yen)	FY2022	Announcement	FY2023	YOY Change	
		1st half	April	1st half	FX Impact	Growth ratio
Net sales		274.7	265.0	282.9	+9.4	+ 3%
Operating Income		38.8	25.0	32.5	+2.6	-16%
Ordinary Income		34.5	23.0	28.9		-16%
Net income Attributable to Owners of the Parent		26.5	16.0	18.2		-31%
Exchange Rate	USD	133yen	(130yen)	141yen		+ 8yen
	EUR	139yen	(140yen)	154yen		+ 15yen

**Sales Increased; Operating Income Decreased Year on Year.
Sales and Income Decreased compared to the April Announcement.**

- Environment** Both sales and income increased due to a rise in demand resulting from higher sales quantities of trucks in China and the strengthening of emissions regulations in addition to a recovery in automotive production against the background of an easing of component shortages including semiconductors.
- Digital Society** Both sales and income decreased as demand for semiconductor manufacturing equipment products and electronic components decreased due to the stagnation of investment in semiconductors and data centers.
- Energy & Industry** There was an increasing in sales, and profitability was improved, reflecting insulator's price revisions and stable demand in its market in the U.S.

Forecasts for FY2023

	(Bln. Yen)	FY2022	Announcement April	FY2023	YOY Change	
					FX Impact	Growth ratio
Net sales		559.2	565.0	575.0	+13.8	+3%
Operating Income		66.8	56.0	62.0	+3.9	-7%
Ordinary Income		65.9	53.0	58.0		-12%
Net income Attributable to Owners of the Parent		55.0	38.5	39.0		-29%
Exchange Rate	USD	135yen	(130yen)	141yen	140yen	+6yen
	EUR	141yen	(140yen)	152yen	150yen	+11yen

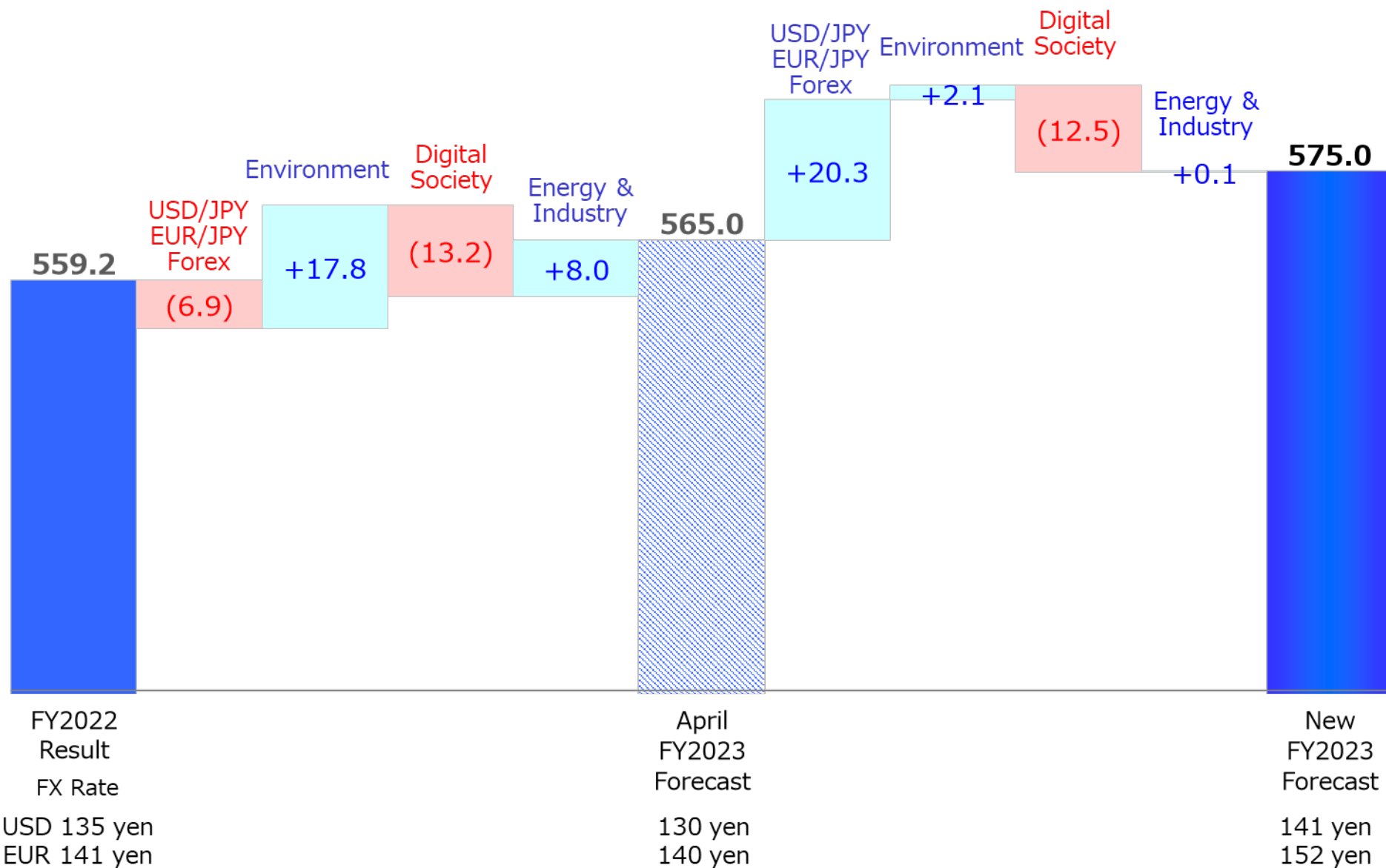
Assumed exchange rates in 2nd half

**Sales Increased; Operating Income Decreased Year on Year.
Sales and Income Decreased compared to the April Announcement.**

- Environment** Both sales and income are expected to increase due to a recovery in automotive production associated with the easing of component shortages, which continued from the first half of the fiscal year, higher sales volumes of trucks in China and the positive effect of the weak yen.
- Digital Society** Both sales and income are expected to decrease due to a decline in demand as the stagnation of investment in semiconductors and data centers will continue and a market recovery will be delayed further than assumed at the beginning of the fiscal year.
- Energy & Industry** Sales are expected to increase and losses to fall, with business breaking even due to insulator's price revisions and demand in the U.S. being steady, and demand for Industrial heating systems for Lithium-ion battery cathode materials increasing.

Sales Change Analysis for FY2023

(Bln. Yen)



FY2022
Result
FX Rate

April
FY2023
Forecast

New
FY2023
Forecast

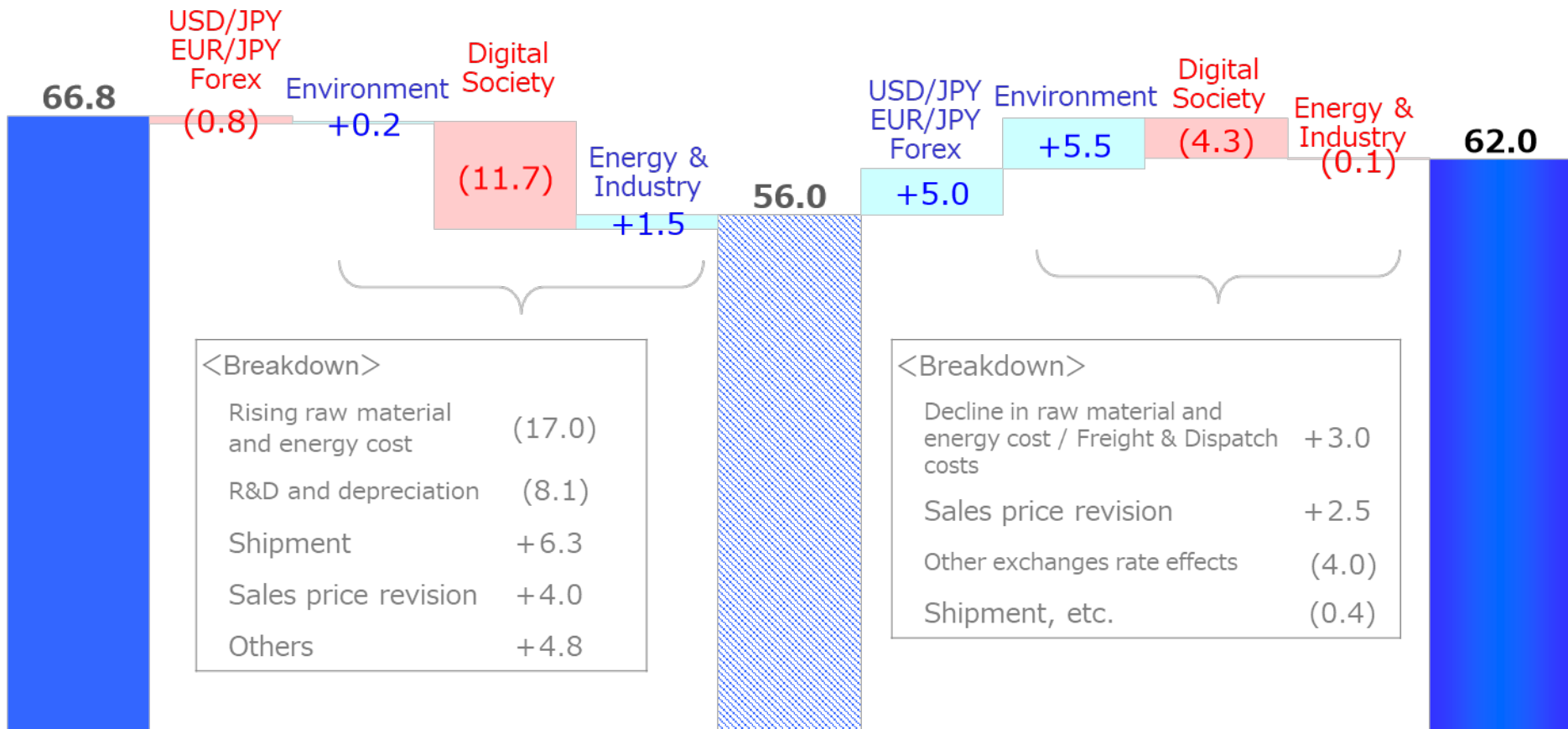
USD 135 yen
EUR 141 yen

130 yen
140 yen

141 yen
152 yen

Operating income Change Analysis for FY2023

(Bln. Yen)



<Breakdown>

Rising raw material and energy cost	(17.0)
R&D and depreciation	(8.1)
Shipment	+6.3
Sales price revision	+4.0
Others	+4.8

<Breakdown>

Decline in raw material and energy cost / Freight & Dispatch costs	+3.0
Sales price revision	+2.5
Other exchanges rate effects	(4.0)
Shipment, etc.	(0.4)

FY2022 Result

FX Rate

USD 135 yen
EUR 141 yen

April FY2023 Forecast

130 yen
140 yen

New FY2023 Forecast

141 yen
152 yen

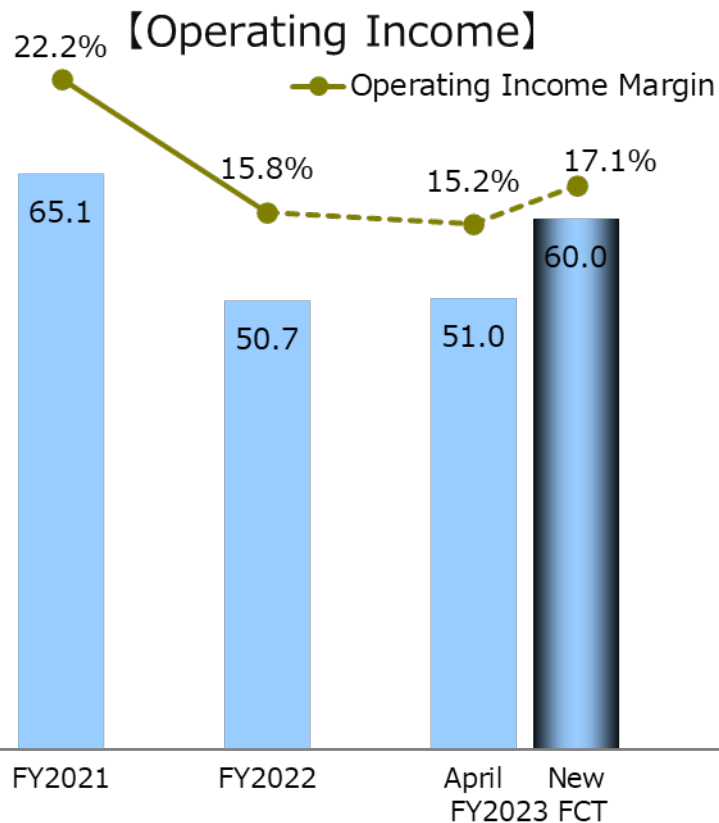
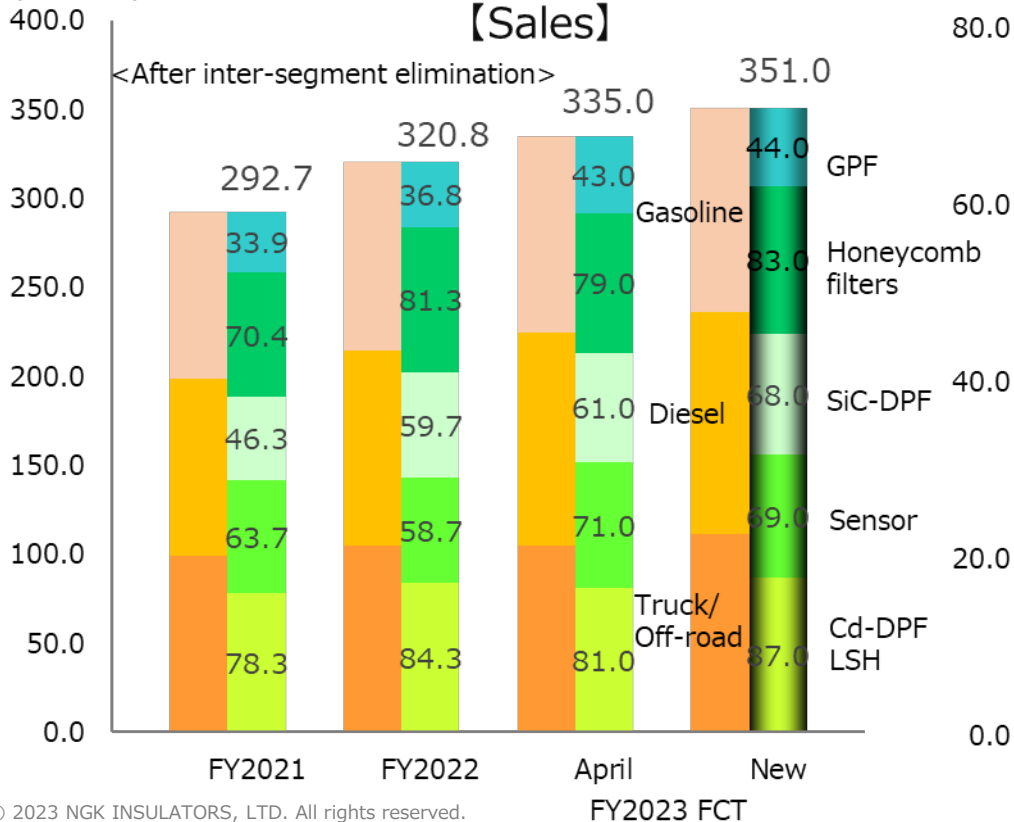
Forecasts for the Environment Business

Automotive Related

Both sales and income are expected to increase compared to the April forecast as demand increases due to the increase in truck and off-road vehicle sales in China, and with the added positive effect of the weak yen. Demand for products for passenger vehicles will increase compared with the previous year due to the global increase in passenger vehicle sales and the strengthening of China's emissions regulations. In addition, demand for products for trucks and off-road vehicles is expected to increase due to the strengthening of China's off-road emissions regulations and in increase in the number of trucks sold in China.

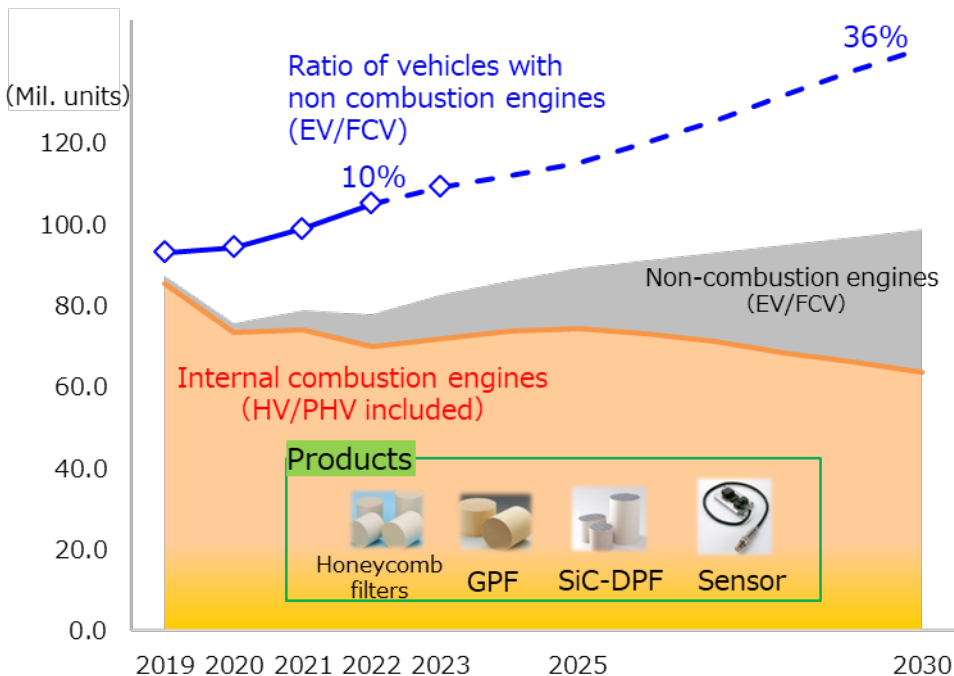
- Honeycomb filters/GPF (for gasoline fueled vehicles) : As expected at the beginning of the term, demand has remained strong generally, and sales increased compared to the April forecast due to the effect of the weak yen.
- SiC-DPF (for diesel passenger vehicles/trucks) : Sales increased from the April forecast as demand increased more than initially expected in China due to the strengthening of off-road emissions regulations.
- Sensors (for diesel passenger vehicles/trucks) : Sales decreased slightly from the April forecast due to a slight decrease in volume in association with customer inventory adjustments.
- Cd-DPF/LSH (for trucks) : Product demand increased from the April forecast due to an increase in truck sales in China. Sales also increased due to the effect of the weak yen.

(Bln. Yen)



The future perspective for the EN Business

〔Forecast for Automobile Sales〕 (NGK's Est)



〔Forecast for emission regulations〕 (NGK's Est.)

Markets	2022	2023	2024	2025	...	2030
Japan		PPNLT(WLTC)				GE/GDI·MPI RDE
Europe		EU6d-Full			EU7	
U.S.		Tier3 LEV III				PM1mg
China	China's stage 6a (AII)		China's stage 6b (AII)			China's stage 7 (AIII)
India	BS6 Stage I		BS6 Stage II			BS7
Thailand	EU4		EU5			EU6b

The EV ratio is virtually unchanged from the April forecast, and demand for the company's products is expected to remain at a certain level due to the introduction of new products with more advanced functions in response to the strengthening of emissions regulations in various countries.

The impact of the new emission regulation in Europe, Euro7

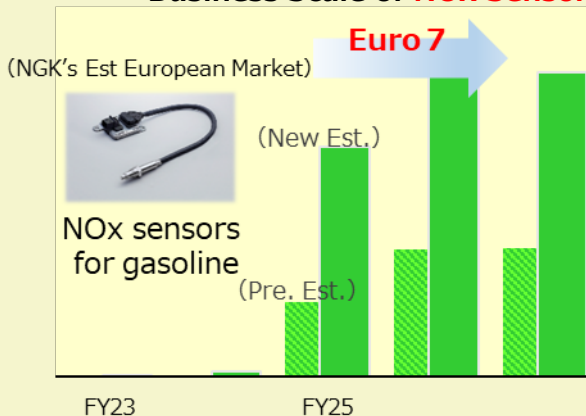
Launching GPF with Surface Adsorption Layer (High value-added products)



In the European market, the new Euro 7 emissions regulations, which are scheduled to be introduced in 2025, will tighten regulations on the number of particulate material (PM) emissions.

In response, we have already **developed and implemented a highly functional GPF product with a highly effective surface collection layer.** We will promote our high-value-added products not only for passenger cars, but also for trucks and off-road vehicles.

Business Scale of NOx Sensor for Gasoline



Under the new Euro 7 emissions regulations, Continuous NOx Monitoring will be obligatory concerning gasoline engine. Demand for the NOx sensors for gasoline developed by the company is expected to materialize, and the scale of the business is expected to be larger than initially forecast.

We will capture demand with certainty while optimizing our production system

Forecasts for the Digital Society Business

■ SPE Related (Components for semiconductor production equipment)

- Demand for semiconductors has remained sluggish with the continued slump in smartphone and PC sales since last year. Although there are positive impacts from sales price revisions and the effect of the weak yen, long-term stagnation and a delay in the timing of recovery are clear with regard to demand for semiconductor manufacturing equipment, and sales and income are expected to decrease in comparison to the April forecast with demand also decreasing.

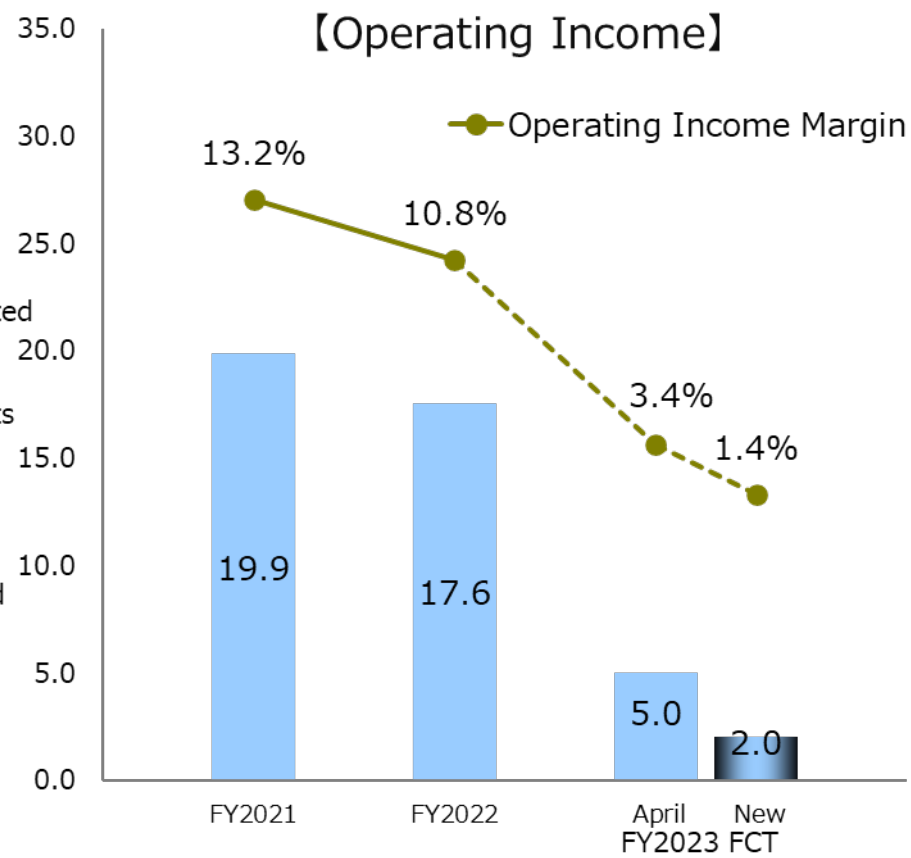
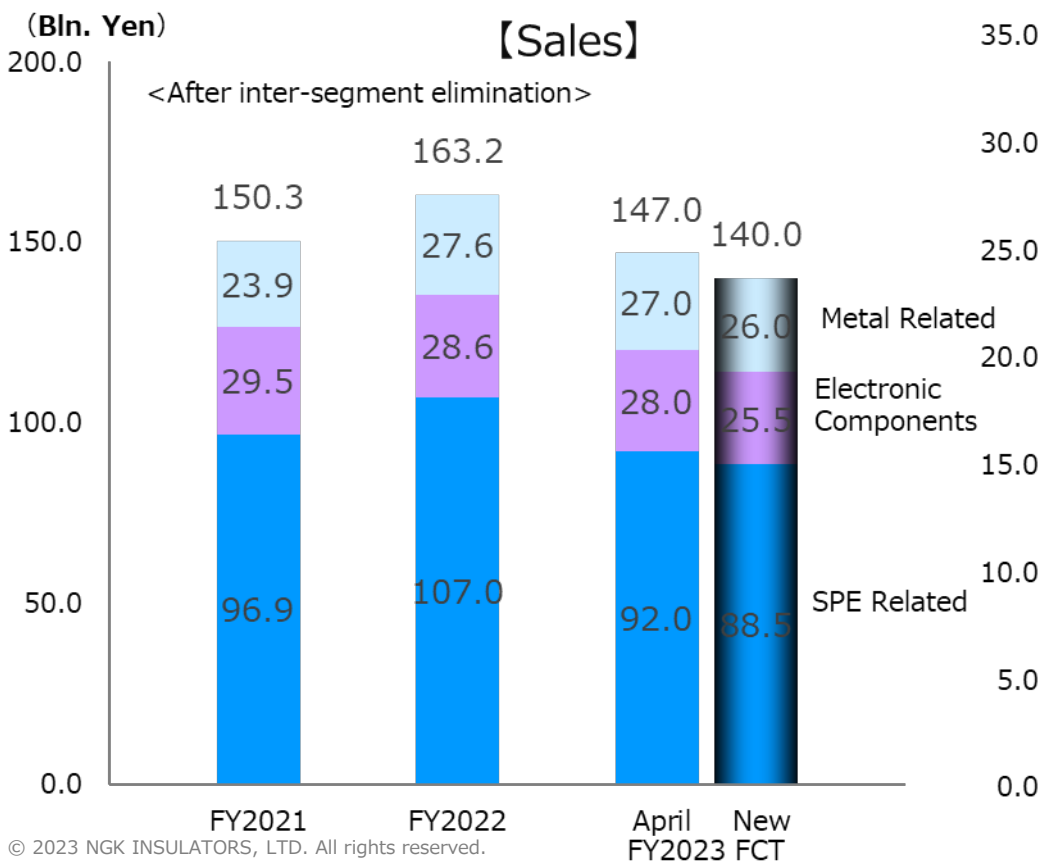
Although the sector will get back into form gradually from the end of the fiscal year, full-scale recovery is expected from next term on.

■ Electronic Components

- Demand for piezoelectric element products for HDDs has decreased as data center investment has been curbed temporarily due to concentrated investment in AI infrastructure. Although it is anticipated that data center investment will resume gradually in the new year and demand will increase over the medium to long term, sales are expected to decrease in comparison to the April forecast.
- Sales of ceramic packaging for crystals are expected to decrease in comparison to the April forecast due to a delay in the recovery of smartphone sales in China.

■ Metal Related

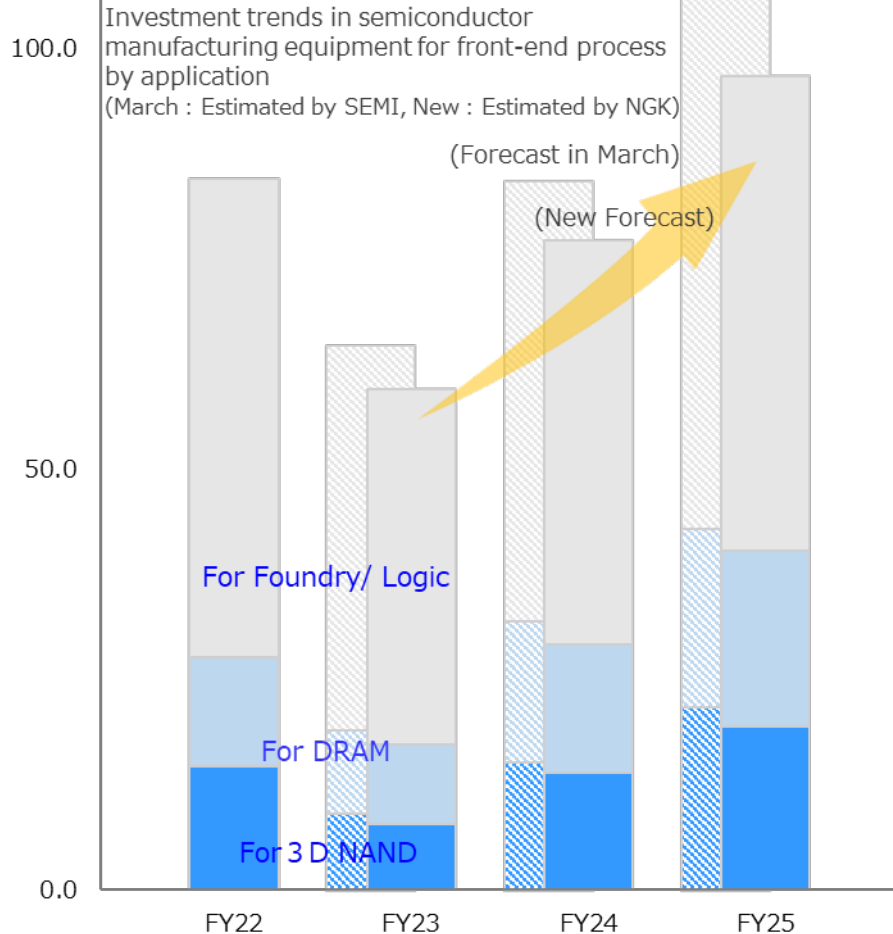
- Although product demand is on a recovery trend, sales are expected to decrease in comparison to the April forecast due to supply chain inventory adjustments.



The future perspective for the DS Business

Components for semiconductor manufacturing equipment(SPE)

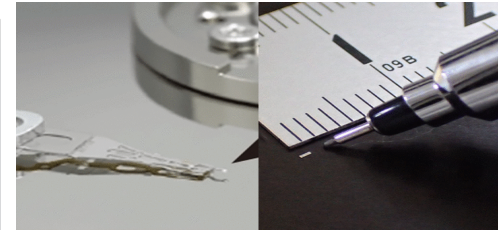
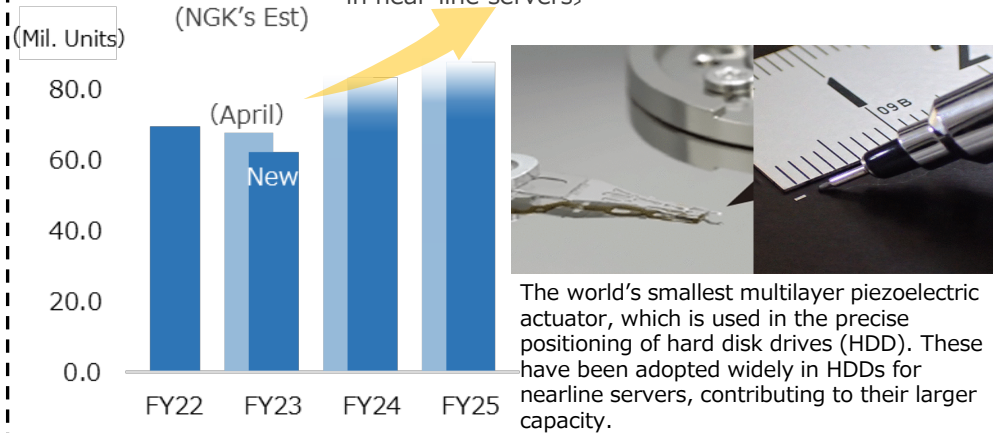
(Bln. Dollar) (NGK's forecast for the demand of SPE related)



Due to the sluggishness of demand for semiconductors, WFE investment in fiscal year 2023 is expected to be lower than the March forecast. Although it is expected to recover from fiscal year 2024, the record high level of fiscal year 2022 will only be exceeded from fiscal year 2025 on. We will continue to invest for increased production to ensure that we capture demand for the company's products when the market expands again due to the progress in society of digitalization.

Electronic Components (Piezoceramic Actuators for HDD)

(Expected sales volume of HDD installed in near-line servers)

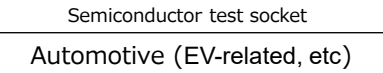
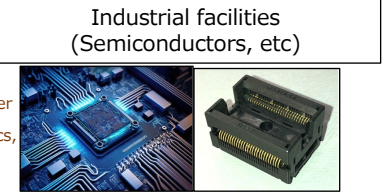
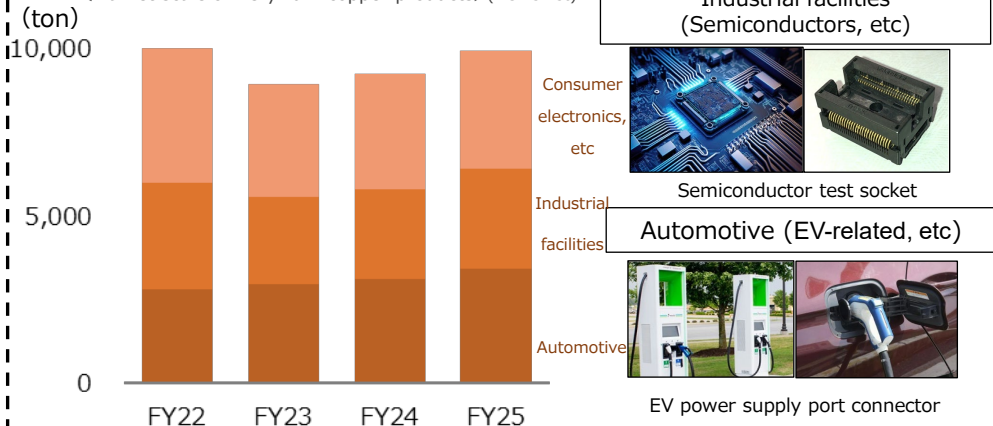


The world's smallest multilayer piezoelectric actuator, which is used in the precise positioning of hard disk drives (HDD). These have been adopted widely in HDDs for nearline servers, contributing to their larger capacity.

Major US hyperscalers are currently holding back on data center investment, but demand for HDDs for nearline servers is expected to increase over the medium to long term as they resume data center investment aimed at the full-scale social implementation of AI learning data and the metaverse.

Special metals and molds (Beryllium copper products)

(Market scale of Beryllium copper products) (NGK's Est)



The demand for beryllium copper is expanding not only for EV-related connector components but also for inspection purposes in semiconductors.

Forecasts for the Energy & Industry Business

■ Insulators

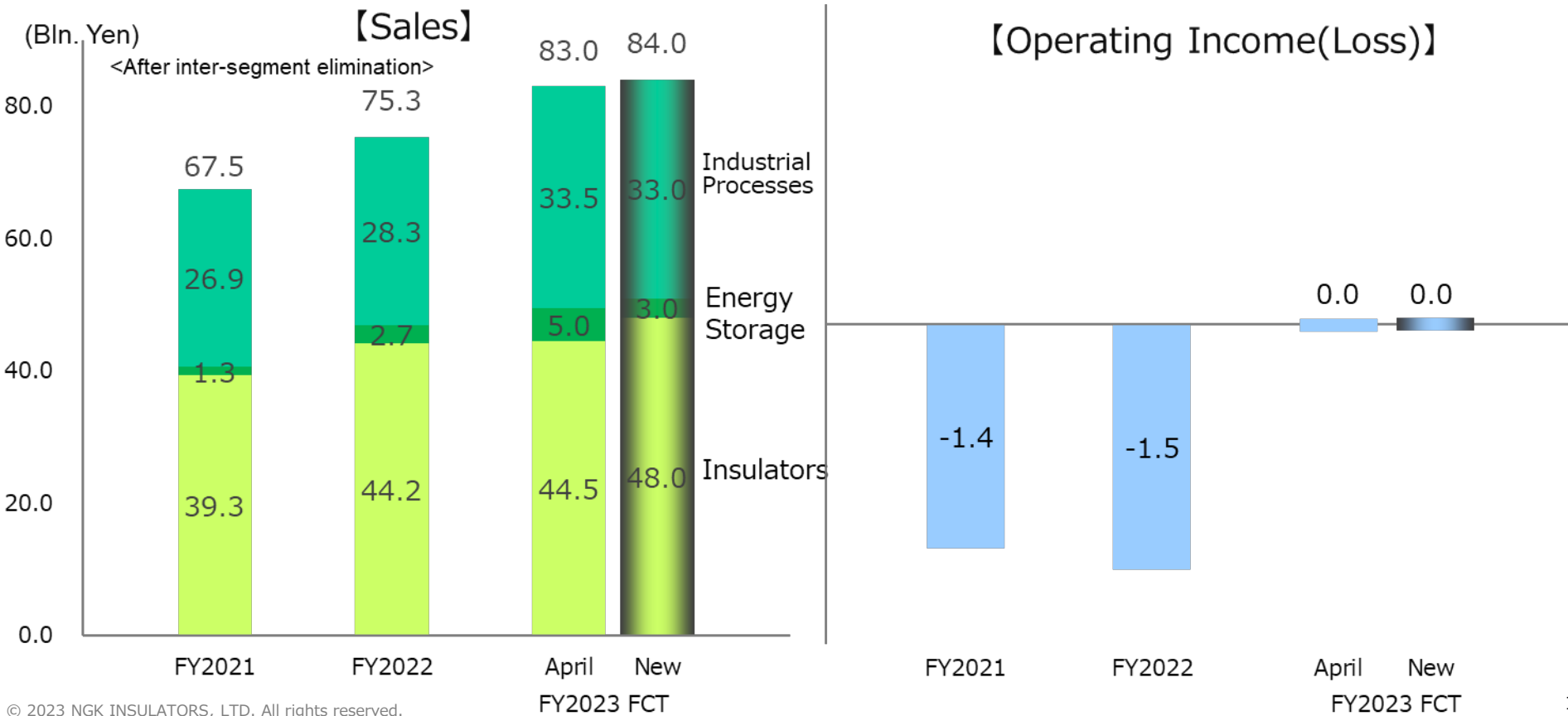
- Both sales and income are expected to increase in comparison to the April forecast due to steady demand underpinned by plans for expanding and reinforcing transmission networks in the United States in addition to revisions of sales prices.

■ Energy Storage

- Sales are expected to decrease in comparison to the April forecast due mainly to the delay in shipments on domestic projects and ongoing losses are expected.
We will improve our products, strengthen our production system and promote cost reductions towards the expansion of sales to overseas markets based on the BASF sales alliance.

■ Industrial Processes

- While demand for industrial heating systems for lithium-ion batteries is expected to remain firm demand, on the other hand, demand for advanced refractory materials for MLCCs is expected to decrease, leading to reduced sales and income in comparison to the April forecast.

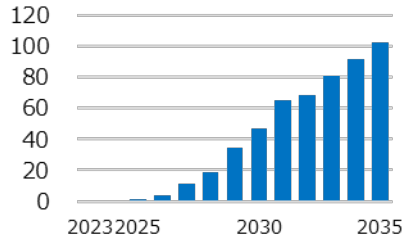


The future perspective for the E&I Business

■ NAS® batteries (Energy storage)

Overseas, where the introduction of renewable energy is ahead of Japan, potential demand for NAS batteries (large capacity, long duration) is expected to materialize and become fully-fledged from 2025.

6-hour plus NAS battery demand forecast(NGK's Est)



The development of new demand for NAS batteries in combination with renewable energy, such as for green hydrogen, off-grid, and improvement of the rate of use of renewable energy, has materialized due to the sales alliance with BASF. We will use BASF's worldwide network to expand sales in the market and reduce material costs.

<Overseas projects and applications>

Bulgaria Improvement of efficiency of renewable energy in operation Spt,2023~



South Korea Hydrogen Production Equipment in operation Aug,2020~



Improvement of efficiency of renewable energy in operation Apr,2023~



Maldives Decarbonized desalination system in progress

Australia Supplying renewable energy to the mine in operation May,2023~



■ NAS installation sites ■ BASF-led projects

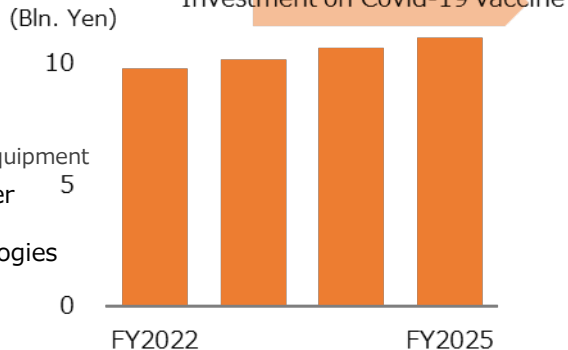
■ Industrial Processes (Membrane)



Market Scale of filtered water for use in pharmaceuticals(NGK's Est)

Investment on biopharmaceuticals

Investment on Covid-19 vaccine



Pharmaceutical Water Production Equipment

We will provide very safe water through a combination of membrane separation technologies optimal for water used in pharmaceutical manufacturing processes.

In the new drug field, in addition to biopharmaceuticals, the size of the market has expanded due to the expansion of COVID-19 vaccine investment. We will make sure to capture large projects and increase revenues.

■ Insulators

Japan Market

- In March, We announced that it would end the manufacture and sale of NGK products manufactured at Chita Site within a few years. We are currently in discussions with customers about this.
- We will improve profitability by reducing fixed costs, revising sales prices, etc.

U.S. Market

- Demand for polymer insulators has been steady due to plans to expand and strengthen transmission and distribution networks related to renewable energy.

We are promoting the improvement of profitability through rationalization, cost reductions, sales price revisions, etc., and profits are expected to continue in the future too.

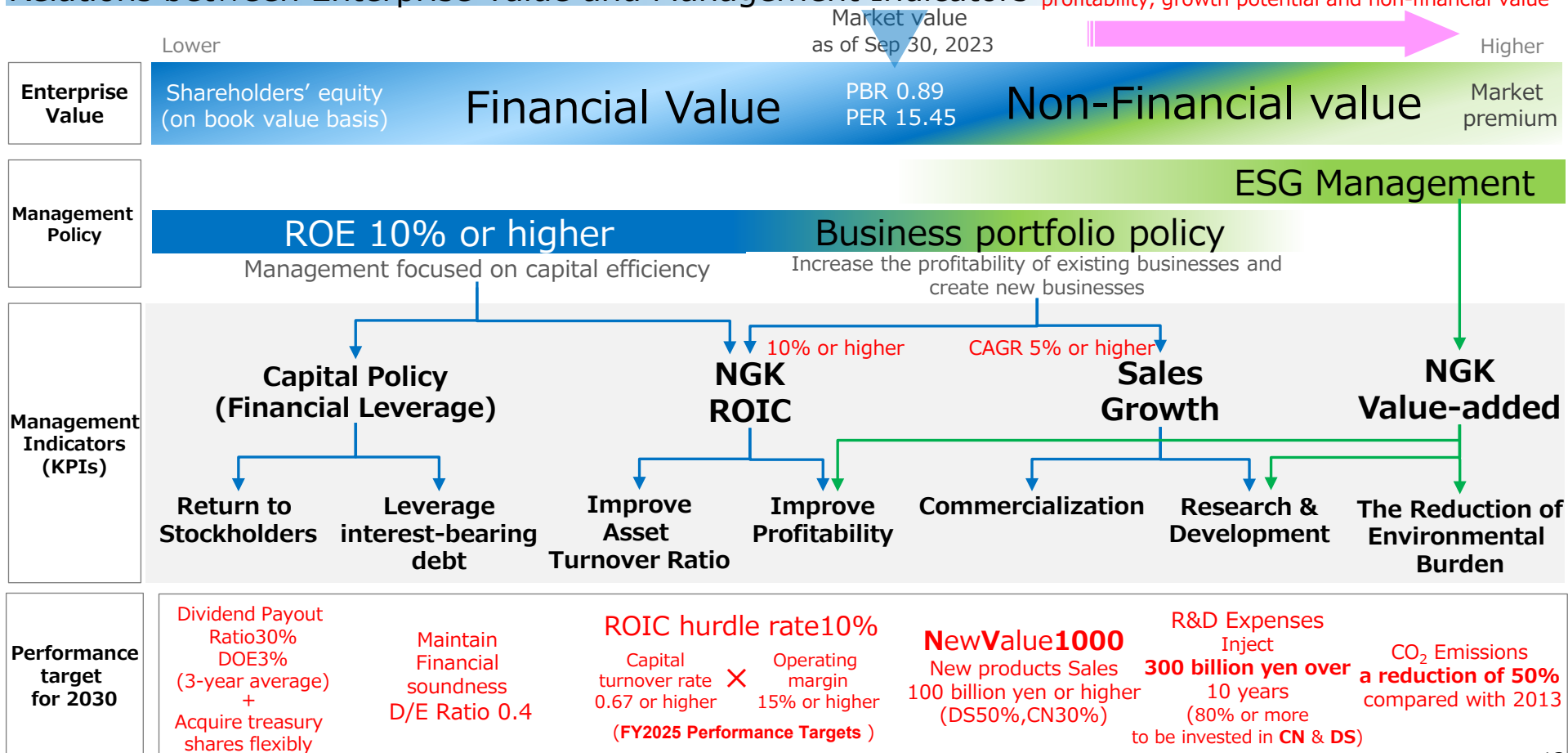
Improving Enterprise Value

- **Enhance capital profitability** via corporate management that is conscious of the formula, $\text{Equity spread} = \text{ROE} - \text{Cost of shareholders' equity}$.
- **Ensure growth potential** through advancing **business portfolio management**, and **investment in intellectual capital (R&D, etc.)** and **human capital** for growth.
- **Upgrade non-financial value** primarily via **an effort to reduce environmental footprint and respect human rights**.

Estimation of the NGK's Capital Cost	
After-tax Debt Cost	1.0%
Capital Cost	9.0% (CAPM)
D/E Ratio	0.4
WACC	6.8%
Pre-tax WACC	9.7% (Hurdle rate)

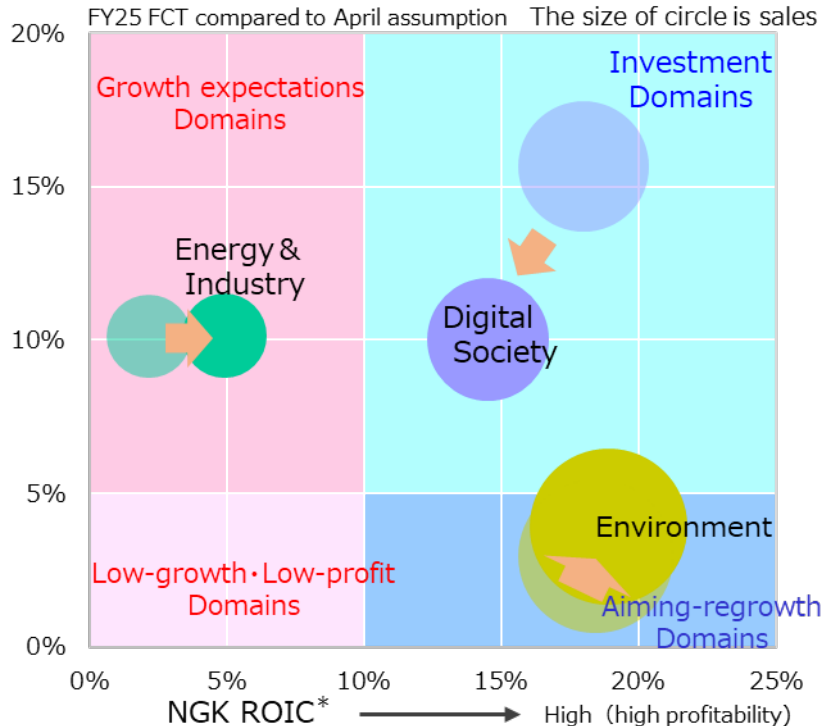
Relations between Enterprise Value and Management Indicators

Aim to increase enterprise value by enhancing capital profitability, growth potential and non-financial value



Business portfolio policy

- Portfolio management pivoting on profitability and growth
- Scrutinize each product by using NGK-version of ROIC of 10% and a sales growth rate of 5% as the criteria.
- Inject management resources into investment domains and domains where we expect growth.
- Consider deciding whether or not to continue the business of each product that belongs to low-growth and low-profit domains.

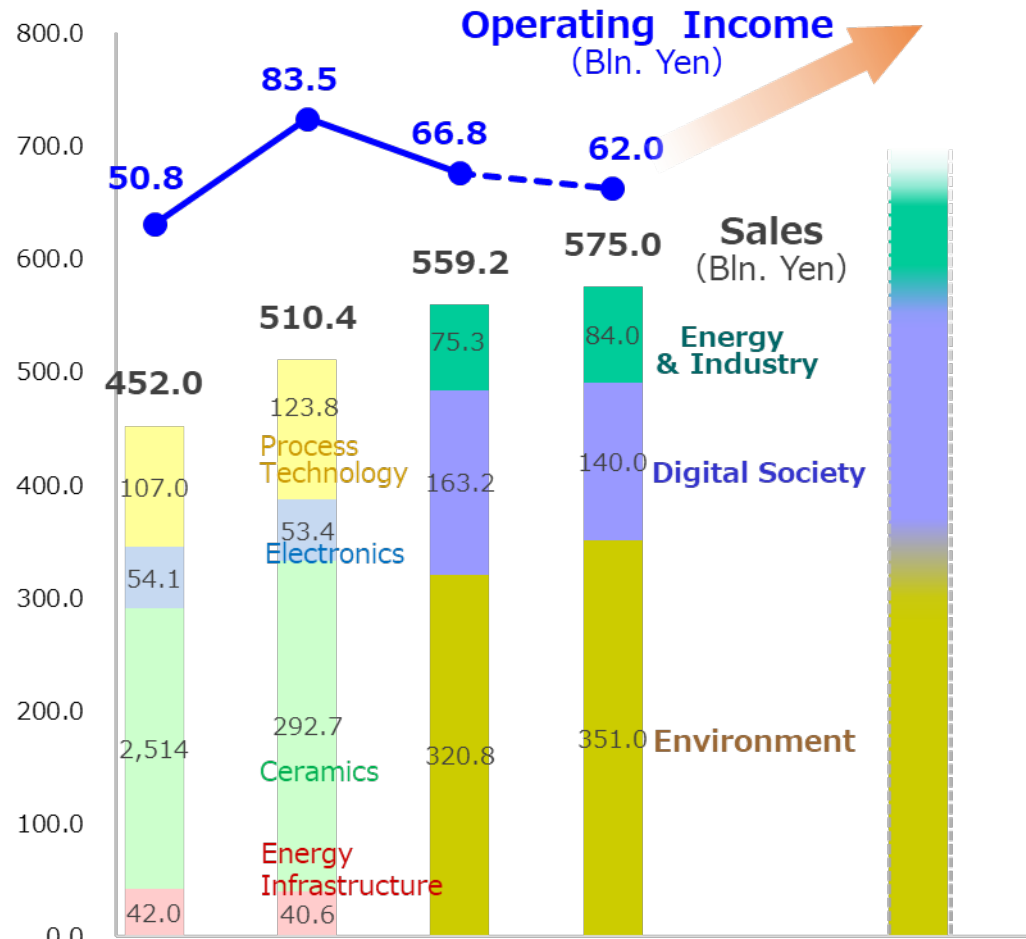


$$* \text{NGK ROIC} = \frac{\text{Accounts receivable} + \text{Inventories} + \text{Fixed assets}}{\text{Operating Income}}$$

Instead of "capital" and "liabilities", this is calculated based on business assets (accounts receivable, inventories, fixed assets) that can be managed by business divisions

The Environment Business will introduce high value-added products continuously to improve profitability while maintaining growth potential. The high growth expectations of Digital Society Business have not changed despite the delay in the recovery of market conditions, and the company will push ahead with business transformation through positive inputs.

Consolidated performance trends



	FY2020	FY2021	FY2022	FY2023	FY2025
Operating Income (Bln. Yen)	50.8	83.5	66.8	62.0	83.5
Sales (Bln. Yen)	452.0	510.4	559.2	575.0	675.0
Energy Infrastructure	42.0	40.6			
Ceramics	2,514	292.7	320.8	351.0	
Electronics	54.1	53.4	163.2	140.0	
Process Technology	107.0	123.8			
Digital Society					
Energy & Industry			75.3	84.0	
Environment					

FX Rate					
USD	106	113	135	141	140
EUR	124	131	141	152	150

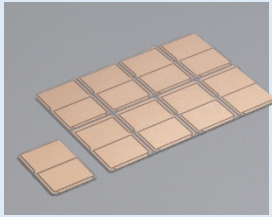
Aiming for creation of new products & businesses

■ SN DCB Circuit Substrate

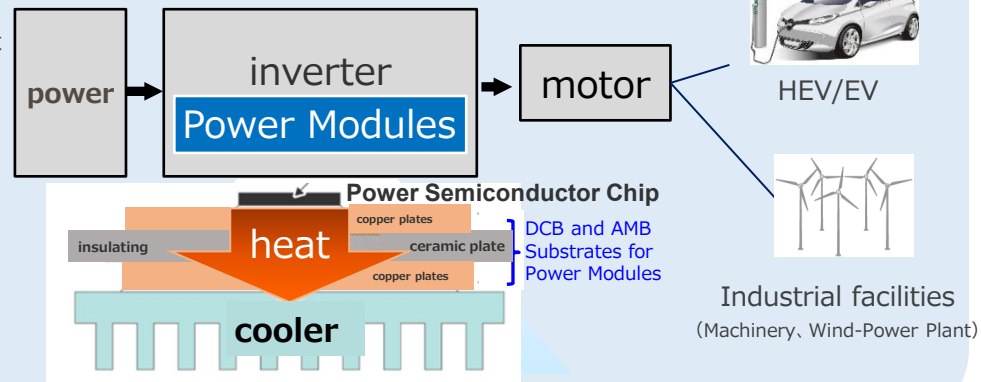
Ceramic circuit boards for vehicle and industrial equipment power modules, excellent in reliability and heat conduction. In addition to the electrification of automobiles (EV/HV), demand for industrial equipment applications such as renewable energy is expected to increase.

In association with improvements in power module performance, the performance required from insulated heat dissipation circuit boards has increased, such as the improvement of heat dissipation performance against increased output.

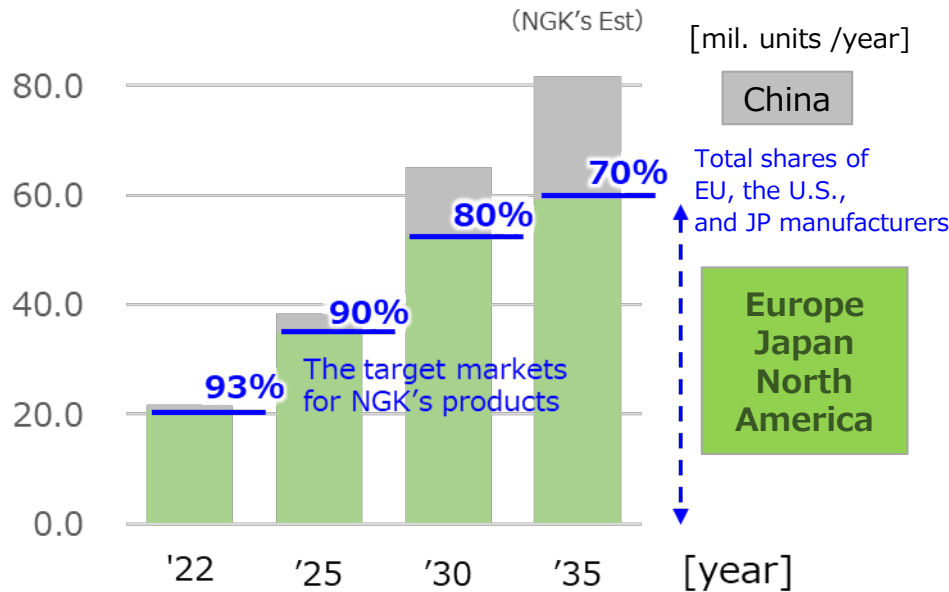
In particular, the company's products are increasingly being used in automotive power modules due to their superior "cooling-heating cycle reliability."



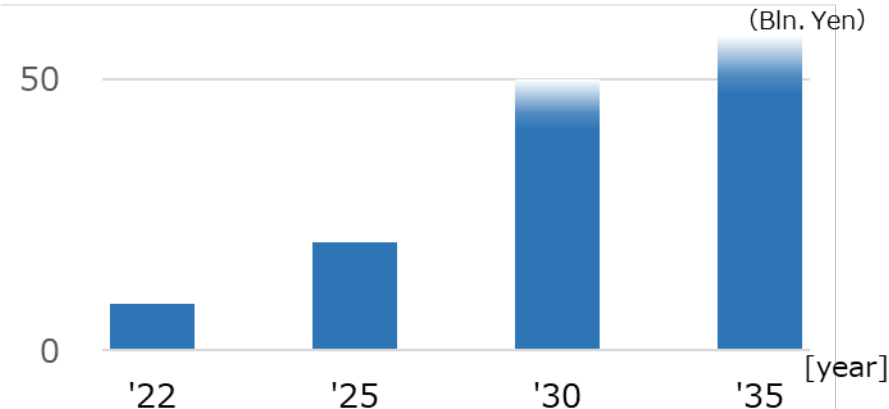
Voltage and current waveforms are generated to drive the motor



● Estimated Market shares, sorted by Power Module Manufacturer (Number of automobiles with inverter)



● Market Scale of SN DCB Circuit Substrate (NGK's Est)

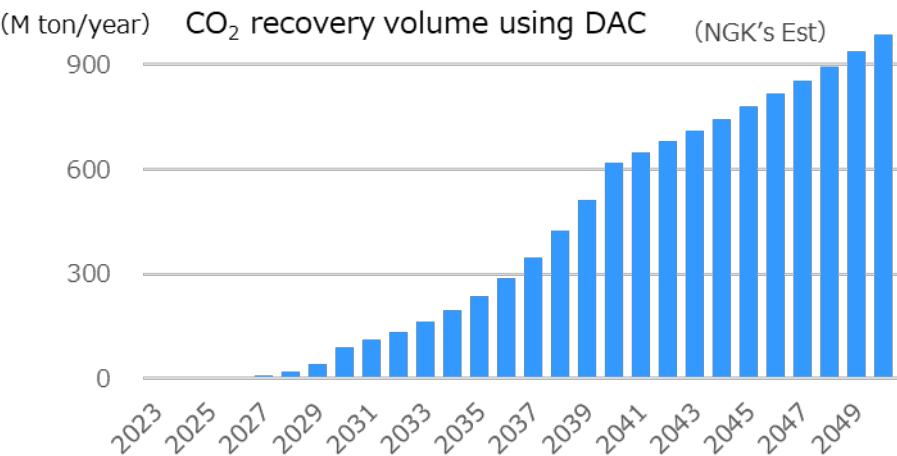
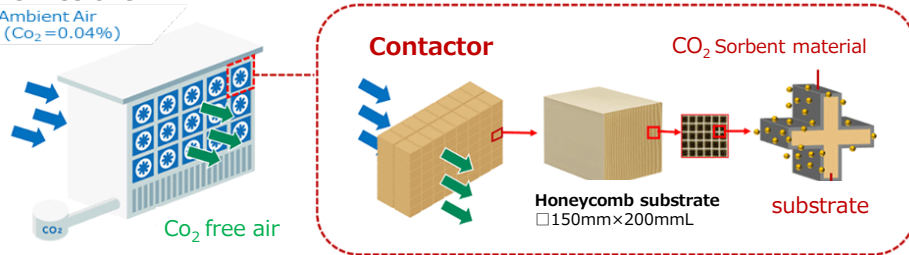


From a competitive environment perspective, the target markets for the company's products are assumed to be PM manufacturers in Europe, Japan and North America. The adoption of SN insulated heat dissipation circuit boards will increase in association with the increase in power modules that use SiC semiconductors centered on BEV. We will establish a mass production system promptly and promote market launches.

Aiming for creation of new products & businesses

■ Honeycomb Structure Sorbent Material for Direct Air Capture

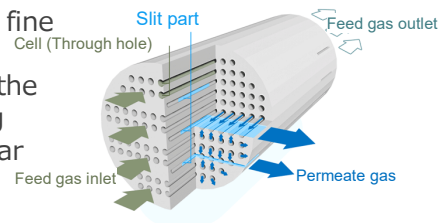
Direct air capture (DAC) is a technology that collects CO₂ directly from atmosphere with adsorbing and absorbing. The separation and use of CO₂, including methanation, will be required to realize a carbon-neutral society. Applying the ceramic honeycomb structure technology which the company has cultivated in ceramics for automotive exhaust gas purification, the features of this technology include that “it is compact and has a large surface area” and “it has low pressure loss (it can process large amounts of air efficiently).” 1 billions tons of CO₂ will be processed via DAC in 2050, our ceramics technology will contribute to reduce CO₂ emissions.



We will implement demonstration tests and aim for an early market launch using the manufacturing equipment for ceramic substrates for automotive catalytic converters.

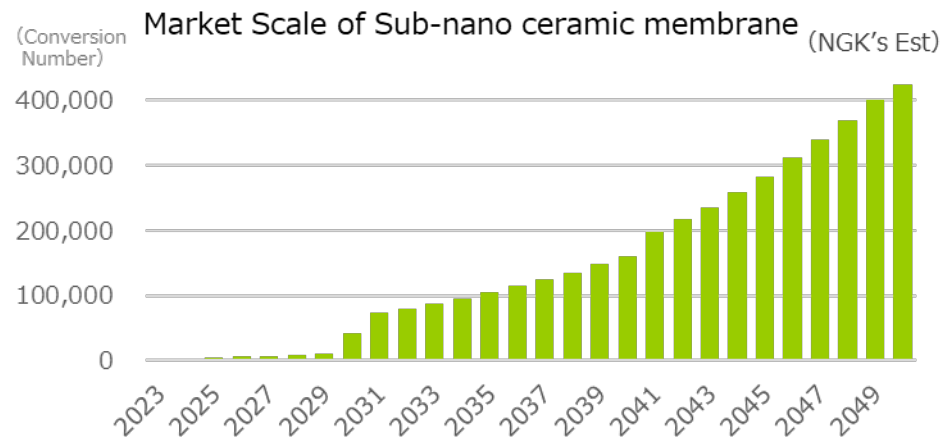
■ “Sub-nano ceramic membrane” capable of molecular-level

A sub-nano ceramic membrane is a separation membrane with particularly fine sub-nano class pores. The separation of gases and liquids at the molecular level is possible by arranging zeolites that have pores at the molecular level in the crystal structure on the cell surface. Applying a sub-nano ceramic membrane to current processes, CO₂ emissions are expected to decrease by half.



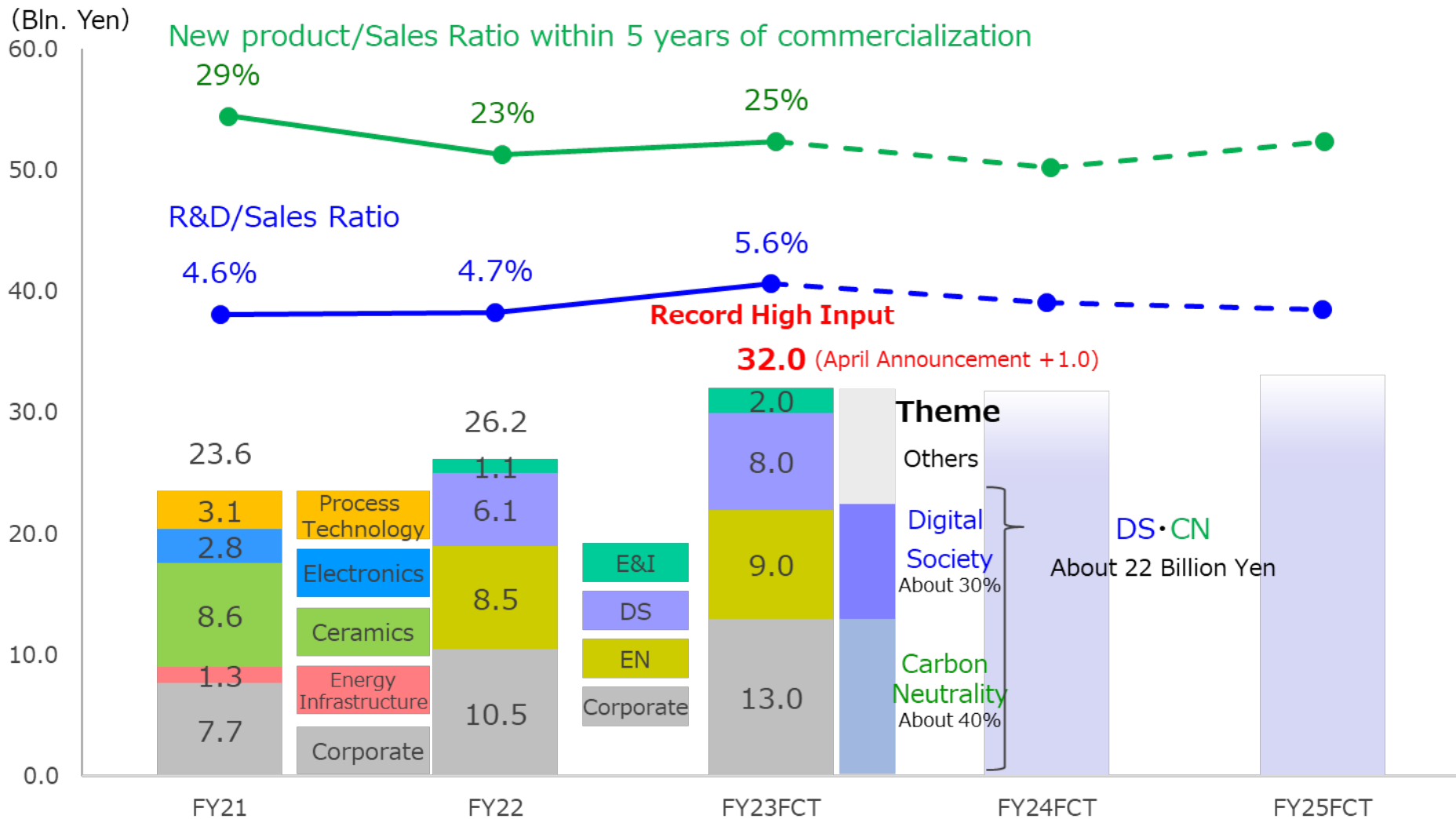
Example of Development Products

- DDR-type zeolite membrane for CO₂ separation
CO₂ separation from EOR and natural gas
- Zeolite membrane for H₂ separation
The separation of H₂ and methane in H₂ transportation using existing natural gas pipelines
- Dehydration Membrane
Dehydration in chemical plant processes, etc



We will strengthen the test and evaluation system and promote marketing activities towards the application of the system in major uses by 2030.

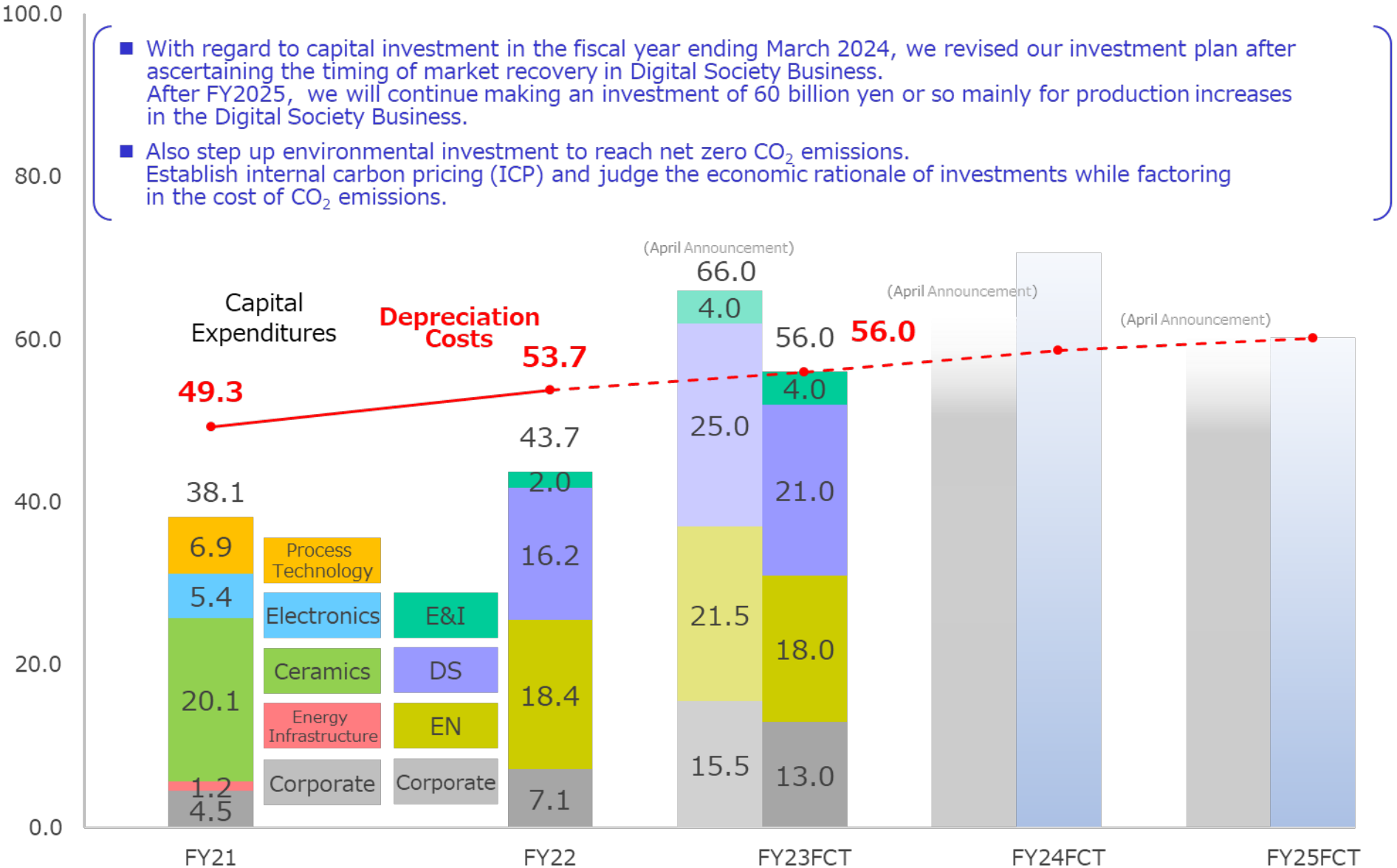
R&D Input



- **Plan record-high R&D budgets** mainly for CN- and DS-related products in order to achieve NV1000*. Increase of one billion yen compared to the forecast in April due to an increase in development expenses for products close to commercialization, etc.
- To enhance our own technologies, the Corporate NV Creation, the Corporate R&D and the Corporate Manufacturing Engineering coordinate and proceed with the development of new products in each theme steadily. Simultaneously, actively acquire technologies and resources from outside.

Capital Expenditures & Depreciation Costs

(Bln. Yen)

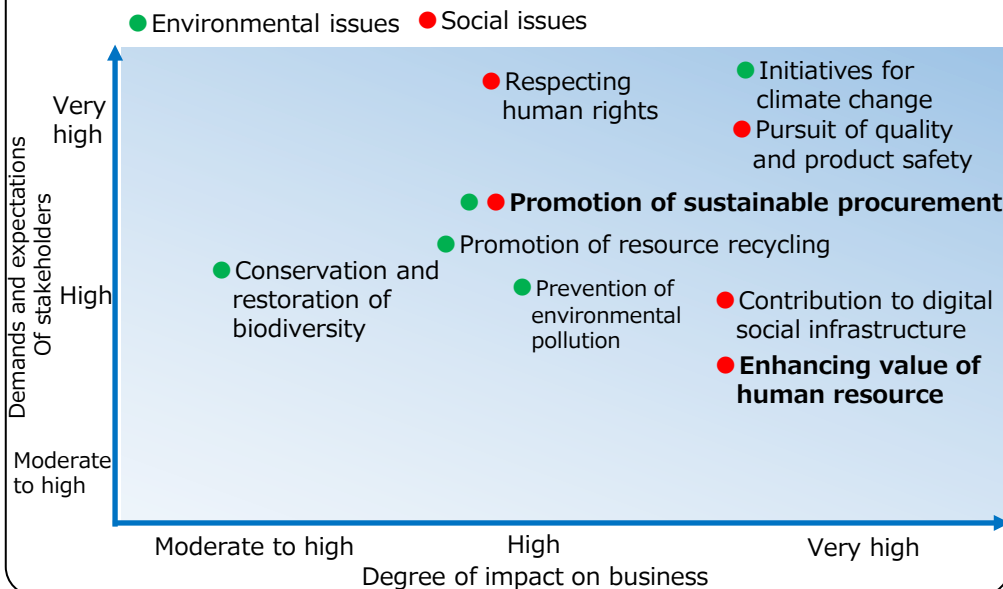


Promoting ESG Management

As a company that contributes to the future of energy, the protection of the global environment, and the development of industry based on unique ceramic technology, we have identified the materialities for us to realize our ideal form under the group philosophy of “Enriching human life by adding new value to society.”

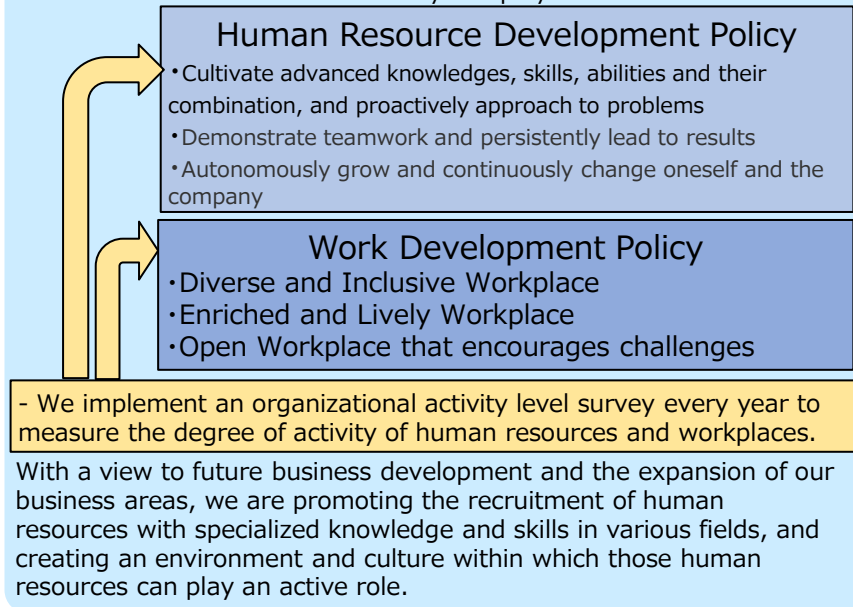
Materiality (Important issues)

Based on our Basic Policy on Sustainability, the NGK Group identified its Materiality in April 2023. By efficiently and effectively utilizing our limited management resources to address these material issues, our Group seeks to maximize value creation for both the Group and our stakeholders.



Enhancing value of human resource

In June 2023, we formulated the “NGK Group Human Capital Management Policy,” the “Human Resources Development Policy,” and the “Internal Environment Development Policy” to enhance the human resources who will work on the realization of the NGK Group Vision and create an environment in which they can play active roles.



Initiatives for climate change

We achieved CO₂ emissions of 560,000 tons (a reduction of 23% compared with 2013) in fiscal year 2022. We will continue to promote energy savings, the strengthening of renewable energy procurement and the installation of PV systems for further reductions. In addition, we will also promote the development of hydrogen and ammonia fuel conversion technologies. We are advancing information disclosure based on the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), analyzed the risks and opportunities of climate change and the magnitude of their impacts after setting the time axis and scenarios, and disclosed the results in May 2023.

Promotion of sustainable procurement

We maintain and select suppliers based on the “CSR Procurement Guidelines” to identify risks related to sustainability in the supply chain. Since fiscal year 2021, we have implemented fact-finding survey questionnaires to carry out detailed CSR evaluations of each supplier, and have expanded the scope to include major suppliers of domestic and overseas group companies.

Capital Policy

- **Ensure profitability exceeding capital costs and financial soundness at the same time.**

Focus on capital efficiency with ROE as a management indicator and utilization of interest-bearing debt

- **Proactive shareholder returns from a medium- to long-term perspective**

Pay dividends while targeting a three-year average payout ratio of 30% and a three-year average DOE of 3%, and acquire treasury shares in a flexible manner.

- **Keep the income rate, assets turnover and financial leverage at healthy levels consistent with business strategy**

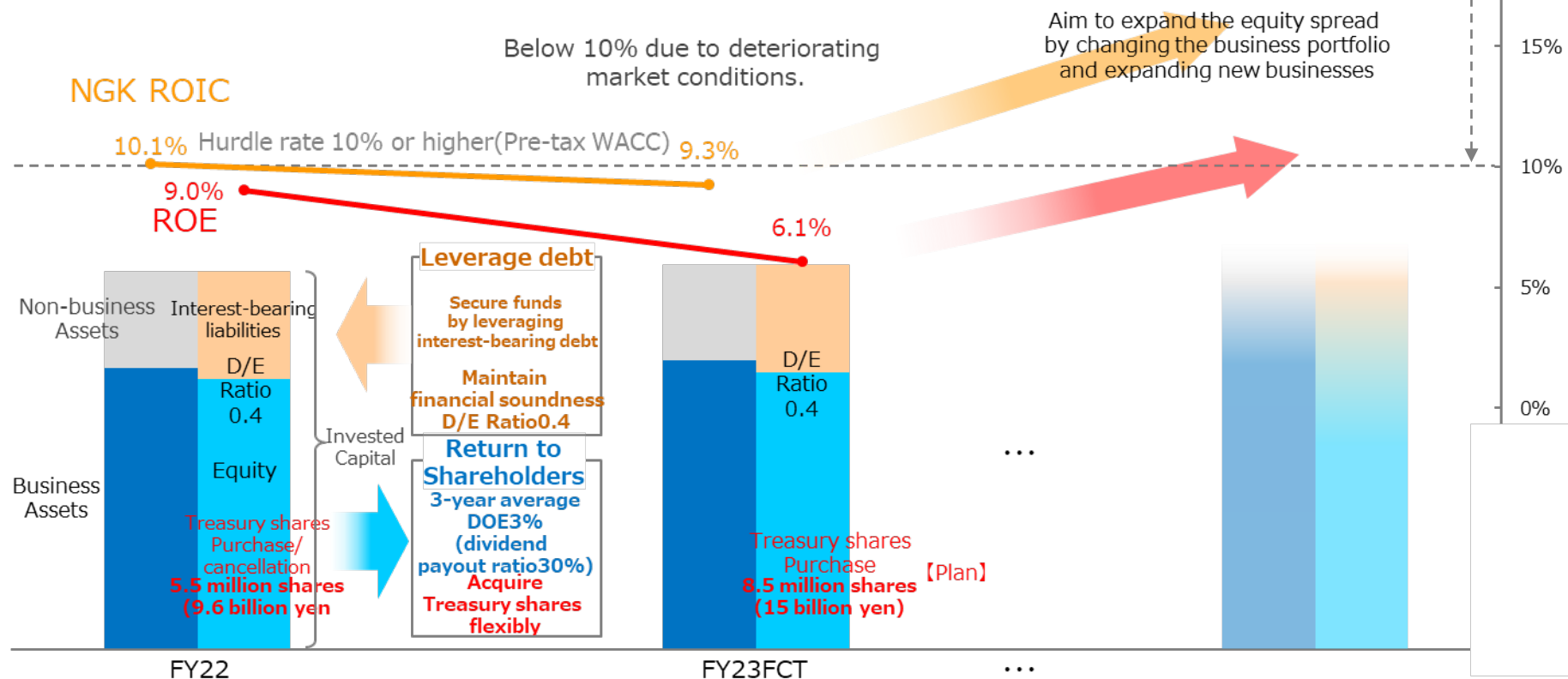
Adopted ROIC, which is highly related to ROE, as an internal management indicator (NGK-version of ROIC*)

Setting fund procurement through obtaining interest-bearing debt as the basis, aim for a debt-to-equity ratio of 0.4 to maintain financial soundness

Estimation of the NGK's Capital Cost

After-tax Debt Cost	1.0%
Capital Cost	9.0% (CAPM)
D/E Ratio	0.4
WACC	6.8%
Pre-tax WACC	9.7% (Hurdle rate)

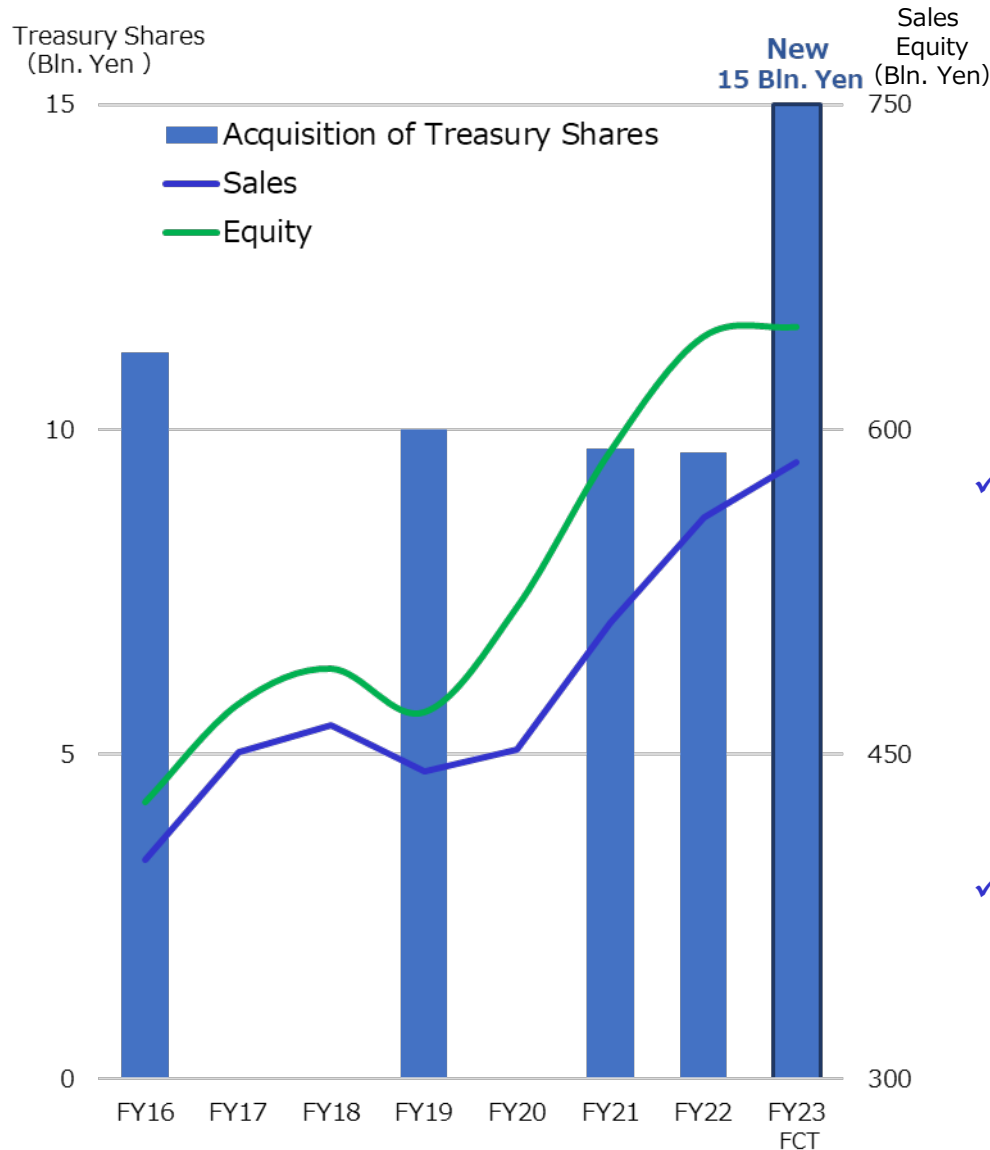
*NGK-version of ROIC = Op. Income ÷ Business assets (sales receivables + inventories + fixed assets)



Capital Policy ~Treasury Shares Purchase~

■ Proactive shareholder returns from a medium- to long-term perspective

Pay dividends while targeting a three-year average payout ratio of 30% and a three-year average DOE of 3% and **acquire treasury shares in a flexible method.**



➤ **Acquisition of Treasury Shares**
 Up to 8.5 million shares/15 billion yen
 Acquisition method : Market purchases
 Acquisition period : From October 30, 2023 to February 29, 2024

- ✓ While investing positively in capital expenditure in line with the expansion of automotive and SPE / electronic components business, the company has also acquired a cumulative total of more than 120 million treasury shares, including the shares scheduled for acquisition in the current fiscal year, worth more than 160 billion yen.
- ✓ From now on, we will continue to provide shareholder returns while prioritizing inputs for the expansion of income from existing business and the creation of new business.

Capital Policy ~Sustainable Finance(ESG Management)~

Financing investments in projects contributing to decarbonization and in development related to carbon neutrality by Green Bonds (interest-bearing liabilities)

- Allocation of the first green bond, 10 billion yen(7 years) and the second green bond, 5 billion yen

The green bond has obtained "Green 1(F)," the highest rating, provided by an external reviewer (Japan Credit Rating Agency, Ltd.).

(Bln Yen)

Eligible project categories	Project cases	Seventh series of NGK INSULATORS, LTD. unsecured straight bonds (The first green bond)		Eighth series of NGK INSULATORS, LTD. unsecured straight bonds (The second green bond)	Total
		Allocated amount (January to March 2022)	Allocating amount (April to March 2023)	Allocating amount (December to March 2023)	
Batteries	•NAS® Batteries •Zinc Rechargeable Batteries ®	1.5	3.1	1.5	6.2
Next-generation power semiconductors	•Gallium Nitride (GaN) Wafer •DCB Circuit Substrate	0.8	1.4	1.3	3.6
CCU/CCS and hydrogen/ammonia	•CO ₂ Separation Membrane	0.6	1.6	1.7	4.0
Clean energy utilization	•Install Photovoltaic Equipment Systems using NAS® Batteries	0.2	0.3	0.2	0.7
Energy-efficient manufacturing	• Invest in the high-efficiency facilities meeting Energy-efficient standard sufficiently	0.1	0.2	0.2	0.4
Total(except issuance costs)		3.3	6.6	4.9	*14.9

* All funds have been applied except for issue expenses.

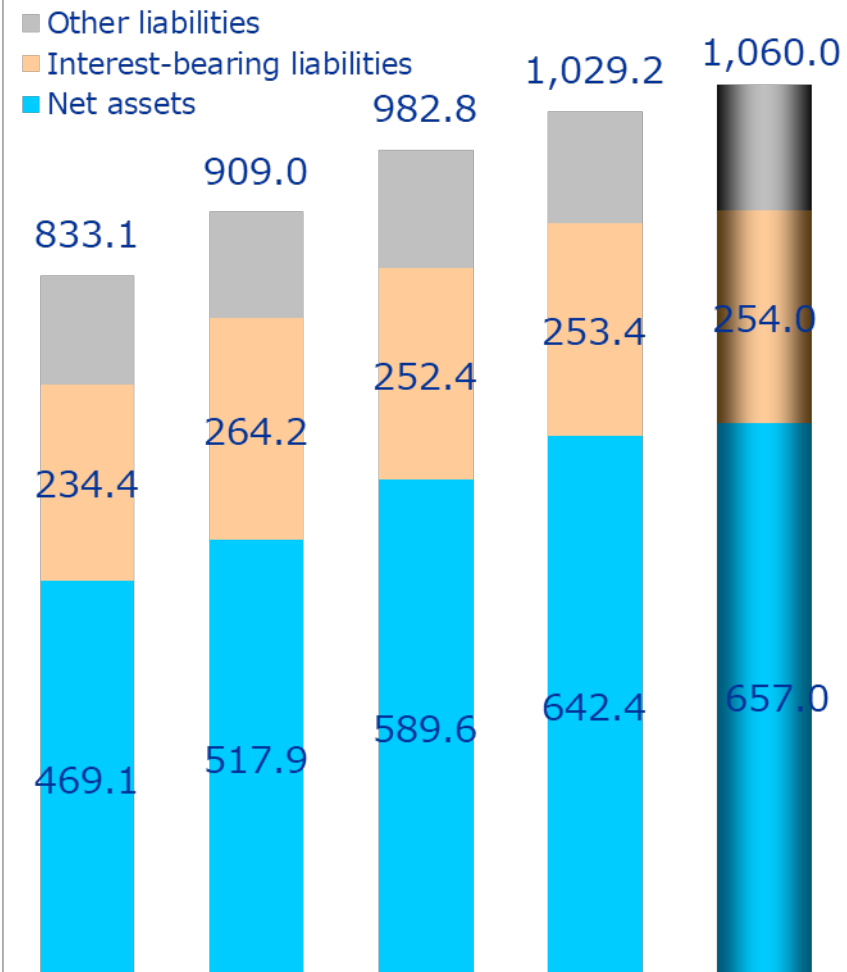
- Third Series of Green Bonds in 2023(Plan)

Ninth Series of NGK INSULATORS, LTD. Unsecured Straight Bonds	
Issuance amount	10 billion yen (Degree)
Issuance date	November, 2023 onwards
Maturity	5 years

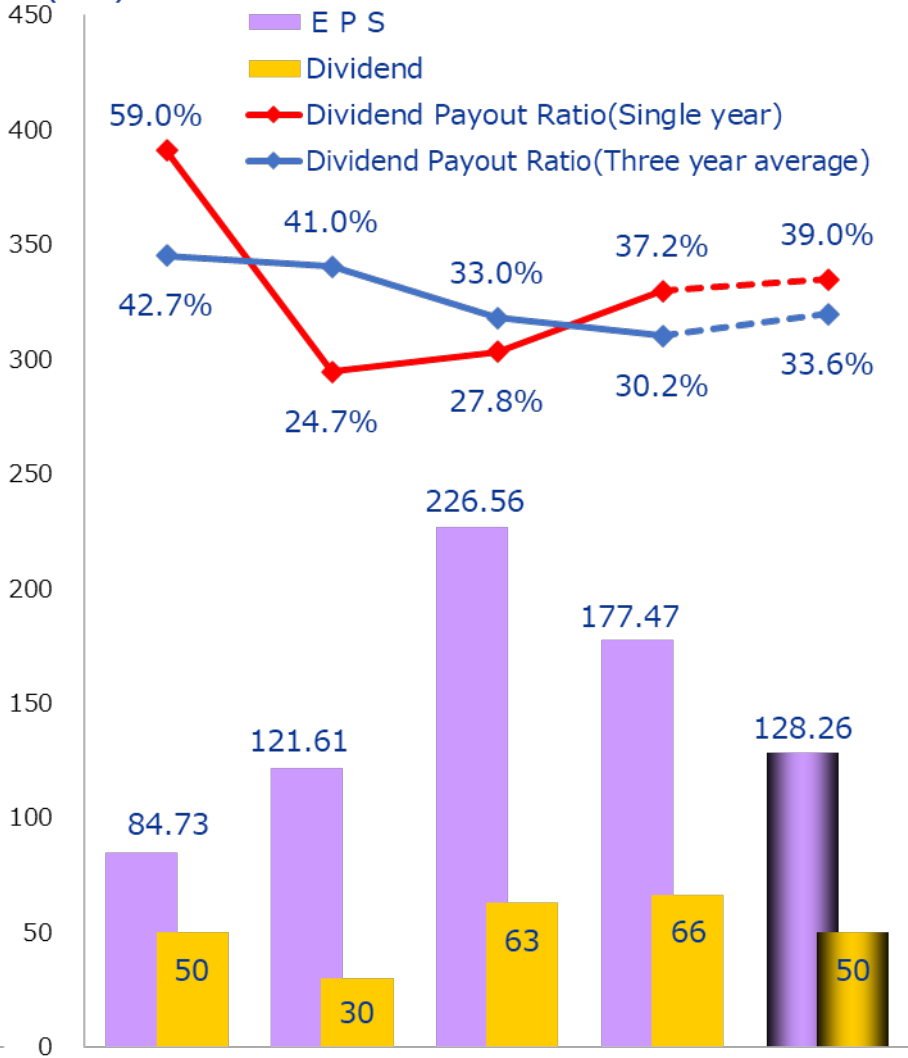
In addition to reinvesting retained earnings, we will secure financing through interest-bearing debt and provide growth inputs related to carbon neutrality while maintaining both financial soundness and capital efficiency.

Total Assets & Dividend

(Bln. Yen)



(Yen)



	FY19	FY20	FY21	FY22	FY23 FCT
ROE	5.8%	7.9%	12.9%	9.0%	6.1%
D/E Ratio	0.51	0.52	0.43	0.40	0.39

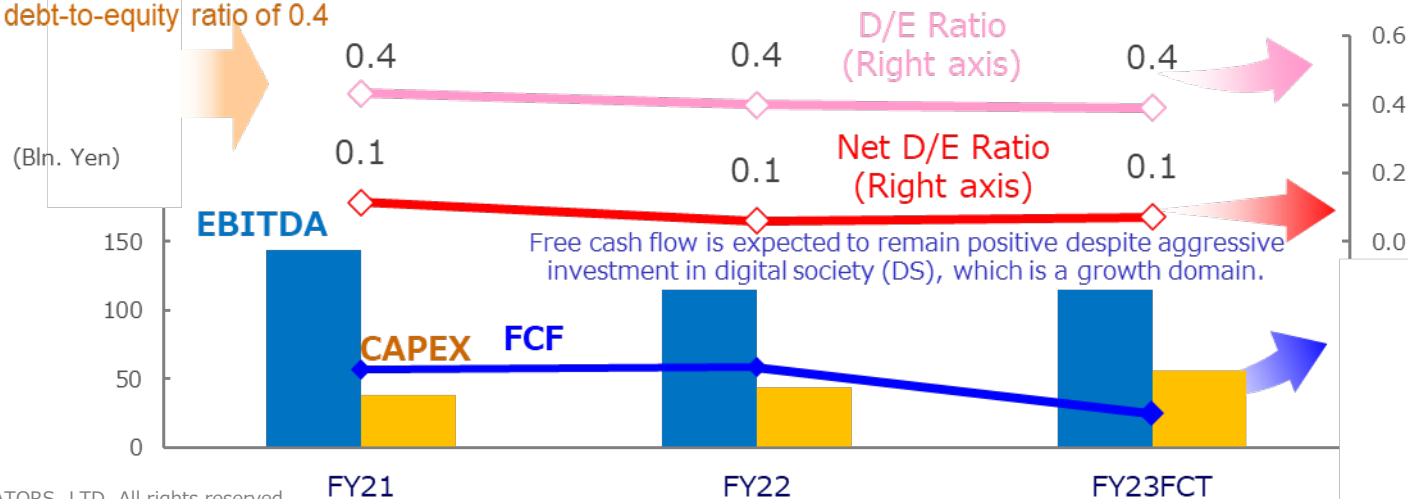
	FY19	FY20	FY21	FY22	FY23 FCT
DOE					
Single year	3.4%	2.0%	3.6%	3.4%	2.4%
Three-year average	3.4%	2.9%	3.0%	3.0%	3.1%

Equity ratio of 50% or higher will be maintained.

Summary of Cash Flow

(Bln. Yen)	FY21	FY22	FY23Forecast	
			April Announcement	New Forecast
Operating Activities	94.8	97.9	76.0	78.0
Investing Activities	(46.3) Investment (37.4)	(52.0) Investment (43.1)	(66.0) Investment(66.0)	(56.0) Investment(56.0)
Financing Activities	(45.3) New loans +15.0 Repayment (34.0) Treasury shares Purchase (9.7)	(34.6) New loans +29.6 Repayment (32.8) Treasury shares Purchase (9.6)	(27.0) New loans +25.0 Repayment (34.1)	(33.0) New loans +35.0 Repayment (34.9) Treasury shares Purchase (15.0)
Effect of Exchange Rate Changes on Cash & Cash Equivalents	5.5	2.6	(1.5)	2.0
Net Increase (Decrease) in Cash & Cash Equivalents	8.8	14.0	(18.5)	(9.0)
Cash & Cash Equivalents at End of Period	154.9	168.9	150.4	159.9

Invest funds in growth domains based on a debt-to-equity ratio of 0.4



Sales by Product (Annual)

(Bln. Yen)



<After inter-segment elimination>	FY2020	FY2021	FY2022	FY2023 Forecast
Honeycomb filters	63.7	70.4	81.3	83.0
GPF	33.2	33.9	36.8	44.0
Cd-DPF·LSH	59.2	78.3	84.3	87.0
SiC-DPF	39.6	46.3	59.7	68.0
Sensors	53.3	63.7	58.7	69.0
Environment Business ^{*1}	248.9	292.7	320.8	351.0
SPE related	80.1	96.9	107.0	88.5
Electronics components	27.9	29.5	28.6	25.5
Metal related	19.3	23.9	27.6	26.0
Soshin Electric CO. ^{*3}	6.9			
Digital Society Business ^{*2}	134.2	150.3	163.2	140.0
Energy Storage	2.8	1.3	2.7	3.0
Insulators	39.1	39.3	44.2	48.0
Industrial Processes	27.0	26.9	28.3	33.0
Energy & Industry Business ^{*4}	69.0	67.5	75.3	84.0
Total	452.0	510.4	559.2	575.0

*1 The Ceramics Business has been renamed to the Environment Business since the beginning of FY2022

*2 The Electronics Business has been dissolved and reorganized into the Digital Society Business composed of SPE related, Electronics components, and Metal-related since the beginning of FY2022.

*3 Excluded from consolidation in the fourth quarter of FY2020.

*4 The Energy Infrastructure Business has been dissolved and reorganized into the Energy & Industry Business composed of Energy Storage, Insulators and Industrial Processes

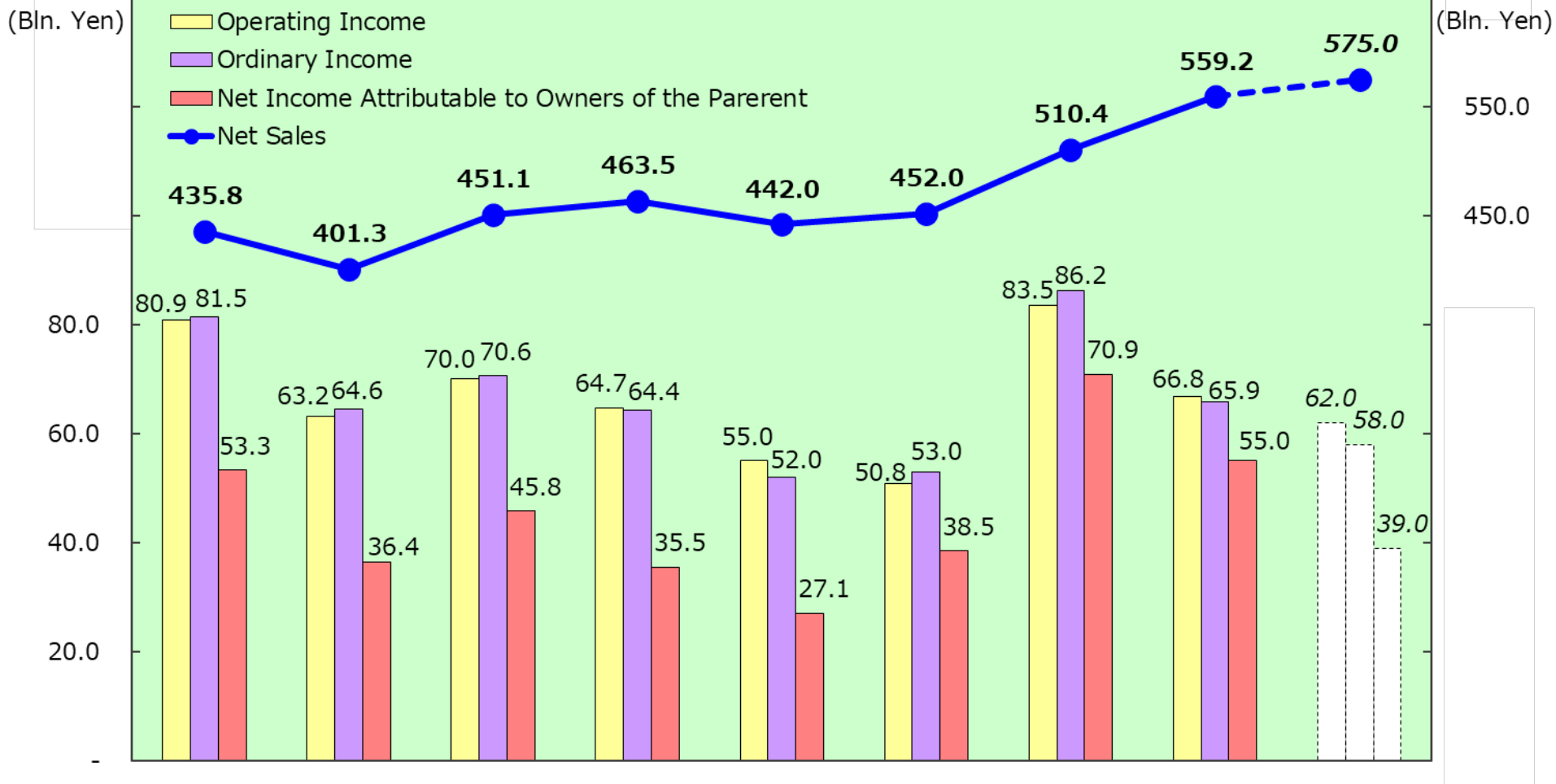
Sales by Product (Semi Annual)

(Bln. Yen)



<After inter-segment elimination>	FY2022		FY2023 Forecast	
	1H	2H	1H	2H
Honeycomb filters	40.0	41.4	45.2	37.8
GPF	18.4	18.4	24.9	19.1
Cd-DPF·LSH	39.8	44.5	42.9	44.1
SiC-DPF	27.2	32.5	34.0	34.0
Sensors	27.8	31.0	32.9	36.1
Environment Business	153.1	167.7	179.8	171.2
SPE related	59.0	47.9	41.8	46.7
Electronics components	16.4	12.2	11.7	13.8
Metal related	12.7	14.9	12.6	13.4
Digital Society Business	88.2	75.0	66.1	73.9
Energy Storage	1.1	1.7	0.7	2.3
Insulators	20.0	24.2	22.8	25.2
Industrial Processes	12.3	16.0	13.5	19.5
Energy & Industry Business	33.4	41.9	37.0	47.0
Total	274.7	284.6	282.9	292.1

Consolidated Operating Results



FX Rate	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
USD	¥120	¥109	¥111	¥111	¥109	¥106	¥113	¥135	¥141
EUR	¥132	¥119	¥129	¥128	¥121	¥124	¥131	¥141	¥152
ROE	13.3%	8.8%	10.4%	7.6%	5.8%	7.9%	12.9%	9.0%	6.1%
EPS	¥163.28	¥112.71	¥142.42	¥110.35	¥84.73	¥121.61	¥226.56	¥177.47	¥128.26
Dividend	¥38	¥40	¥44	¥50	¥50	¥30	¥63	¥66	¥50

The purpose of this brief is information disclosure for better understanding of NGK Group's policies, projections and financial condition. This brief does not solicit buying and selling of NGK's shares.

The figures included in this brief, including the business performance targets and figures, are all projected data based on the information currently available to the NGK Group, and are subject to variable factors such as economic conditions, competitive environments and future demands.

Accordingly, please be advised that the actual results of business performance may differ substantially from the projections described here.



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