

FY2021 1st Half Results (from April 1, 2021 to September 30, 2021)

November 1, 2021



NGK INSULATORS, LTD.



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President
Shigeru Kobayashi

This is a translation of materials used for the analyst meeting held in Tokyo, Japan on November 2, 2020

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 FY2021
(1st Half results/Forecast for FY2021)

Forecasts and outlook of Segment Information

Capital Expenditures & Depreciation Costs & R&D

Medium-term Plan・Business Portfolio
(Business Performance/ROIC)

Medium to long-term forecast
(Digital Society/Demands for Carbon-neutrality)

Financial Condition
(Capital Policy・Treasury Stock Purchase /
Summary of Cash Flow / Total Assets・Dividend)

Summary of financial 1st Half results for FY2021

	(¥ Bil.)	FY2020 1 st half	Announcement April→July	FY2021 1 st half	Growth ratio
Net Sales		194.9	240.0→250.0	250.2	FX +49 +28%
Operating Income		11.6	34.0→42.0	45.9	+14 +297%
Ordinary Income		12.2	32.0→40.0	43.9	+259%
Profit Attributable to Owners of Parent		7.3	25.0→30.0	32.0	+340%
Exchange Rate	USD	¥107	(¥105→108)	¥110	+¥3
	EUR	¥121	(¥125→129)	¥131	+¥10

YOY (Year-Over-Year) change increased in sales and income.

Income exceeded the July announcement.

- Ceramics Sales and income increased due to increased demands of automotive-related products for the recovery of passenger car and track sales.
- Process Technology Sales increased due to higher demand of semiconductor manufacturing equipment for strong foundry investments.
- Electronics Sales declined since Soshin Electric Co., Ltd. was excluded from consolidation and, also accounting standards for revenue recognition changed. Income increased due to higher demands for piezoceramic actuators for HDDs and metal related products.
- Energy Infrastructure Insulators reduced the deficit through cost reduction and improving sales.

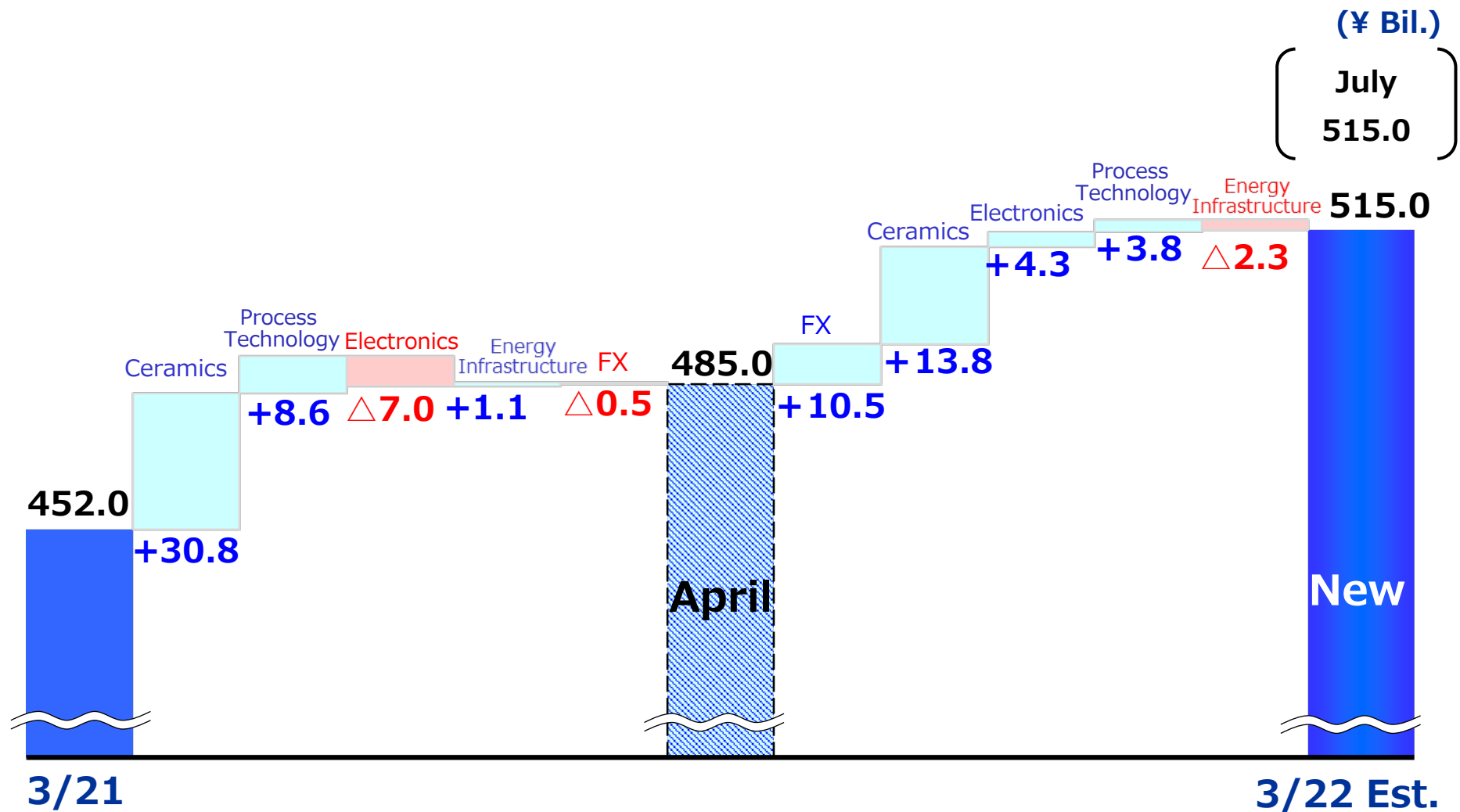
Summary of financial 1st Half results for FY2021 (Forecasts for FY2021)

	(¥ Bil.)	FY2020	Announcement April→July	FY2021	Growth ratio
Net Sales		452.0	485.0→515.0	515.0	FX +99 +14%
Operating Income		50.8	70.0→80.0	83.0	+42 +63%
Ordinary Income		53.0	68.0→79.0	82.0	+55%
Profit Attributable to Owners of Parent		38.5	50.0→58.0	60.0	+56%
Exchange Rate	USD	¥106	(¥105→107)	¥110	+¥4
	EUR	¥124	(¥125→127)	¥131	+¥7

Sales and income are expected to hit a record high. * * Sales: FY2018 ¥463.5 bil. Income: FY2015 ¥80.9 bil.

- Ceramics Higher demands are expected for the tightening emission regulations and the recovery of passenger car and truck sales. Income are expected to increase as the effect of higher sales exceeds a rise in depreciation and amortization and other costs. There are concerns such as the effect of semiconductor shortage and rise in price, and we will pay close attention to the future trends.
- Process Technology Strong Foundry investment will continue. Both sales and income are expected to increase due to steady demand.
- Electronics Increased income are expected due to higher demands for metal related products and package products.
- Energy Infrastructure The demand for insulators will remain weak, but the business is forecast to return to profitability due to the cost reduction and improving sales prices.

Sales Change Analysis for FY2021



FX Rate

3/21
106/USD
124/EUR

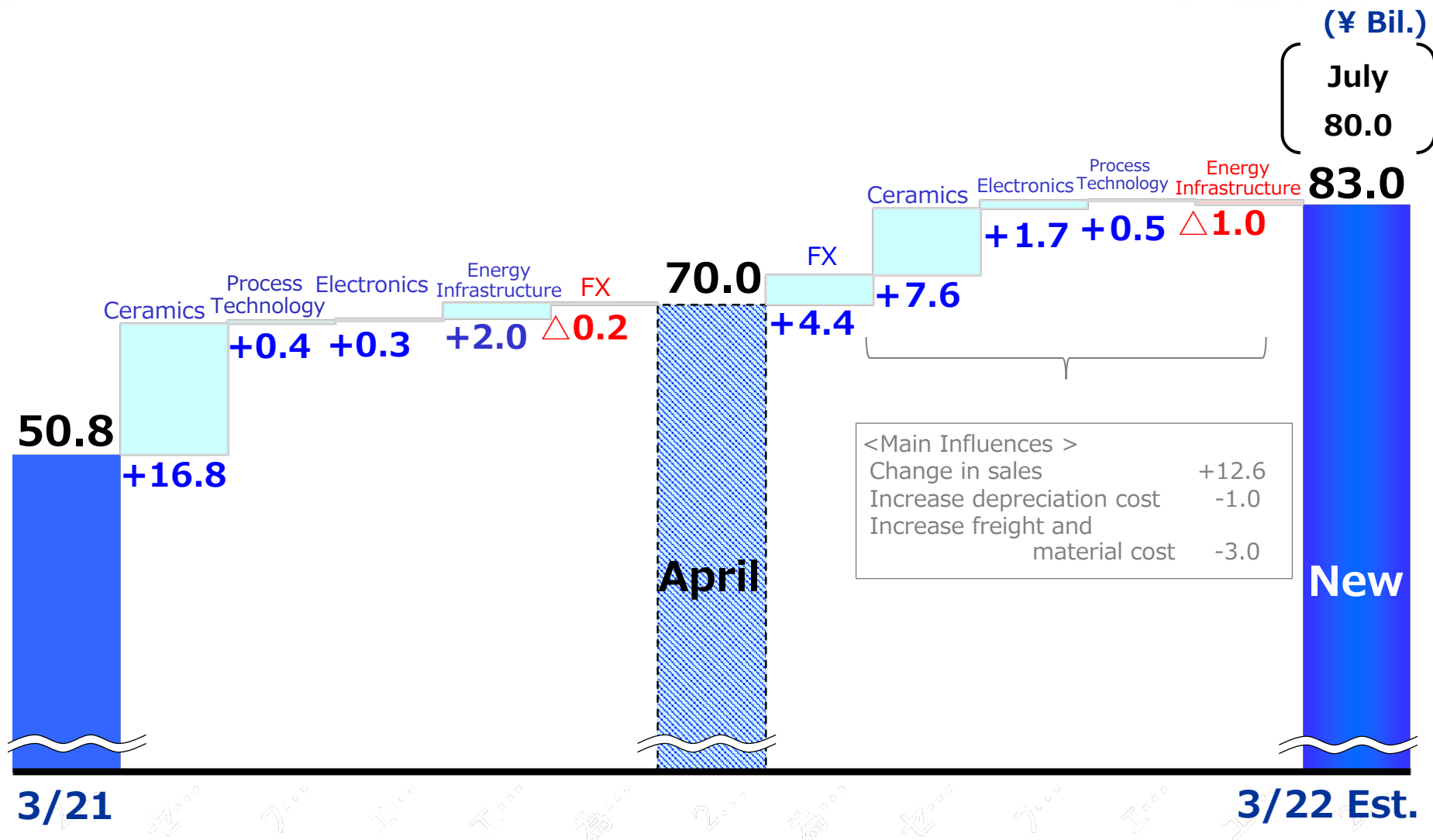
April(3/22 Est.)

105/USD
125/EUR

New(3/22 Est.)

110円/USD
131円/EUR

Income Change Analysis for FY2021



FX Rate

3/21
106/USD
124/EUR

April(3/22 Est.)
105/USD
125/EUR

New(3/22 Est.)
110円/USD
131円/EUR

Ceramics Business (Changes from April)

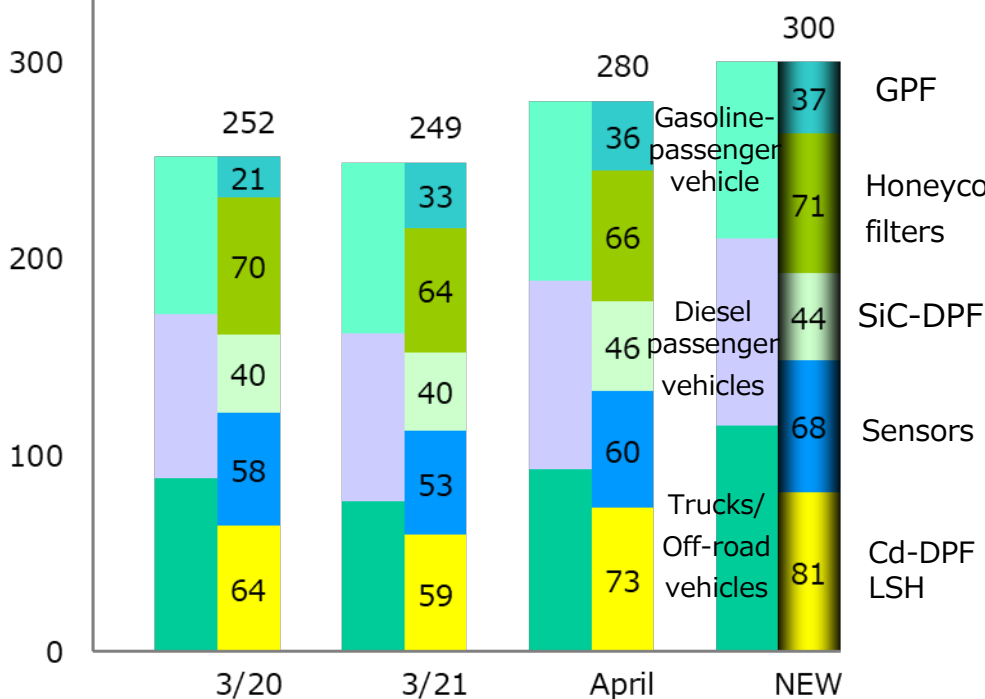
- Automotive-related...Although there are effects of production adjustments in automakers because of semiconductor shortage and recent slowdown of Chinese economy, our products demand is expected to increase due to steady car market compared to the previous forecast. Income is forecast to exceed the April forecast since the effect of higher sales exceeds a rise in freight and other costs. On the other hand, there are many concerns such as effects of further semiconductor shortage and rise in price. We will pay close attention to the future trends.
- GPF/Honeycomb filters
(For gasoline-passenger vehicles) : The solid demand is forecast to continue due to the recovery of passenger cars market.
- SiC-DPF
(For diesel passenger vehicles/trucks) : The demand is forecast to decrease compared to the April forecast because of the effects of production adjustments in automakers and others.
- Sensors
(For diesel passenger vehicles/trucks) : The demand is forecast to increase due to the trend of inventory recovery in addition to the recovery of passenger car markets.
- Cd-DPF/LSH(For trucks) : The demand is forecast to increase due to strong truck market.

<After consolidation elimination>

(¥Bil.)

【Sales】

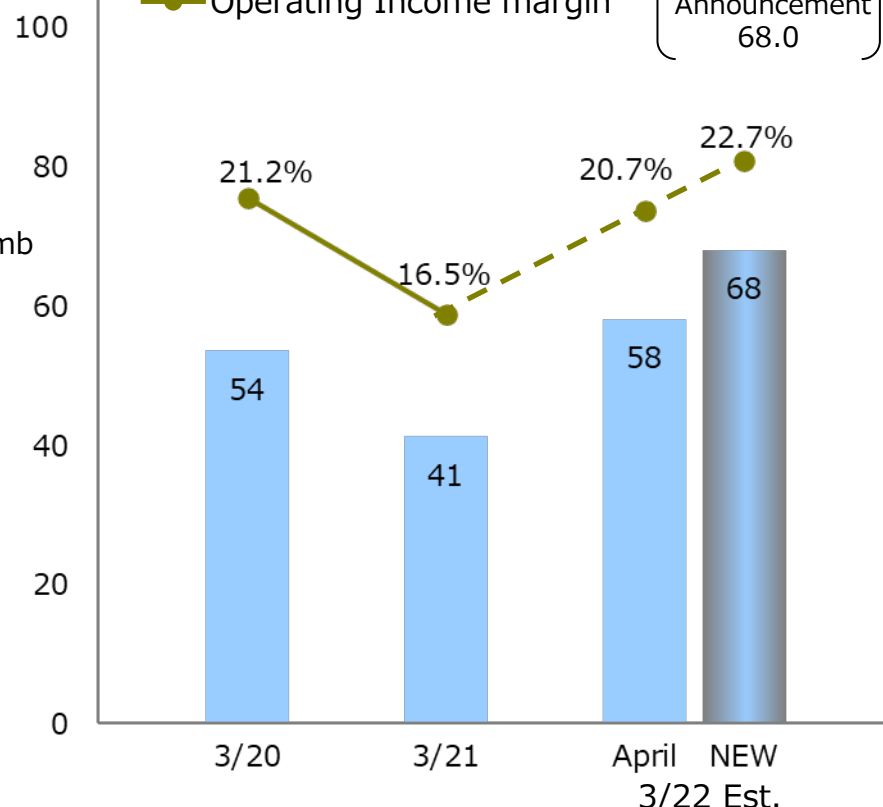
July
Announcement
310.0



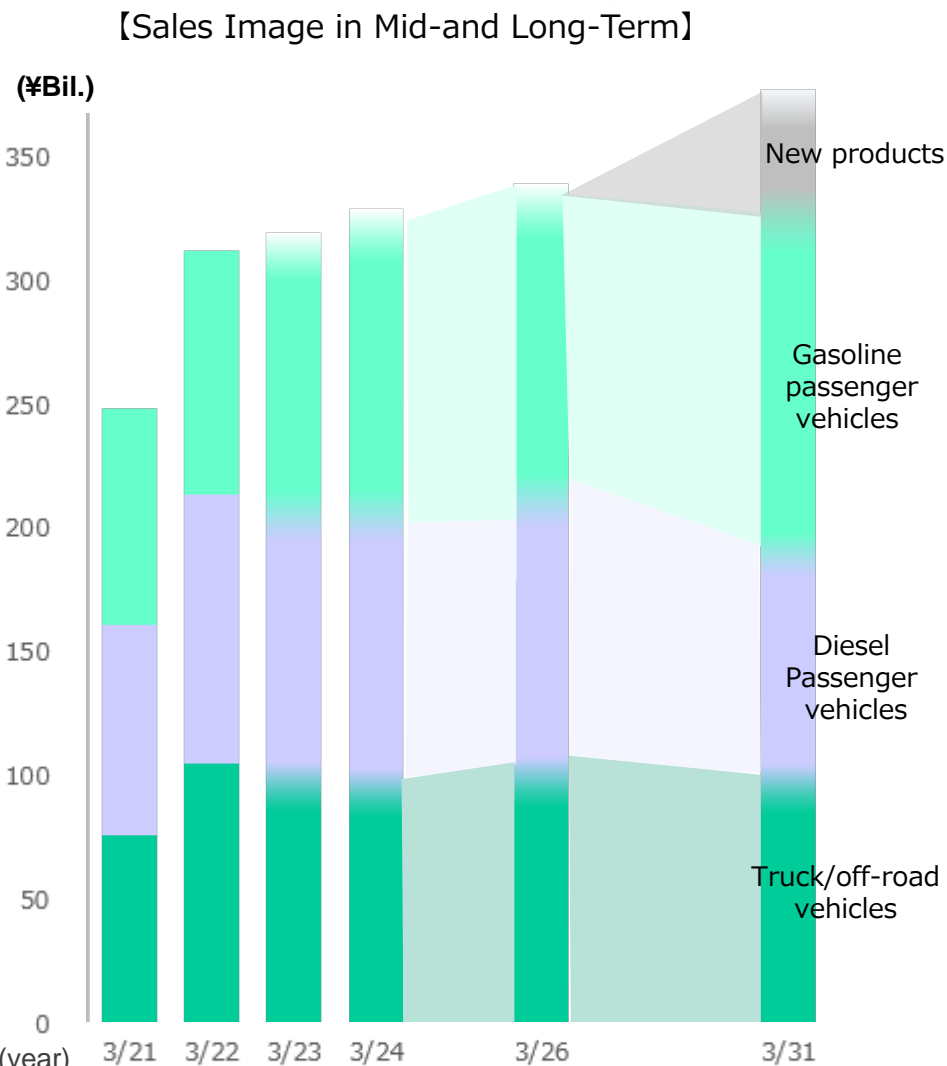
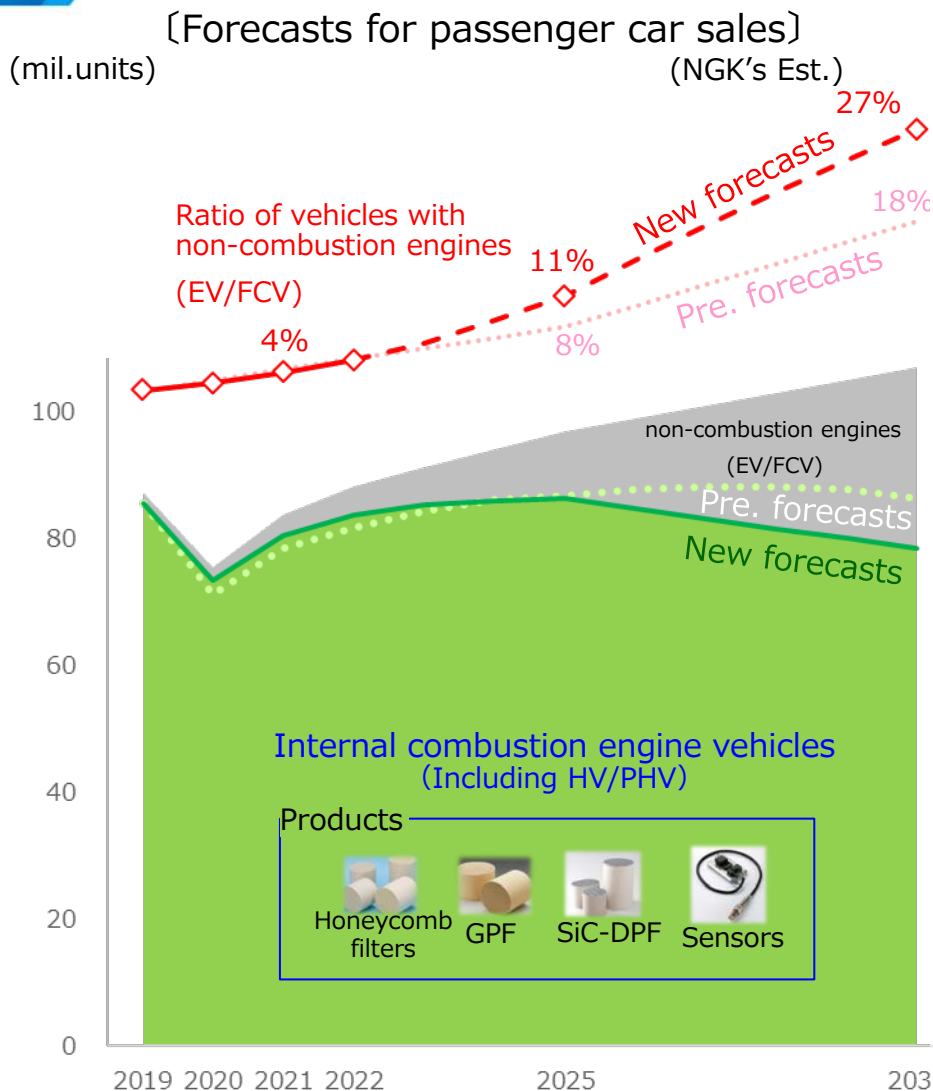
【Operating Income】

Operating Income margin

July
Announcement
68.0



Forecast for Passenger Car Sales and Emission Regulations



Sales will see a steady increase until around 2025, being backed by the increasing automobile demand and the tightening of regulations. The forecast from 2025 to 2030 for the ratio of vehicles with non-combustion engines shows a bleaker outlook than the April forecast, considering the likely progress of vehicle electrification mainly in Europe and China. Although demand for internal combustion engine vehicles will taper off, we will launch new products including highly value-added ones in response to a further tightening of regulations in order to maintain and increase sales in the medium and long term.

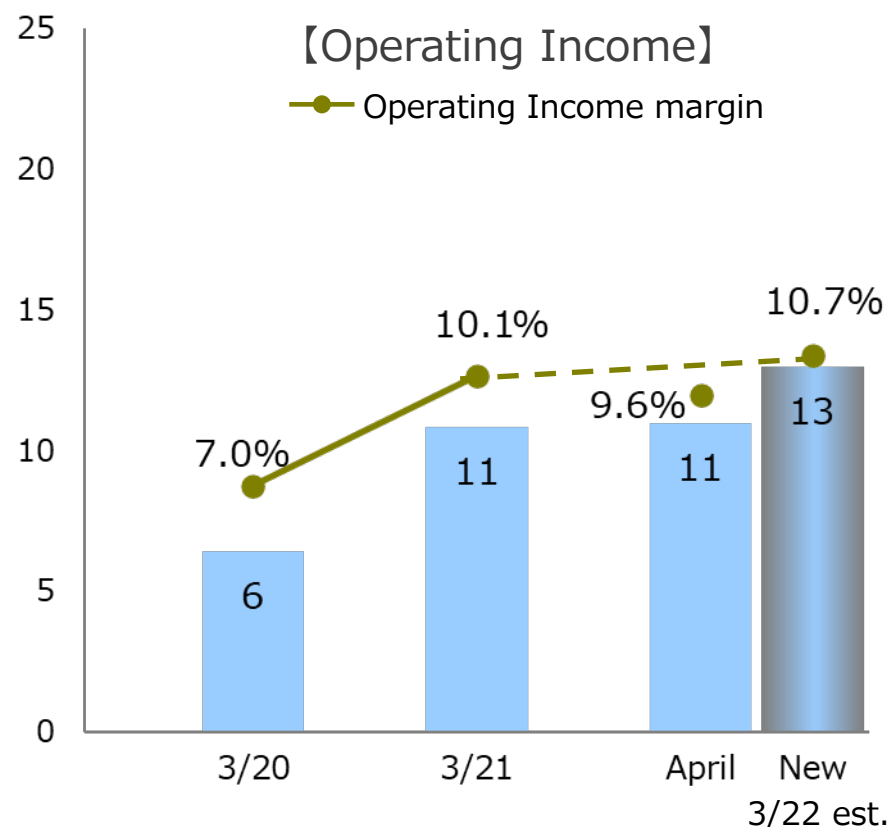
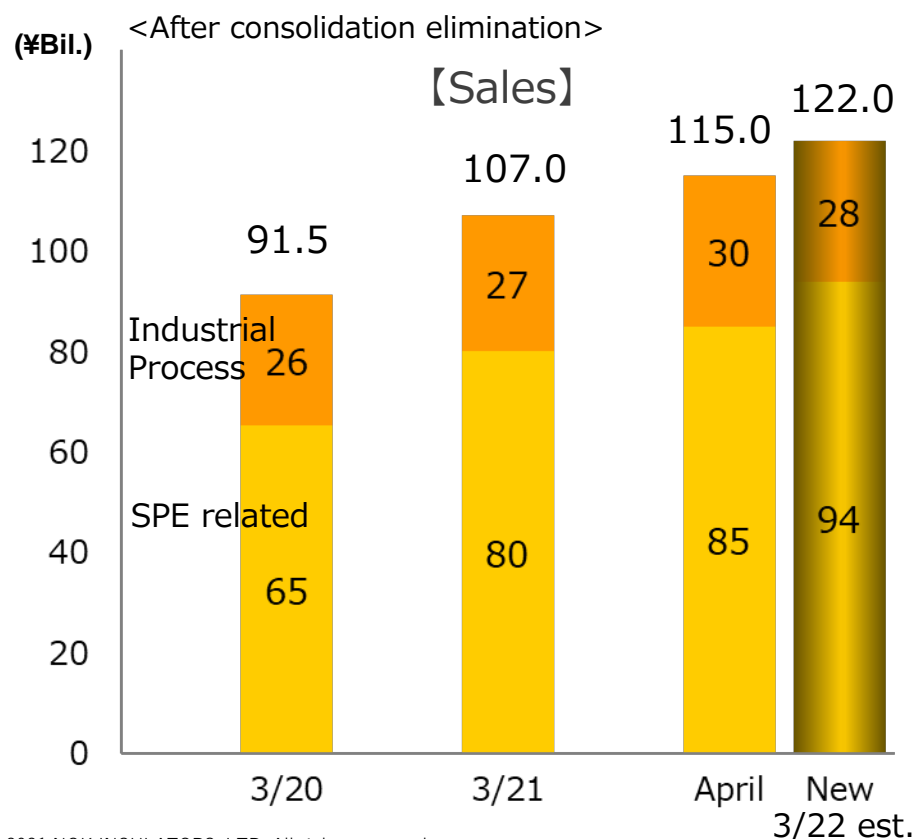
Process Technology Business (Changes from April)

● Ceramics for Semiconductor Manufacturing Equipment (SPE-related products)

• The demand of SPE-related products will exceed April forecast due to strong foundry investments, and the demand for our products is expected to steadily increase.

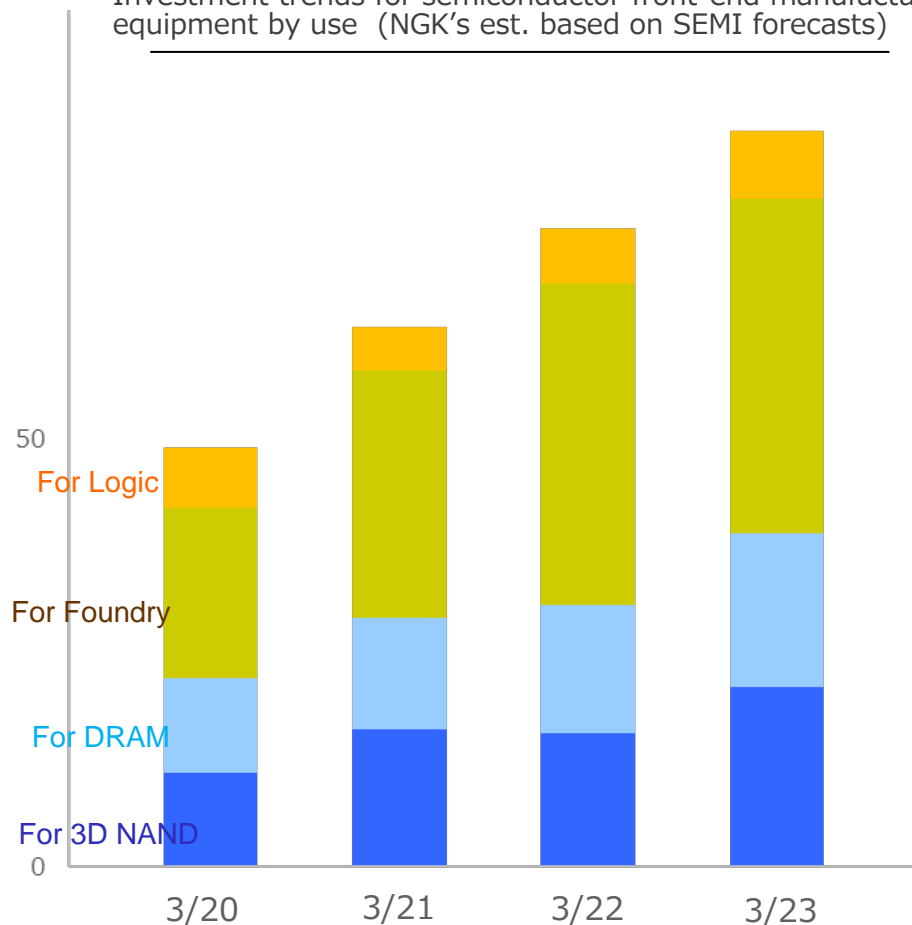
● Industrial processes

• The demand for heating systems for lithium-ion battery materials is expected to be active, but part of investment plans will be delayed, and the demand is expected to miss the April forecast.

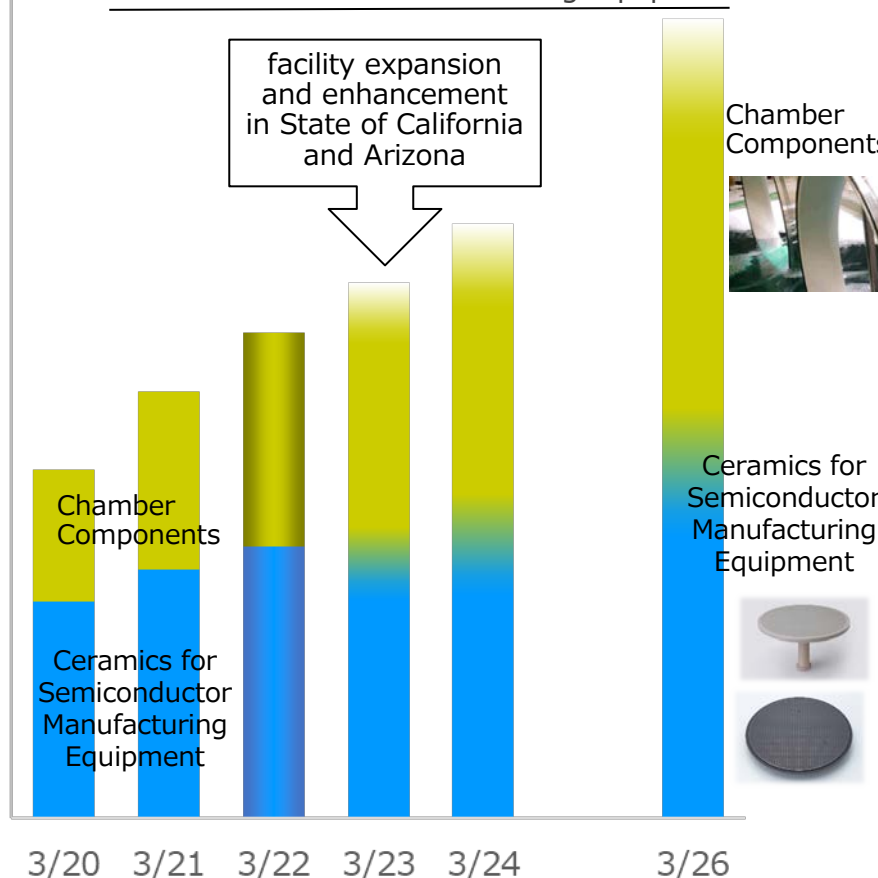


■ Ceramics Components for Semiconductor Manufacturing Equipment

Investment trends for semiconductor front-end manufacturing equipment by use (NGK's est. based on SEMI forecasts)



Sales Image of Ceramics Components for Semiconductor Manufacturing Equipment



Strong investment mainly in foundries will continue, given the shift to high-performance logic ICs and the increasing data storage capacity; the demand for semiconductor manufacturing equipment will see a significant increase. Led by the demand increase, both ceramics for semiconductor manufacturing equipment and chamber components will also see increases in volume. We will meet the future demand for chamber components by expanding production facilities in the states of CA and AZ. For ceramics for semiconductor manufacturing equipment, a further improvement in productivity will be achieved by enhancing DX technology led by the Tajimi Plant.

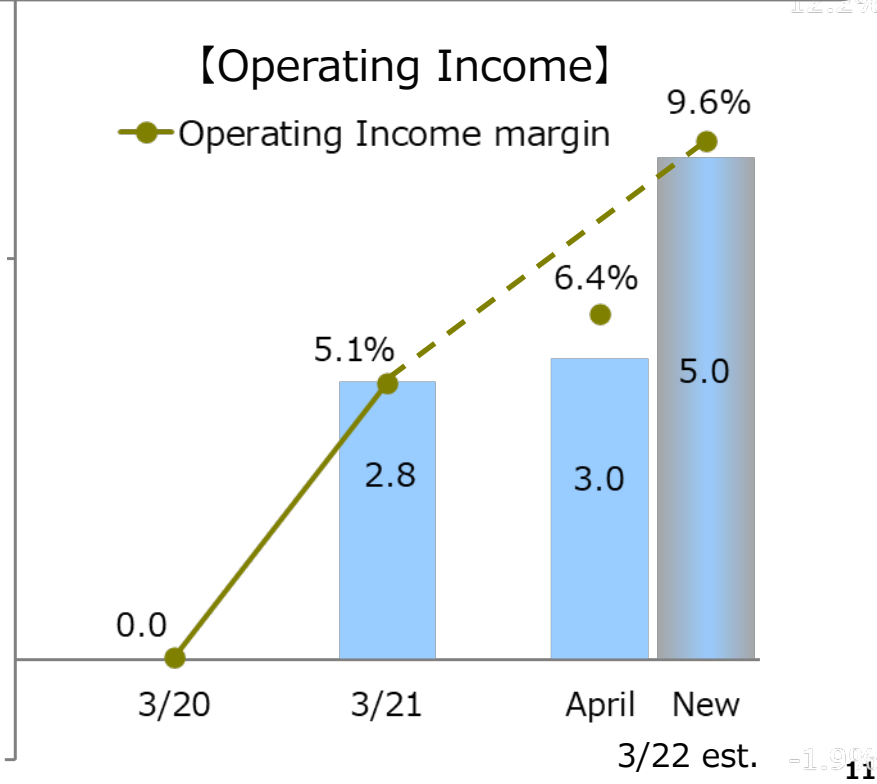
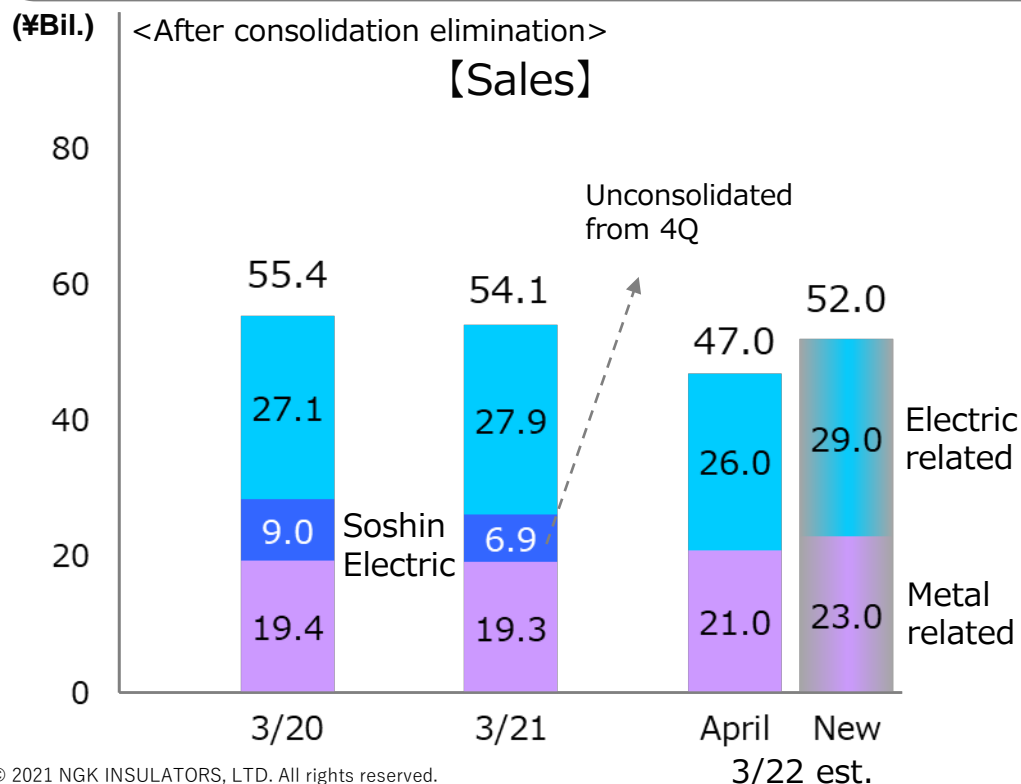
Electronics Business(Changes from April)

● Electronics Components

- The demands for piezoceramic actuators for HDDs are expected to increase steadily on the back of strong data-center investment. Both sales and income are expected to exceed the April forecast.
- Bonded Wafer for SAW Filter will remain steadily as April forecast.
- Package product demand for crystal devices is forecast to increase and, also the demand for mobile phone base stations is forecast to increase.

● Metal Related Products

The demand for home electric appliance in China is expected to increase in addition to the recovery of demand for automotive-related products.



Forecasts for the Electronics Business

■ Bonded Wafer for SAW Filter (Electronics Components)

A composite wafer products for high-functionality SAW filters with an improved temperature profile. The required performance level will rise due to advancements in communication systems and the market is forecast to expand (CAGR approx. 20%) as the number of filters installed on mobile devices increases.

(Total demand forecast of high-functionality filters)
(Bil. number of pieces) (NGK's Est.)



■ Piezoceramic Actuators for HDD (Electronic Components)

A piezoceramic actuators for large-capacity HDDs primarily used in nearline servers for data centers. In response to changes in life-style due to COVID-19, demand for large-capacity HDDs will continue to expand. In a bid to secure cost competitiveness over SSD, the capacity of HDD storage will further increase.

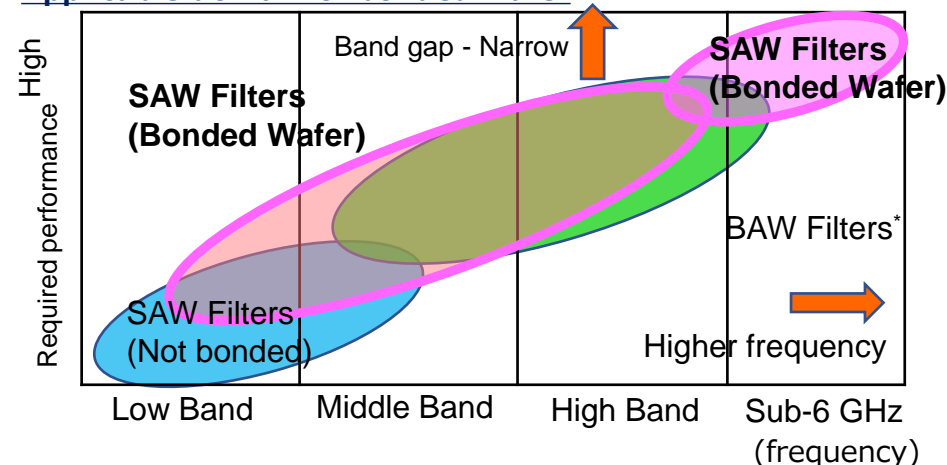
We will make further investments to boost production and meet increasing demand, and develop high-performance products.

■ Package products for crystal devices

In line with market expansion and the progress of high-frequency systems for communication devices such as smartphones and wearables, the demand for smaller products is expected to see an annual growth of 20%.

We will ratchet up the production capacity to meet the increasing demand.

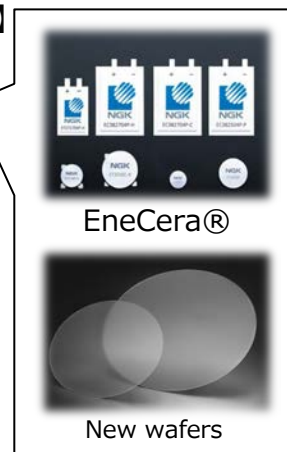
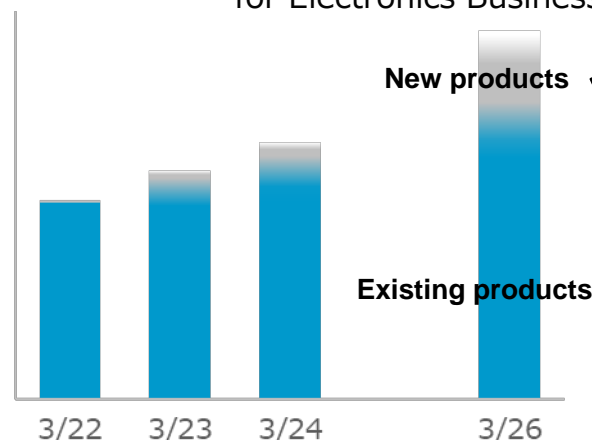
Applicable domain of bonded wafer



(* BAW Filters: Filter with a complex structure that is produced in the thin film process)

BAW filters are taking the lead in high-performance filters, but we will meet the increasing demand through further development of SAW filters.

【Sales Image in Mid-and Long-Term for Electronics Business】



Seeing environmental changes such as the progress of faster and larger-capacity communications as an opportunity, we will triple sales by 2030 by enhancing existing businesses, and improving and expanding new products.

Energy Infrastructure Business(Changes from April)

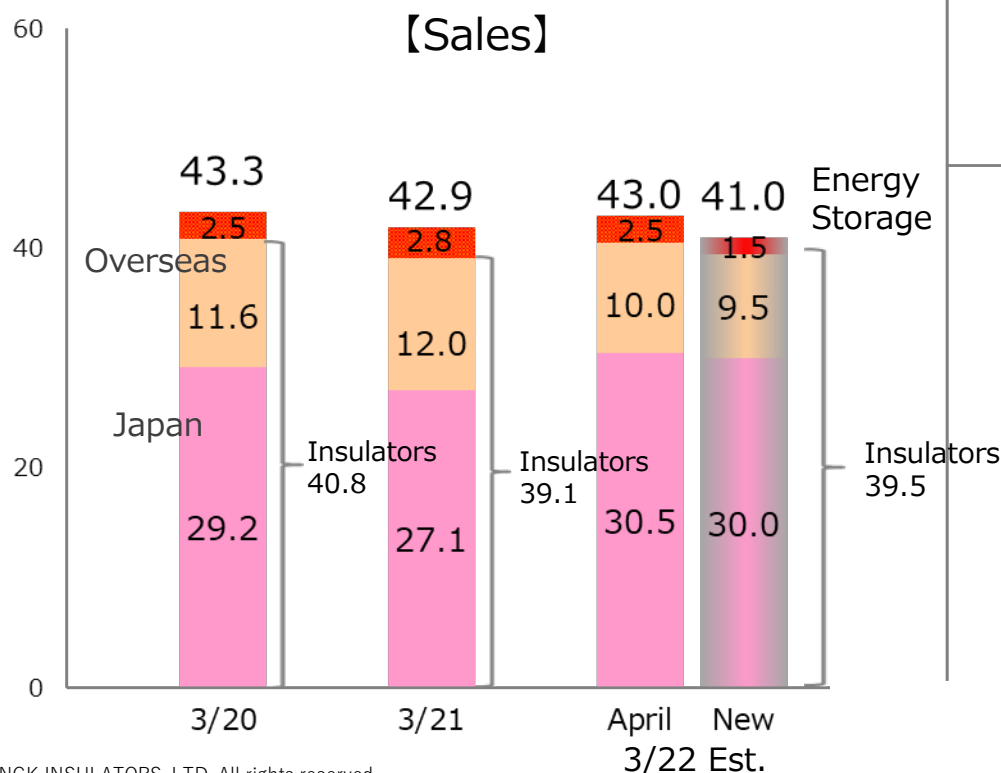
● Insulators

Although positive income is expected for the first time in six years thanks to effects of price revisions, income will be lower than the April forecast due to the delay of projects overseas because of the COVID-19 pandemic and the slowdown in domestic demand.

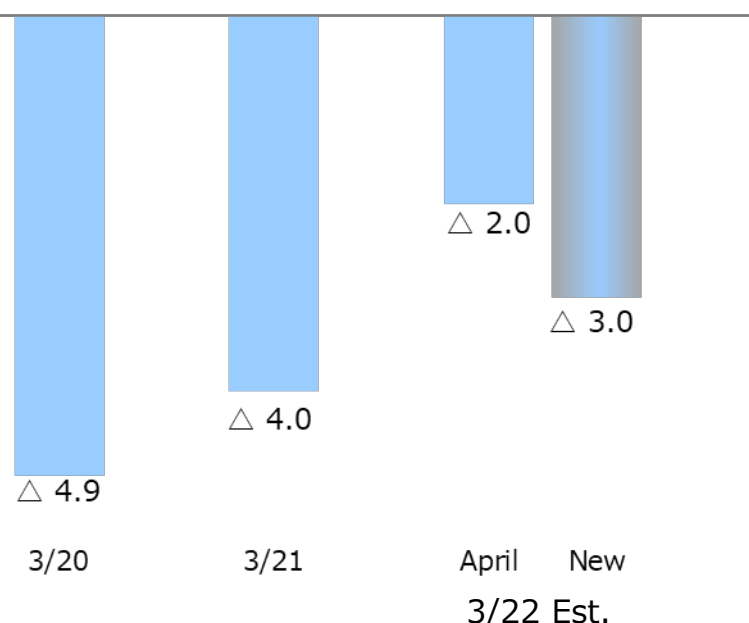
● Energy Storage

Although measures and consideration for realization of decarbonized society are begun to be implemented, the main need is for short-term energy storage within 4 hours. The need for long-term energy storage is expected to expand in or after 2025, and the deficit will continue.

(¥ Bil.) <After consolidation elimination>



【Operating Income(Loss)】



■ NAS® Battery

*About 18% for FY2019

Japan : The 6th Strategic Energy Plan announced to increase the percentage of renewable energy sources to 36–38%* for FY2030. The storage battery market is expected to expand in or after 2025 onward when investments in renewable energy will be accelerated.

<Target market>

• Consumers : Storage for the purpose of adopting renewable energy and adaptability and storage as BCP measures

• Power system storage : For adaptability to meet a power supply-demand gap associated with renewable energy implementation

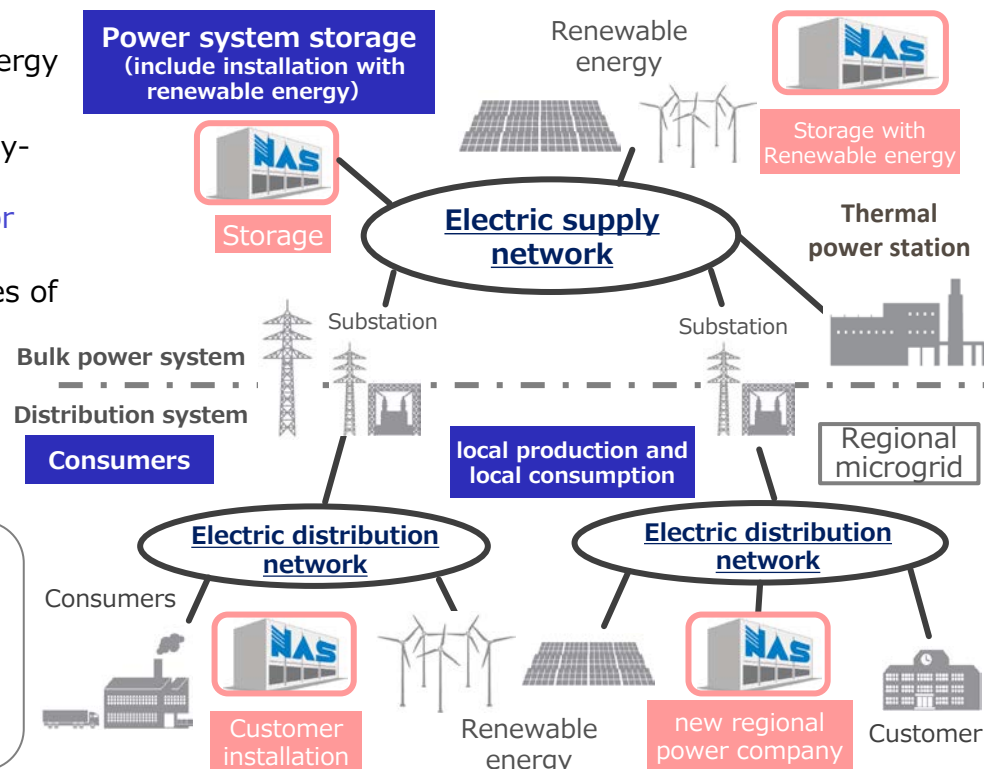
⇒ Expecting that a system to make use of storage batteries for wider adoption of renewable energy will be developed.

• Local production for local consumption: Storage for the purposes of long-term supply and demand adjustments, and building and maintaining resilience within regions

⇒ We will propose a renewable energy utilization model that leverages the features of NAS batteries (long-term energy storage) to local municipalities having a high interest in decarbonization.

[Efforts to local production and local consumption model]

• In April 2021, we reached an agreement with Chubu Electric Power Miraiz Co., Inc. on the establishment of Ena Electric Power Co., Inc. as a new regional power producer and supplier in Ena, Gifu Prefecture, Japan. The company will contribute to regional revitalization through local production and local consumption of energy and to decarbonization in the city of Ena.



Overseas : Implementation of renewable energy is expanding mainly in Europe and the U.S., and the need for storage batteries is increasing. The need for long-term energy storage has been appearing, though the main need is for short-term energy storage.

Sales networks will be expanded and improved in the U.S. and Europe in cooperation with BASF. We will work on acquiring certifications to capture the visible demand and carry out cost reductions to improve cost competitiveness.

[Partnership of BASF]

June 2019 Entered into a sales partnership agreement.

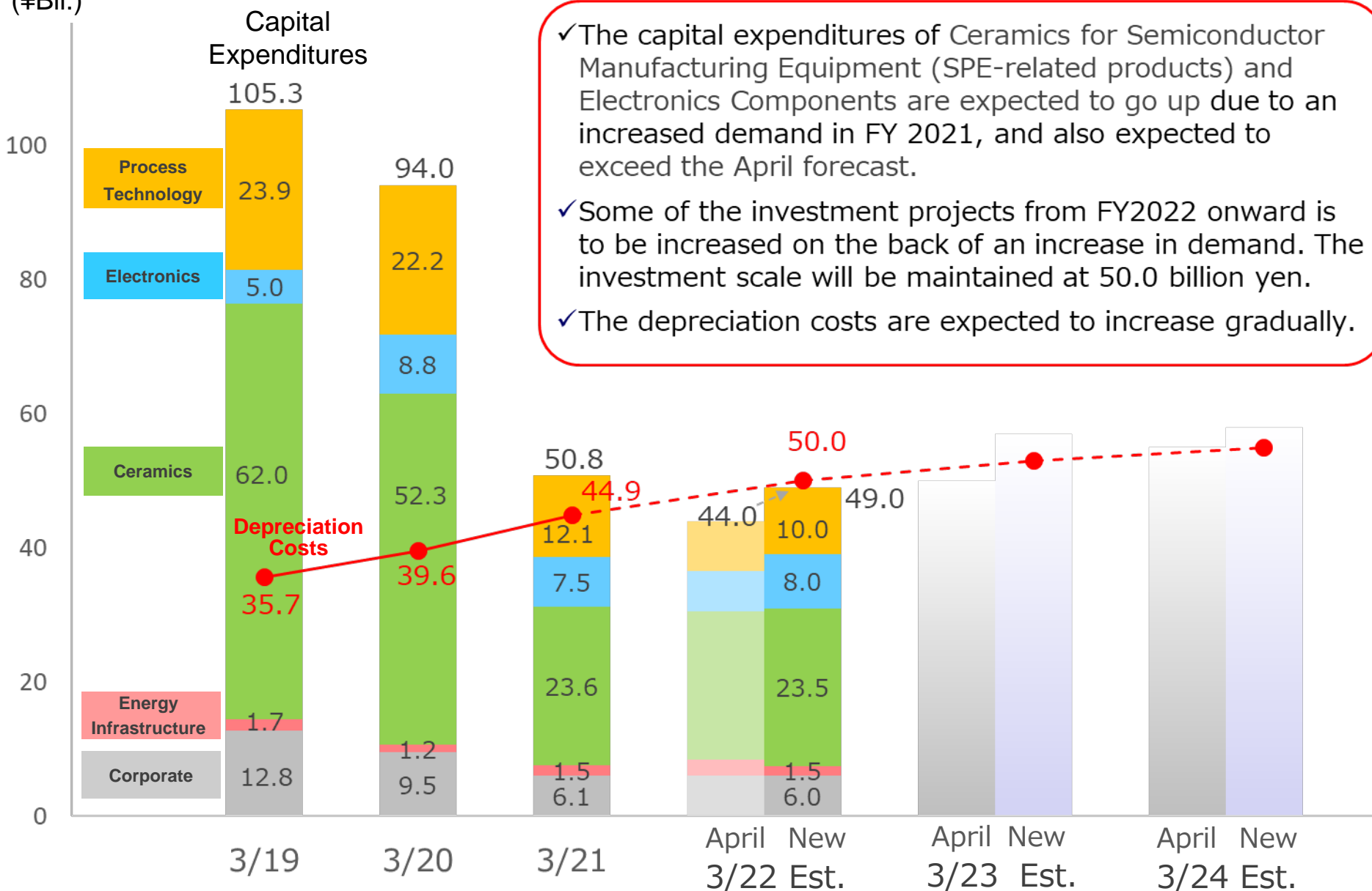
Nov. 2019 Entered into a joint development agreement (JDA) to develop the next generation of sodium-sulfur batteries.

Oct. 2021 NAS batteries started up at BASF's Antwerp Verbund site.

BASF New Business GmbH ("BNB"), a wholly-owned subsidiary of German chemical group BASF, installed NAS batteries and started operating. The project aims at developing optimum business models by having BNB gain direct experience in long-term operations of its own NAS battery system, learning diverse benefits from the viewpoint of the user and examining various use cases. (Press release on Oct. 20, 2021)

Capital Expenditures & Depreciation Costs

(¥Bil.)

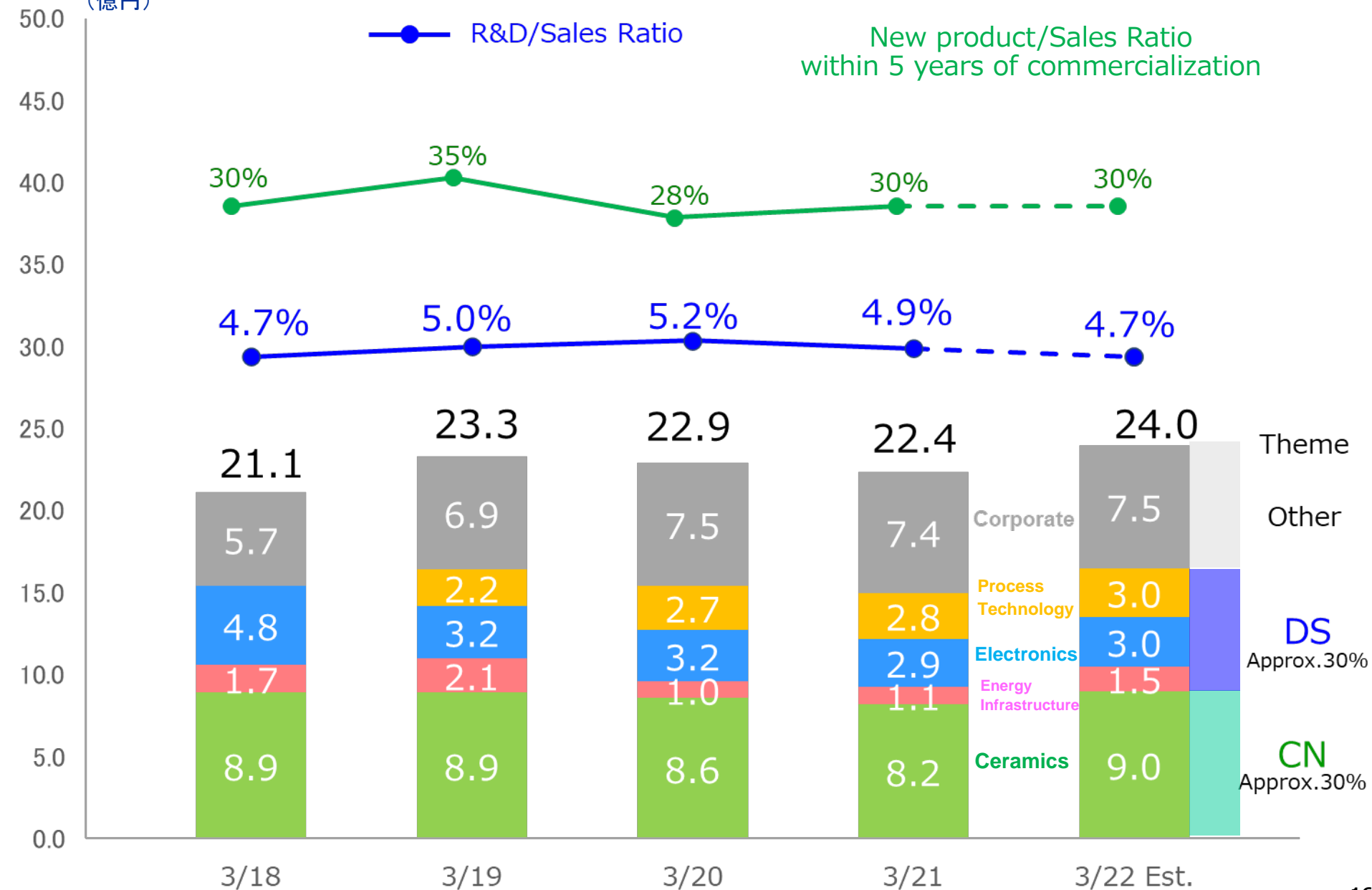


R&D Input

(億円)

New product/Sales Ratio
within 5 years of commercialization

R&D/Sales Ratio



Medium-term Plan · Business Portfolio

Consolidated performance trends

Operating income (¥Bil.)



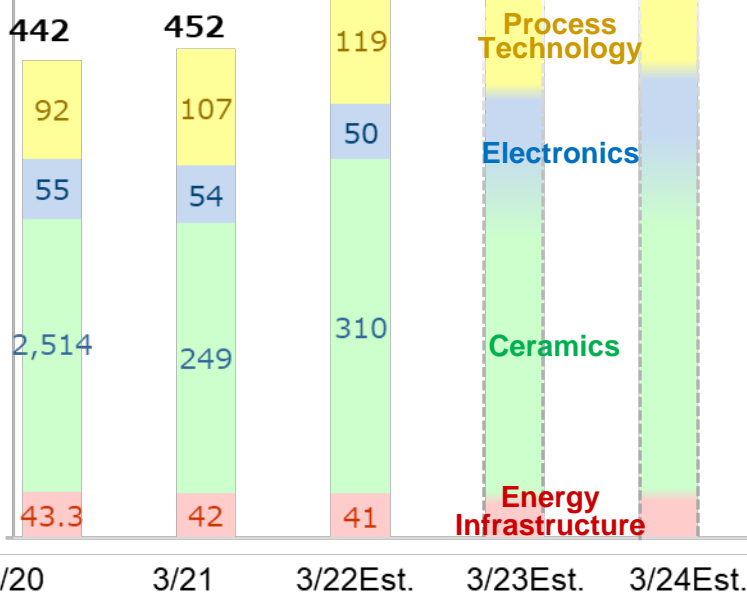
Net sales (¥Bil.)

Process Technology

Electronics

Ceramics

Energy Infrastructure

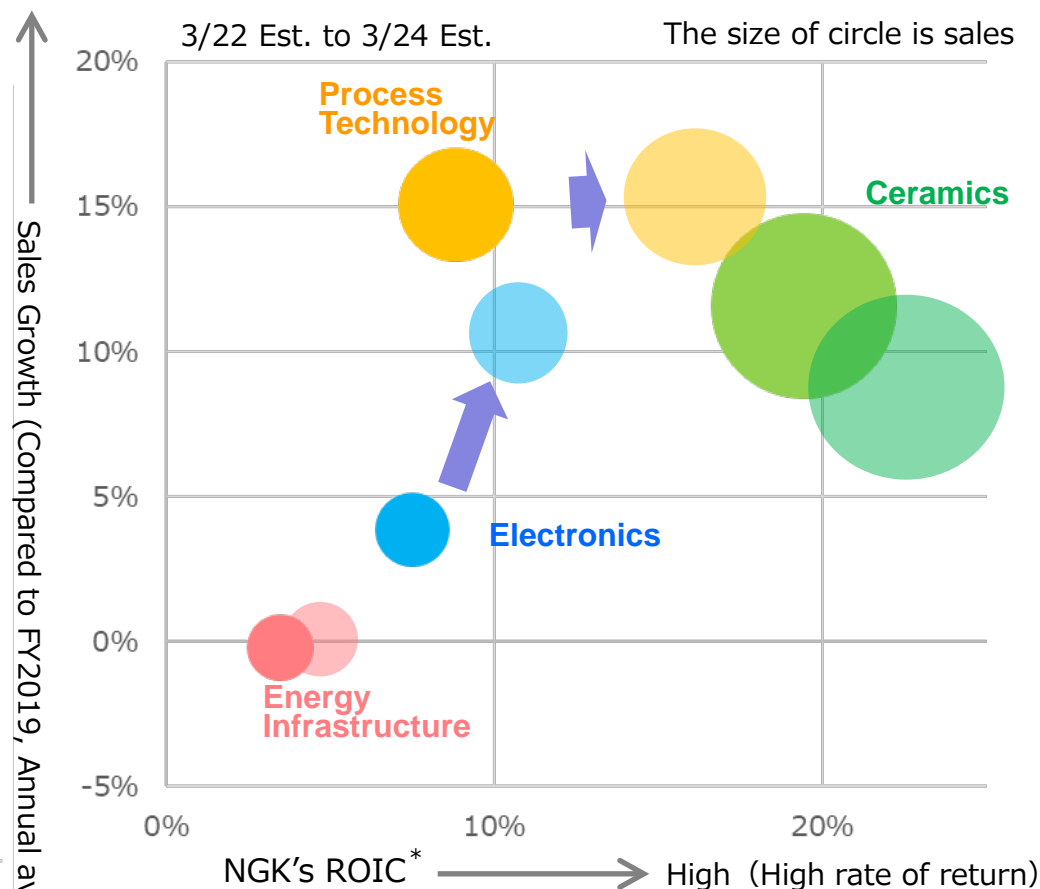


Rate

USD 109 106 110 105 105

EUR 121 124 131 125 125

Medium-term portfolio image



$$\text{Return on invested capital} = \frac{\text{Operating Income}}{\text{Business assets}^{*1}} \quad (\text{NGK-version ROIC})$$

*1 : Business assets = sales receivables + inventories + fixed assets
Calculated based on business assets (sales receivables + inventories + fixed assets) that can be managed by business departments rather than "capital" and "liabilities".

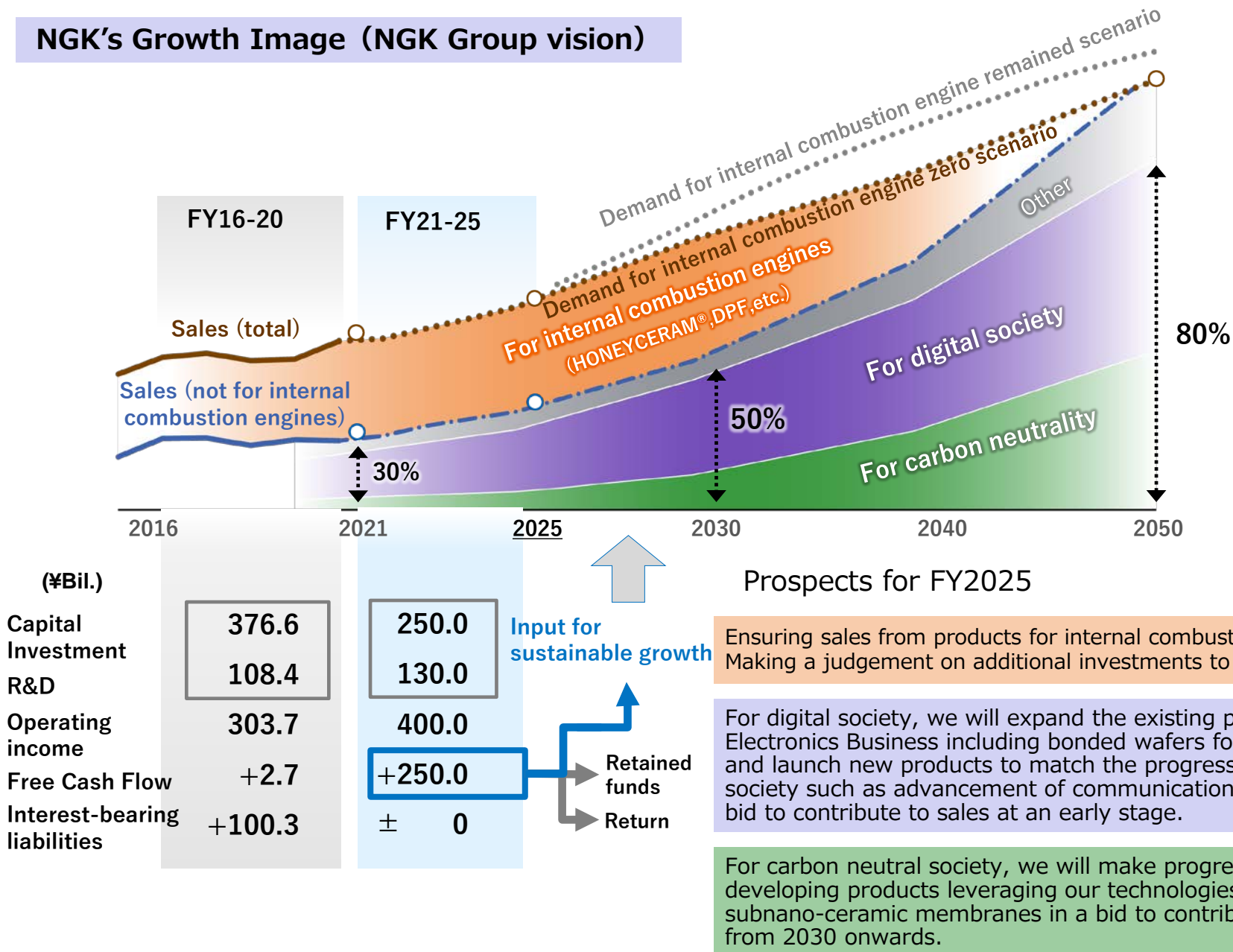
The growth potential and profitability of the Ceramics Business will be maintained.

We will increase sales related to a carbon-neutral / digital society,

a potential source of growth, to improve the growth potential and profitability of each business.

Medium to long-term forecast

NGK's Growth Image (NGK Group vision)



CN

Carbon
neutrality

Under harsh usage,
realizing high-precision separation
and capture of CO₂.

CO₂ Separation Membranes



Large ceramic membranes that can
separate CO₂ at the molecular level
with our unique hydrothermal
synthesis technologies

As there is no risk of fire accidents,
they can be installed indoors and
safely realize emergency power supply
and renewable energy utilization.

Zinc Rechargeable Batteries



High-safety and high-capacity storage
batteries using our proprietary ceramic
separators and water solutions as the
electrolyte

DS

Digital
Society

- Realizing a maintenance-free IoT
- More secure smart cards
- Wearable devices closer to our life

EnerCera®



Highly heat-resistant, high-capacity,
high-power, fast-charging and ultra
small and thin batteries utilizing our
unique crystal-orientation control.

Contribution to 5G and next-generation
telecommunications networks with
high speed and high data capacity

Wafers



Highly functional bonded wafers
realized by our unique precision-
polishing and bonding technologies.

Summary of Cash Flow

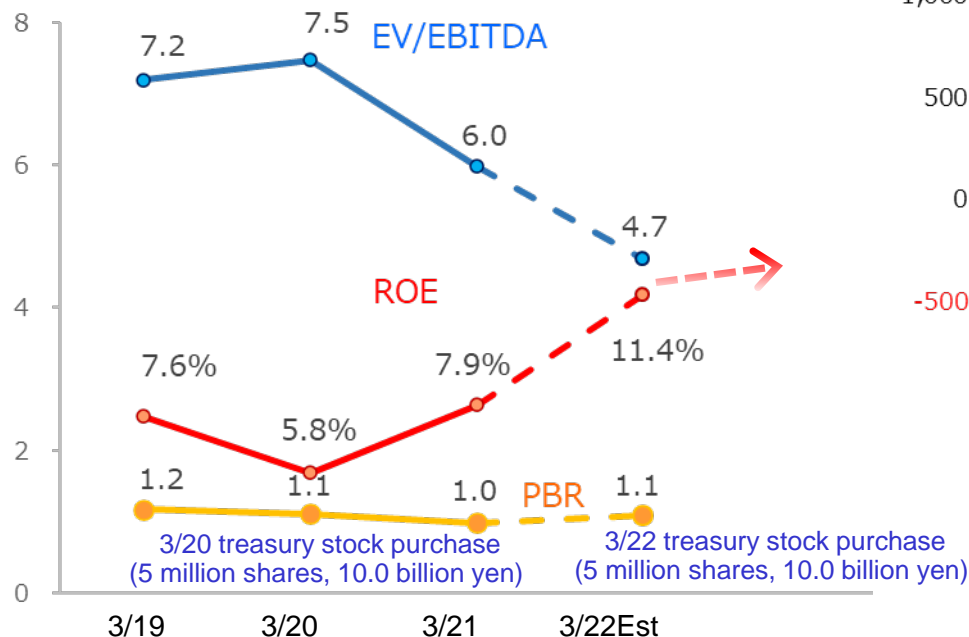
(¥ Bil.)

	3/20	3/21	3/22 Est.
Operating Activities	53.2	85.6	(April forecast) (87.0) 107.0
Investing Activities	-60.8 Investment-95.4	-51.7 Investment-53.3	(△49.0) -55.0 Investment -49.0
Financing Activities	-18.8 New loans +37.0 Repayment -29.0 Treasury stock purchase -10.0	12.3 New loans +32.5 Repayment -9.4	(△46.0) -44.0 New loans +15.0 Repayment -33.0 Treasury stock purchase -10.0
Effect of Exchange Rate Changes on Cash & Cash Equivalents	-2.9	5.2	(△4.0) -1.0
Net Change in Cash & Cash Equivalents	-29.3	51.3	(△12.0) 7.0
Cash & Cash Equivalents-at the End of Year	94.7	146.0	(134.0) 153.0

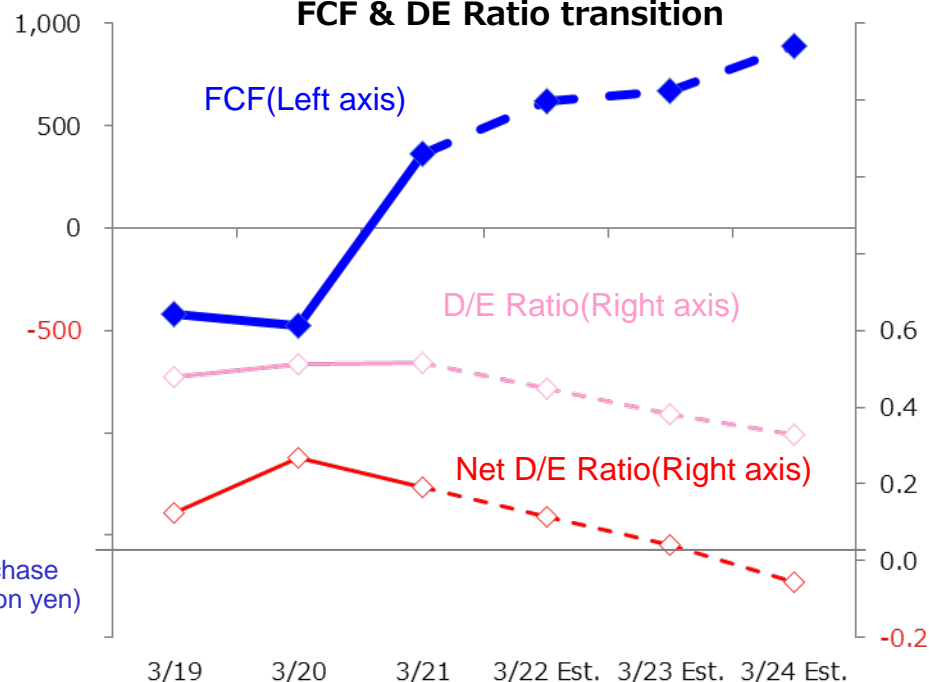
Capital Policy & Treasury Stock Purchase

- ✓ Achieve both profitability exceeding capital costs and financial soundness. Proactive shareholder returns from a mid- to long-term perspective.
- ✓ Maintain sound levels of profitability, capital turnover, and financial leverage consistent with business strategy.

Indicators transition



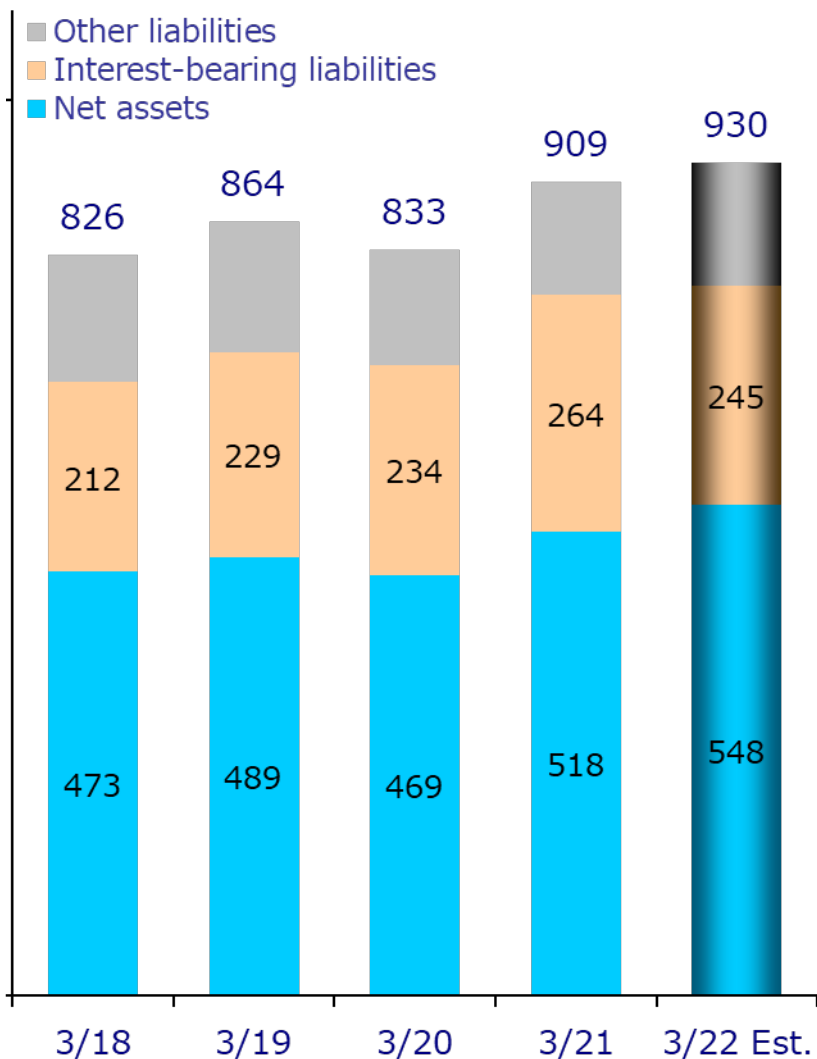
FCF & DE Ratio transition



- ROE is expected to improve significantly by 11.4% for FY2021 due to an improved business performance.
- On the funding side, operating cash flow is expected to increase as the capital expenditures for the past five years continue to yield returns. We will invest in our growth as well as shareholder returns, leveraging interest-bearing liabilities.

Total Assets & Dividend

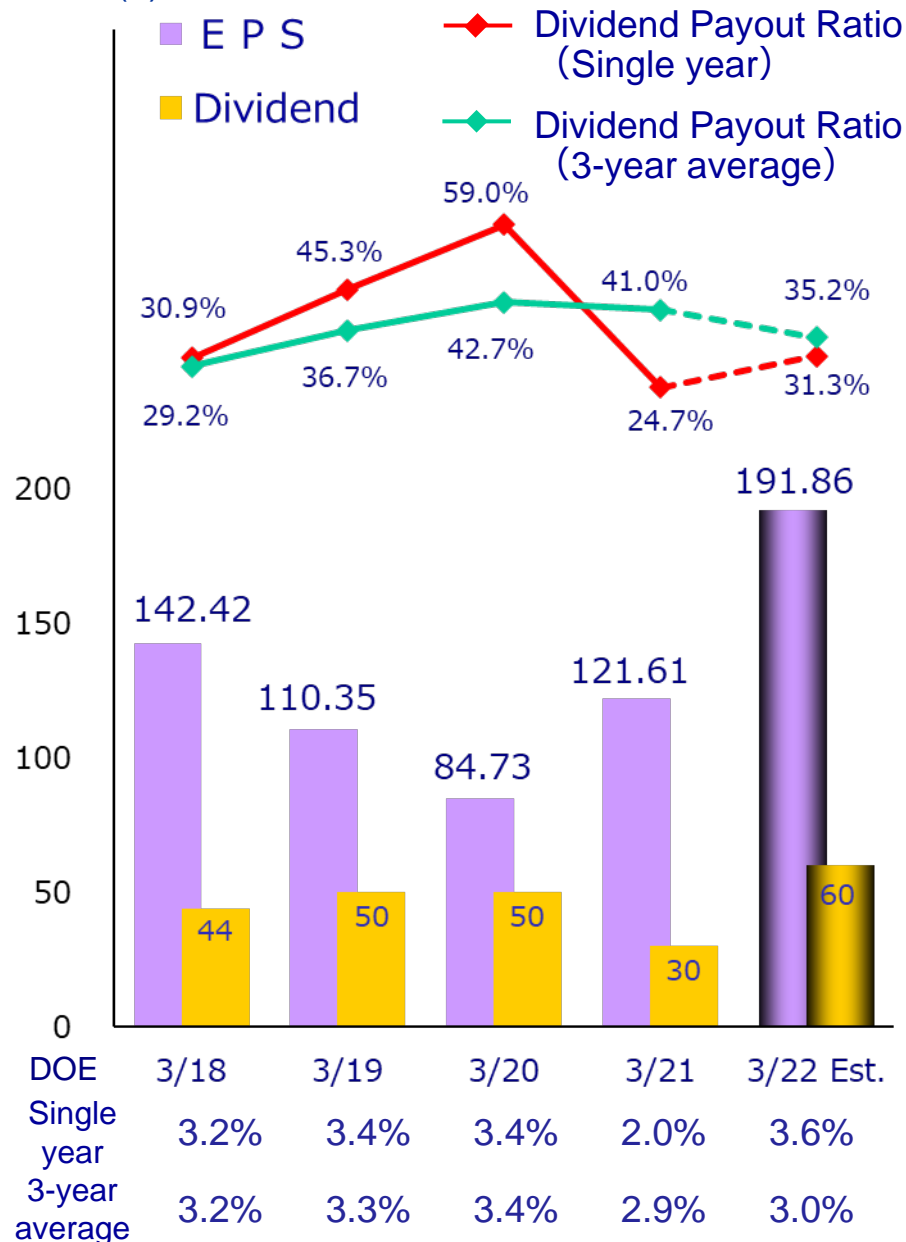
(¥ Bil.)



Period	ROE	D/E Ratio
3/18	10.4%	0.46
3/19	7.6%	0.48
3/20	5.8%	0.51
3/21	7.9%	0.52
3/22 Est.	11.4%	0.45

Equity ratio of 50% or higher will be maintained.

(¥)



The annual dividend of 60 yen will hit a record high.

Sales by Product (Annual)

(¥ Bil.)



<After Consolidation Elimination>	3/19	3/20	3/21	3/22 Est.
Insulators	46.7	40.8	39.1	39.5
Energy Storage	3.2	2.5	2.8	1.5
Energy Infrastructure	49.8	43.3	42.0	41.0
Honeycomb filters	76.0	69.8	63.7	71.0
GPF	10.8	20.7	33.2	36.5
Cd-DPF / LSH	69.5	63.8	59.2	81.0
SiC-DPF	39.0	39.9	39.6	44.0
Sensors	56.2	57.6	53.3	67.5
Ceramics Business	251.4	251.8	248.9	300.0
Metal related	22.3	19.4	19.3	23.0
Electric related	26.3	27.1	27.9	29.0
Soshin Electric CO.	10.2	9.0	6.9	-
Electronics Business	58.8	55.4	54.1	52.0
SPE related	72.5	65.3	80.1	94.0
Industrial Process	31.0	26.1	27.0	28.0
Process Technology Business	103.4	91.5	107.0	122.0
Total	463.5	442.0	452.0	515.0

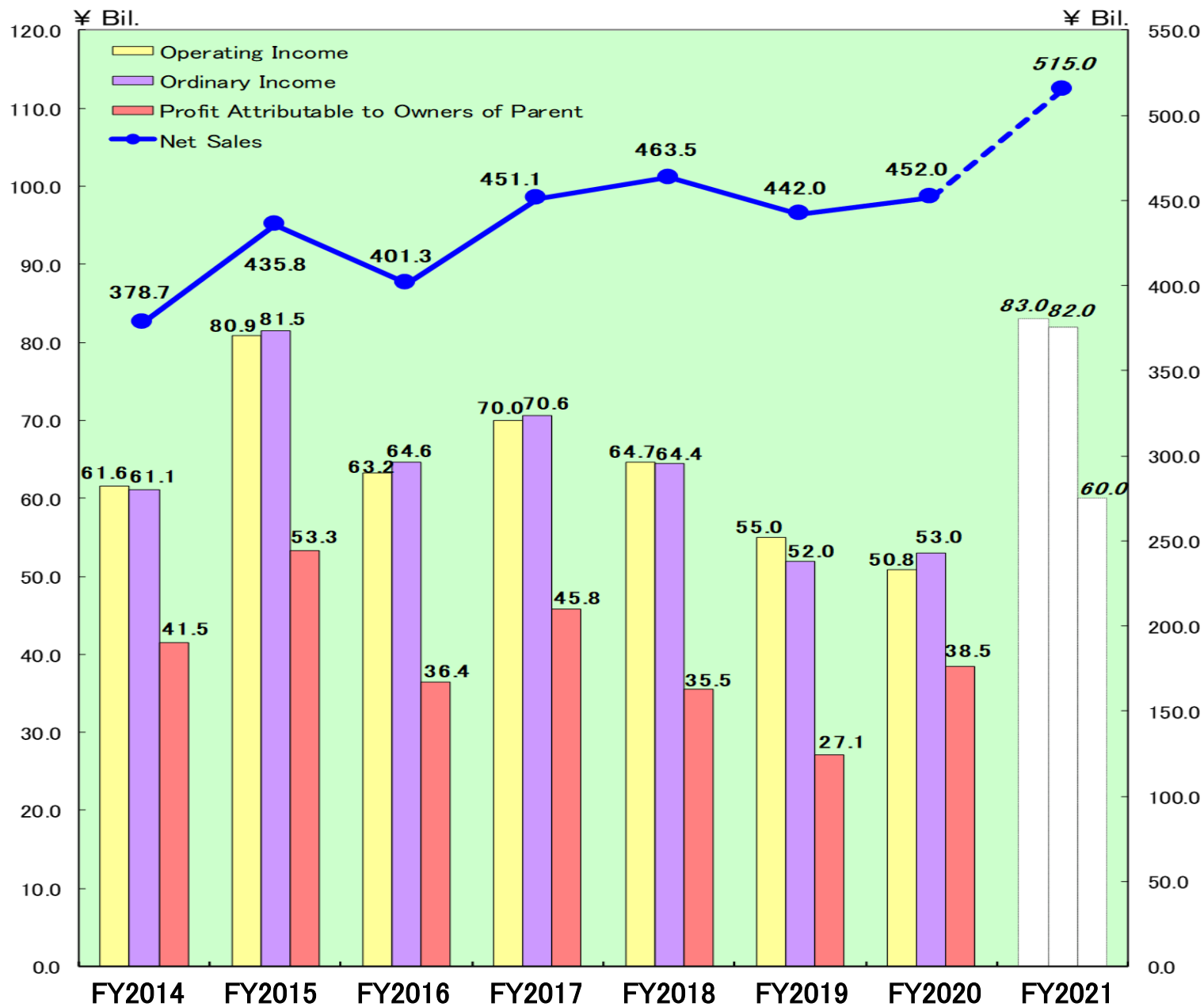
Sales by Product (Semi Annual)

(¥ Bil.)



<After Consolidation Elimination>	3/21		3/22 Est.	
	1 st . Half	2 nd . Half	1 st . Half	2 nd . Half
Insulators	18.8	20.4	19.1	20.4
Energy Storage	0.3	2.5	0.8	0.7
Energy Infrastructure	19.1	22.9	19.9	21.1
Honeycomb filters	25.1	38.6	35.8	35.2
G P F	13.7	19.5	16.1	20.4
Cd-DPF/ LSH	22.4	36.7	40.9	40.1
SiC-DPF	14.9	24.7	22.7	21.3
Sensors	22.2	31.0	32.1	35.4
Ceramics Business	98.3	150.6	147.6	152.4
Metal related	8.8	10.5	11.7	11.3
Electric related	13.6	14.2	14.0	15.0
Soshin Electric CO.	4.4	2.5	-	-
Electronics Business	26.8	27.3	25.7	26.3
SPE related	40.1	40.0	45.8	48.2
Industrial Process	10.7	16.3	11.1	16.9
Process Technology Business	50.7	56.3	57.0	65.0
Total	194.9	257.1	250.2	264.8

Consolidated Operating Results



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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