

# JGC Group's Growth Strategy

The JGC Group has made steady progress toward its long-term management vision "2040 Vision" defined in fiscal 2021 based on "Enhancing planetary health," our purpose as a corporate group, as well as toward "BSP 2025," the medium-term business plan spanning the next five years. Fiscal 2023 marks the third year and mid-point of BSP 2025. Here, we outline the key issues underlying the Group's value-creation mechanism and strategies, as well as progress of BSP 2025 and future policies aimed at achieving our goals.

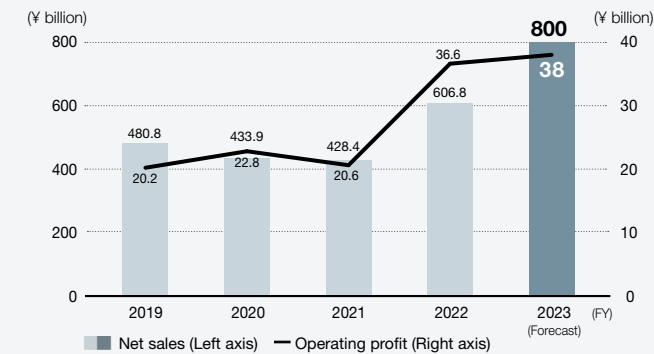
JGC Group at a Glance	19
JGC Group's Value-Creation Mechanism	21
Strengths Supporting Value Creation	23
JGC Group Materiality	25
Long-Term Management Vision "2040 Vision" and Medium-Term Business Plan "BSP 2025"	27
2040 Vision and Materiality	29
Path for Fulfilling Our Strategy	31



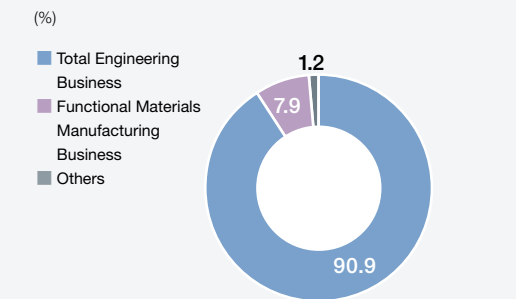
# JGC Group at a Glance







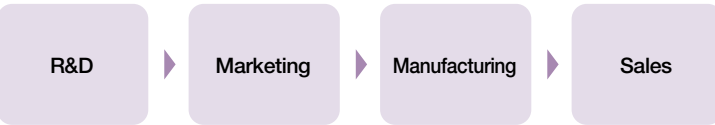





Through business focused on Total engineering and Functional materials manufacturing, the JGC Group is aiming to realize our purpose in "Enhancing planetary health," and ensuring continued growth of corporate value.

Net sales and operating profit



Net sales by segment (FY2022)



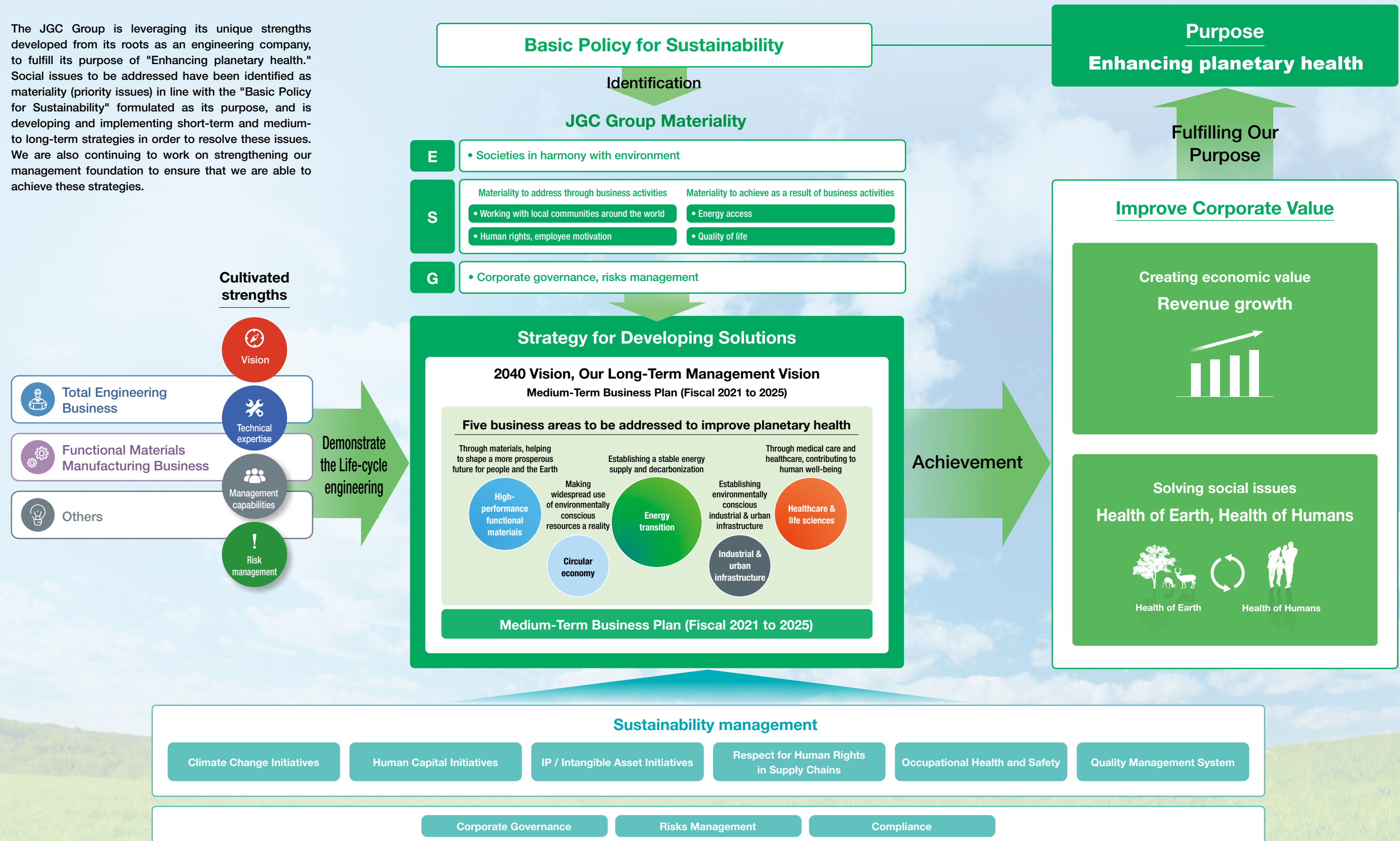
Main Operating Companies	Applicable Plants, Facilities, Products, etc.	Business Model	Typical Products and Services	Number of Employees*
 Total Engineering Business	<b>JGC Corporation</b> (Overseas business) <ul style="list-style-type: none"> <li><b>Energy Solutions</b> LNG (liquefied natural gas), CCS (CO<sub>2</sub> capture and storage), petroleum refining, petrochemicals, chemicals, gas processing, crude oil and gas gathering, etc.</li> <li><b>Sustainable Solutions</b> SAF (sustainable aviation fuel), hydrogen/fuel ammonia, nuclear energy, etc.</li> <li><b>Facility Solutions</b> Industry related with semiconductor and storage batteries, data centers, LNG receiving terminals, transportation infrastructure, etc.</li> </ul>	<b>EPC business (Engineering, Procurement, Construction)</b> Provision of feasibility studies (FS), front-end engineering design (FEED), and EPC projects for plants and facilities  <b>Project execution flow</b>  <b>Maintenance</b> Provision of daily maintenance and shut-down maintenance services mainly for oil refinery and petrochemical plants in Japan  <b>Project Management Consulting (PMC)</b> Provision of consulting service supporting the development of plants and facilities, by leveraging extensive EPC-related knowledge and track record to mediate between clients and contractors	 Floating LNG plant (Malaysia)  Ammonia synthesis pilot project facility (Fukushima)  Pharmaceutical plant (Shizuoka)  Hospital (Saitama)	6,103
	<b>JGC Japan Corporation</b> (Domestic business) <ul style="list-style-type: none"> <li><b>Domestic Sector</b> Pharmaceuticals, healthcare, SAF, hydrogen/fuel ammonia, chemical recycling, petroleum refining, petrochemicals and chemicals, nuclear energy, etc.</li> </ul>			
	<b>JGC Catalysts and Chemicals Ltd.</b> <ul style="list-style-type: none"> <li><b>Catalysts and Fine Chemicals Sector</b> Catalysts used in petroleum refining, chemicals, and environmental conservation, and fine chemical products used as materials in semiconductors, IT/electronics, optics, cosmetics, and other applications</li> </ul>	Research and development, planning, and manufacturing of catalysts, fine chemicals, and fine ceramics products  <b>Business execution flow</b> 	 Oil refining catalysts  Silica sol for anti-reflective film on flat-screen TVs  Metal-matrix composites	
 Others	<b>Japan Fine Ceramics Co., Ltd.</b> <ul style="list-style-type: none"> <li><b>Fine Ceramics Sector</b> Ceramic materials for semiconductor, automotive, telecommunications, industrial, medical, and aerospace applications</li> </ul>			
<b>Japan NUS Co., Ltd., etc.</b>	Energy and environmental consulting, etc.	<b>Consulting, Licensing, Business Participation, Digital Platforms</b> Consulting services such as various studies, analyses and assessments, and production support, business participation in various sectors, etc.		447

\* As of March 31, 2023. Does not include JGC Holdings, employees (313) or temporary staff in each segment



# JGC Group's Value-Creation Mechanism

The JGC Group is leveraging its unique strengths developed from its roots as an engineering company, to fulfill its purpose of "Enhancing planetary health." Social issues to be addressed have been identified as materiality (priority issues) in line with the "Basic Policy for Sustainability" formulated as its purpose, and is developing and implementing short-term and medium-to long-term strategies in order to resolve these issues. We are also continuing to work on strengthening our management foundation to ensure that we are able to achieve these strategies.



# Strengths Supporting Value Creation

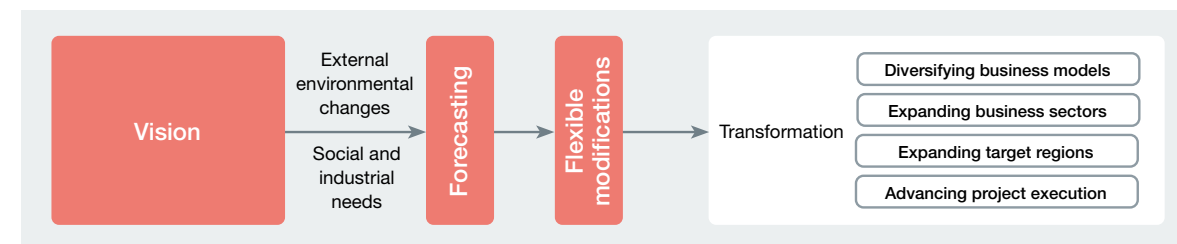
Ever since the foundation in 1928, the JGC Group has continued to grow through corporate transformation. Our four unique strengths of "Vision," "Technical expertise," "Management capabilities," and "Risk management" developed through these transformations have been



- Anticipating external environmental changes and future market needs, and achieving corporate transformation

Foresight originally led to the founding of the JGC Group, in expectation of changes in domestic energy demand and supply. Since then, the Group has continued to grow by constantly anticipating external environmental changes and social and industrial needs to expand our segments and global business areas, diversify business models, and advance project execution.

This Group strength of foresight suggests what the future may hold and enables agile corporate transformation as we discern occasional changes and adjust expectations accordingly. It will be increasingly valuable in the turbulent modern market environment and will drive sustained growth in times to come.



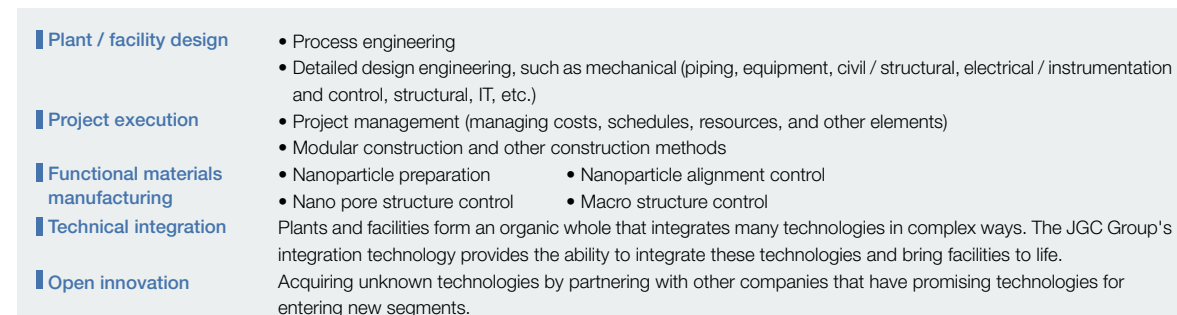
## Background

- **Advent of the age of oil:** At a time of great industrial restructuring in the 1930s, JGC anticipated the leading role oil would play as an energy source in Japan.
- **Global energy market trends:** A trend that emerged in the mid-1960s was for oil-producing countries to develop their own resources. Soon, the JGC Group moved in markets such as South America, North Africa, and Southeast Asia as the next areas for expansion.
- **Interdisciplinary application of energy plant process engineering, further expansion:** Business area expansion is possible by applying technical expertise gained in designing energy plants—used in applications such as nuclear power, pharmaceuticals, nonferrous refining, and renewable energy—to design plants and factories in other promising areas where this expertise is relevant.



- Techniques / technologies for plant and facility design, and project execution
- Development and manufacturing of high-performance materials

The JGC Group's technical expertise supports the foundation of both the Total Engineering Business and Functional Materials Manufacturing Business.



## Background

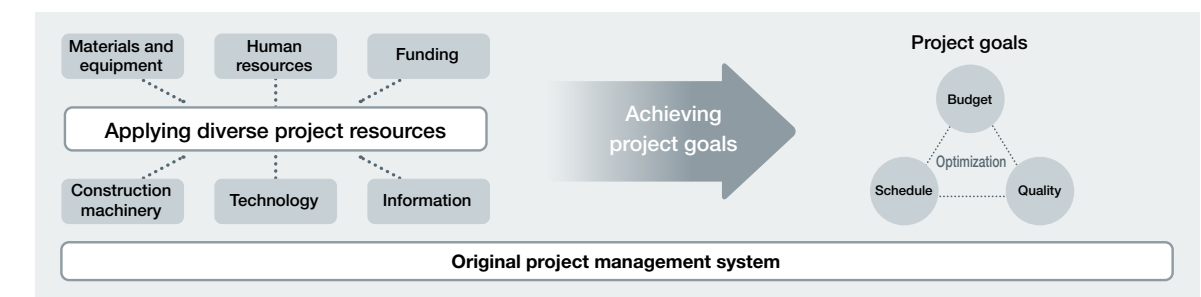
- **Process technologies:** Acquired all patent and licensing rights for the Dubbs cracking process at Universal Oil Products Co. (U.S.) in the late 1920s. The current JGC Group technical expertise developed from knowledge and proficiency in essential refining process technologies.
- **Application and deployment of nanotechnology:** Nanotechnology, the foundation of catalyst development, applied to various sectors including semiconductor and electronic materials led to successful expansion of applicable sectors.

reinforced through interaction and further building on experiences and knowledge. We will continue to reinforce our strengths and apply them to business activities to enhance value creation at the Group.

- Leading and coordinating partners, vendors, and subcontractors as projects are executed
- Collaborating with and guiding diverse stakeholders to create new business



Management capabilities—for project management in particular—are a core competency of the JGC Group as an EPC-focused enterprise. We efficiently manage diverse project resources with an original project management system to complete plants and facilities on time, on budget, and at the level of quality required by clients.



## Background

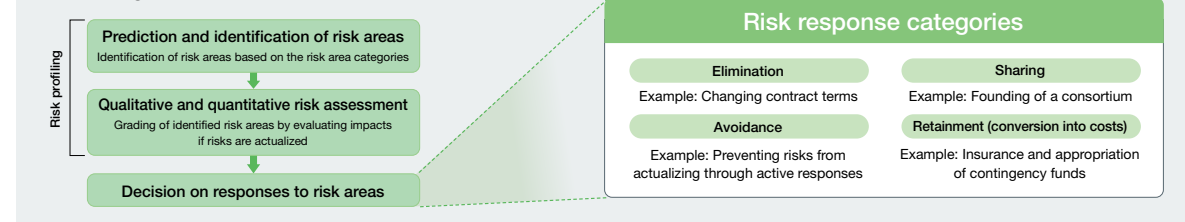
- **Establishment of integrated project management:** When Idemitsu Kosan awarded JGC a lump-sum EPC contract for their Tokuyama Refinery in 1956, Japan's first large-scale "grassroots" refinery project was completed in just 10 months. Attained the status of a general contractor, managing entire projects from design to procurement and construction.
- **Advanced project management system:** An original project management system was deployed in full scale in the Kuwait refinery upgrading project in the 1980s for rationally and scientifically controlling project resources. The system is at the heart of the JGC Group's management capabilities.

- Anticipating risks, planning suitable countermeasures, and reliably implementing them
- Minimizing and overcoming unexpected risks that arise



With recent large-scale projects, changes in individual project profitability may greatly affect overall corporate profit or loss. We recognize that suitably addressing risks is essential in managing projects, and accordingly, all team members follow a risk management flow applying our original project management system and methods to respond to a variety of project risks for each role fulfilled and in each phase.

## Risk management flow



## Background

- **From petroleum refining to engineering business:** Refinery construction plan put on hold in the 1930s due to the Great Depression and local opposition. Subsequently became Japan's first engineering company by applying process technologies acquired through licensed businesses.
- **Established risk response capabilities for overseas projects:** Following expansion overseas in the 1960s, established a thorough risk management system covering all aspects to ensure steady revenue from overseas projects with much greater uncertainty.



# JGC Group Materiality

In line with its "Basic Policy for Sustainability," the JGC Group identifies issues that are important to stakeholders we are involved with and issues that are important for our management as materiality. All our corporate activities are oriented toward resolving materiality, and we are also aiming to enhance the Corporate Governance Structure and Sustainability Management as part of efforts toward resolving materiality.

## Purpose

### Enhancing planetary health

#### Basic Policy for Sustainability

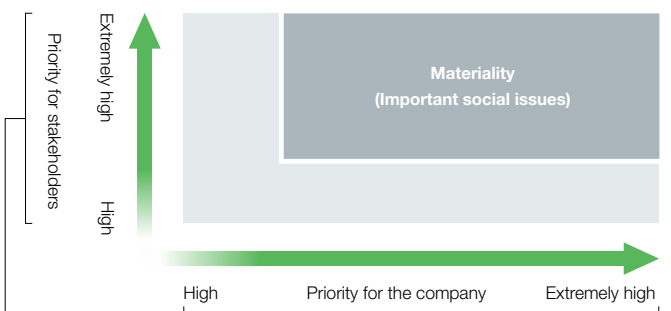
The JGC Group will endeavor centered on its "Enhancing planetary health" as its Purpose, to sustainably increase its corporate value through creation of social values. To realize the above, it will actively pursue sustainability in the areas of environment, society, governance, quality, safety, and health.

#### Materiality positioning and identification process

























Issues positioned as materiality are viewed as key elements, fundamental in establishing management policies and conducting business. Through sound business activities, the JGC Group aims to help solve social issues and create economic, social, and environmental value.

#### Materiality identification process

Social issues to be addressed by the Group are selected through analysis of GRI guidelines, ISO 26000, SDGs, and other international guidelines and global macrotrends. Six material issues that take precedence are determined from a comprehensive evaluation of priorities from the standpoint of society, stakeholders, and the company.



## Materiality (Priority Issues)

	Materiality		Related SDGs	Recognized Social Issues	Materiality Icon
E	Societies in harmony with environment		   	<ul style="list-style-type: none"><li>Reducing the environmental impact of fossil energy</li><li>Promoting use of a greater share of renewable energy</li><li>Protecting ecosystems, maintaining biodiversity</li><li>Promoting development or products and technologies that help curb global warming</li></ul>	
S	Materiality to address through business activities	Working with local communities around the world	   	<ul style="list-style-type: none"><li>Contributing to economic and industrial development in emerging markets</li><li>Creating employment in emerging markets</li><li>Supporting technology transfer and human resource development in emerging markets</li></ul>	
		Human rights, employee motivation	  	<ul style="list-style-type: none"><li>Promoting workplace diversity</li><li>Promoting female hiring and strengthening skill-building</li><li>Respecting human rights in all business activities</li></ul>	
	Materiality to achieve as a result of business activities	Energy access	 	<ul style="list-style-type: none"><li>Meeting greater global energy demand</li><li>Promoting wider use of renewable energy that contributes to sustainable growth</li><li>Enhancing productivity through greater global energy efficiency</li></ul>	
		Quality of life	  	<ul style="list-style-type: none"><li>Responding to aging social and industrial infrastructure</li><li>Promoting development of social and industrial infrastructure in emerging markets</li><li>Improving global medical standards</li><li>Making life more convenient and comfortable</li></ul>	
G	Corporate governance, risks management		 	<ul style="list-style-type: none"><li>Strengthening and improving corporate governance</li><li>Ensuring regulatory compliance in business activities</li><li>Responding appropriately to corporate and business risks</li></ul>	

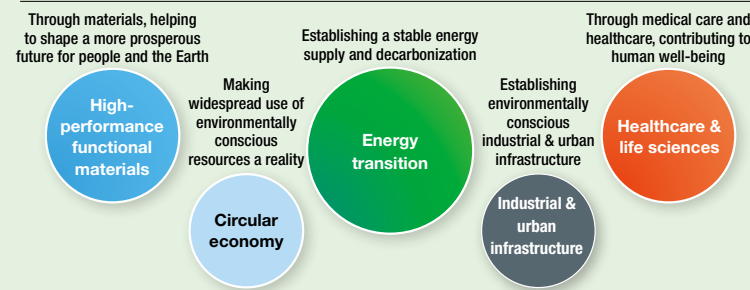


# Long-Term Management Vision "2040 Vision" and Medium-Term Business Plan "BSP 2025"

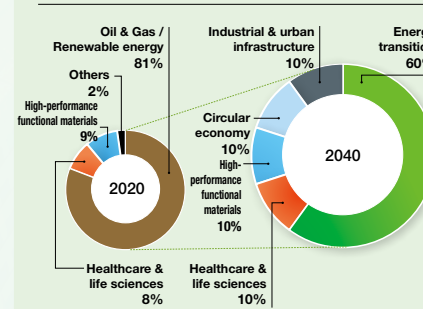
## Long-Term Management Vision "2040 Vision"

### 01 Business area transformation

#### Five business areas to be addressed to improve planetary health



#### Envisioned breakdown of sales



### 02 Business model transformation

#### Transformation of EPC business model

In the EPC business, we will be applying EPC DX in particular for the transformation of the EPC business model. We will seek business model expansion upstream and downstream in the value chain, building on our accumulated experience, and establishing new business models applying digital technologies.

#### Diversifying into non-EPC business models

In the area of non-EPC business models, while reinforcing our existing Functional Materials Manufacturing Business, we will undertake transformation that leverages JGC Group strengths such as licensing, PMC and other consulting, maintenance and digital O&M, digital platform business, as well as participation in new business.

### 03 Organizational transformation

#### Stronger framework for regional management

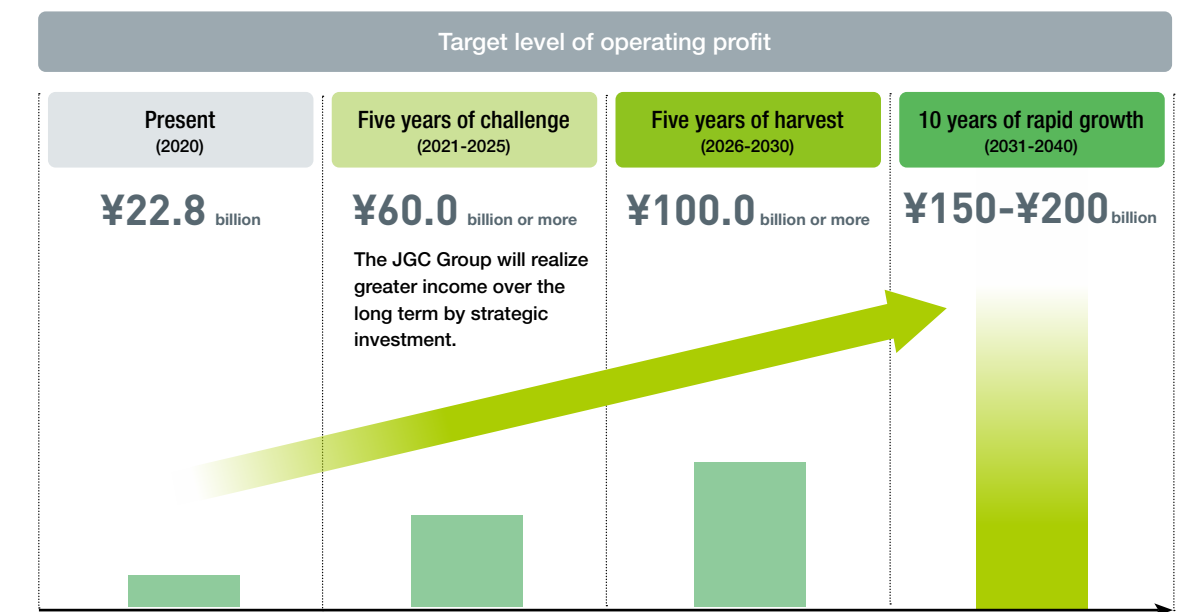
Complementing existing project management from the head office in Japan, we are strengthening our regional management framework, aimed at promptly proposing and executing solutions in an attentive, locally produced and consumed arrangement for local clients in growth markets.

#### More vibrant culture of innovation

In new and existing operations, a corporate culture will be fostered for continuous innovation in technical commercialization and business model development, as needed for transformation in business areas and models. We will seek an "ambidextrous" organization with diverse work styles.

#### Target level of operating income\*

The 2040 Vision will occur over the three phases of "Five years of challenge," "Five years of harvest" and "10 years of rapid growth," and we will make proactive strategic investments via these three facets of transformation to reach ¥150–200 billion of operating profit in 2040.



\* Adjusted operating income: Operating income plus interest and dividend income and share of profit of entities accounted for using equity method earned in each business area

Five years of challenge  
(2021-2025)

Five years of harvest  
(2026-2030)

10 years of rapid growth  
(2031-2040)

#### Overview of Medium-Term Management Plan "BSP 2025"

Last fiscal year began the first five-year stage (fiscal 2021–2025) on the path to the 2040 Vision, positioned as five years of challenge. Our medium-term business plan for this initial period is "Building a Sustainable Planetary Infrastructure 2025 (BSP 2025)." Three key strategies established in BSP 2025 form the basis for an array of ongoing business and investment strategies.

#### Three key strategies

##### Key Strategy 1 Transformation of EPC operations

Increase competitiveness and profitability in mega-sized EPC projects

Take on EPC growth markets and segments

##### Key Strategy 2 Expansion of manufacturing business for high-performance functional materials

Offer more product lineups in existing business for increased revenue

Expand sales of strategic products

Explore and develop next-generation business

##### Key Strategy 3 Establishment of future engines of growth

#### Financial targets

Through steady progress in implementing the three key strategies, we are targeting net sales of ¥800 billion in fiscal 2025, with operating income of ¥60 billion, net profit attributable to owners of the parent of ¥45 billion, and ROE of 10%.

#### Strategic investments

A total of ¥200 billion in investment is planned during BSP 2025, including "DX," "Business development," "M&As," "Commercial demonstrations," "Production facilities," and "R&D."

Transformation of EPC operations  
¥70.0 billion

Expansion of manufacturing business for high-performance functional materials  
¥50.0 billion







Establishment of future engines of growth  
¥80.0 billion

FY2025 (Targets)	
Net sales	¥800 billion
Operating profit	¥60 billion
Net profit attributable to owners of the parent	¥45 billion
ROE	10%

# 2040 Vision and Materiality

The JGC Group has set forth the materiality (priority issues) to be resolved as a corporate group in line with the Basic Policy for Sustainability (P.25 JGC Group Materiality). The long-term management vision "2040 Vision" forecasts our future stance in the year 2040, and guided by materiality, outlines three social issues to be resolved by the JGC Group by 2040, with the aim of expanding five business areas to resolve these issues. This section describes the materiality to be resolved by expanding into the five business areas—and illustrates the relationship between the five business areas and materiality that the JGC Group is seeking to achieve in its 2040 Vision.

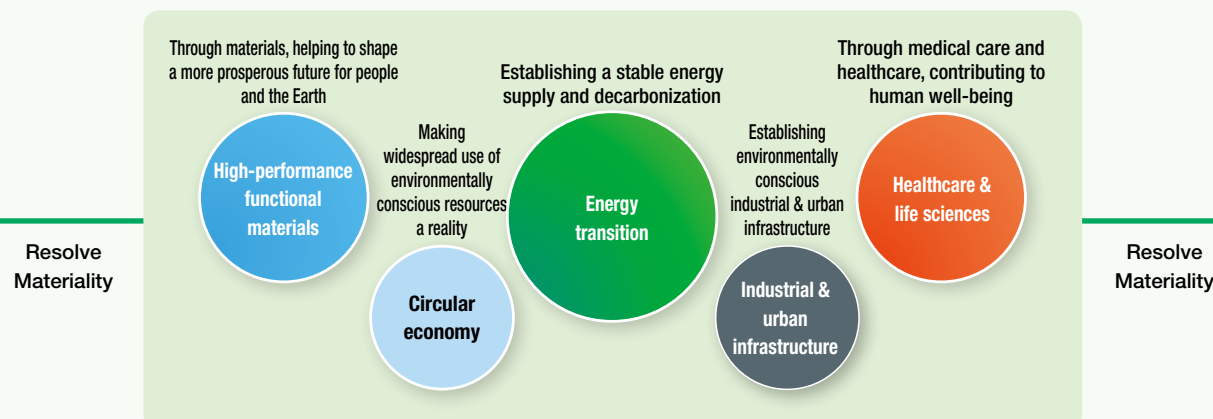
## JGC Group materiality

E		S			G
Societies in harmony with environment	Working with local communities around the world	Human rights, employee motivation	Energy access	Quality of life	Corporate governance, risks management
					

## Social issues to be addressed as identified in the 2040 Vision

Establishing a stable energy supply and decarbonization	Reducing environmental impact of resource consumption	Building and maintaining vital infrastructure and services
<ul style="list-style-type: none"><li>Under stated policy scenario, global primary energy demand is set to expand with demographic and economic growth from 14.4 billion toe (ton of oil equivalent) in 2019 to 17.1 billion toe in 2040.</li><li>Global average temperature is expected to rise 1.5°C between 2030 and 2050, at the current rate of warming.</li><li>In renewable energy, the current supply of 900 million toe is expected to increase to 3.3 billion toe by 2040.</li></ul>	<ul style="list-style-type: none"><li>In waste generated, the 2016 level of 2 billion tons is expected to reach 3.4 billion tons by 2050.</li><li>12% of this total will be plastic waste that is not biodegradable.</li></ul>	<ul style="list-style-type: none"><li>Cities are expected to swell from 50% of the total population in 2018 to 66% in 2050 as economic growth drives urbanization.</li><li>Development of medical infrastructure will be in demand, as well as needs will increase for higher standards of treatment and specialized medicine in emerging countries.</li></ul>

## Five business areas to be addressed to resolve the above issues



## Five business areas aiming to resolve materiality and social issues

Business Area	Resolved Materiality	Resolved Social Issues
Energy transition		<ul style="list-style-type: none"><li>Reducing the environmental impact of fossil energy</li><li>Promoting use of a greater share of renewable energy</li><li>Protecting ecosystems, maintaining biodiversity</li><li>Promoting development or products and technologies that help curb global warming</li></ul>
		<ul style="list-style-type: none"><li>Contributing to economic and industrial development in emerging markets</li><li>Creating employment in emerging markets</li><li>Supporting technology transfer and human resource development in emerging markets</li></ul>
		<ul style="list-style-type: none"><li>Meeting greater global energy demand</li><li>Promoting wider use of renewable energy that contributes to sustainable growth</li><li>Enhancing productivity through greater global energy efficiency</li></ul>
Healthcare & life sciences		<ul style="list-style-type: none"><li>Contributing to economic and industrial development in emerging markets</li><li>Creating employment in emerging markets</li><li>Supporting technology transfer and human resource development in emerging markets</li></ul>
		<ul style="list-style-type: none"><li>Improving global medical standards</li></ul>
High-performance functional materials		<ul style="list-style-type: none"><li>Promoting development or products and technologies that help curb global warming</li></ul>
		<ul style="list-style-type: none"><li>Improving global medical standards</li></ul>
Circular economy		<ul style="list-style-type: none"><li>Reducing the environmental impact of fossil energy</li><li>Protecting ecosystems, maintaining biodiversity</li></ul>
		<ul style="list-style-type: none"><li>Enhancing productivity through greater global energy efficiency</li></ul>
		<ul style="list-style-type: none"><li>Making life more convenient and comfortable</li></ul>
Industrial & urban infrastructure		<ul style="list-style-type: none"><li>Reducing the environmental impact of fossil energy</li></ul>
		<ul style="list-style-type: none"><li>Contributing to economic and industrial development in emerging markets</li><li>Creating employment in emerging markets</li><li>Supporting technology transfer and human resource development in emerging markets</li></ul>
		<ul style="list-style-type: none"><li>Responding to aging social and industrial infrastructure</li><li>Promoting development of social and industrial infrastructure in emerging markets</li><li>Making life more convenient and comfortable</li></ul>
Governance		
Sustainable management foundation		<ul style="list-style-type: none"><li>Promoting workplace diversity</li><li>Promoting female hiring and strengthening skill-building</li><li>Respecting human rights in all business activities</li></ul>
		<ul style="list-style-type: none"><li>Strengthening and improving corporate governance</li><li>Ensuring regulatory compliance in business activities</li></ul>



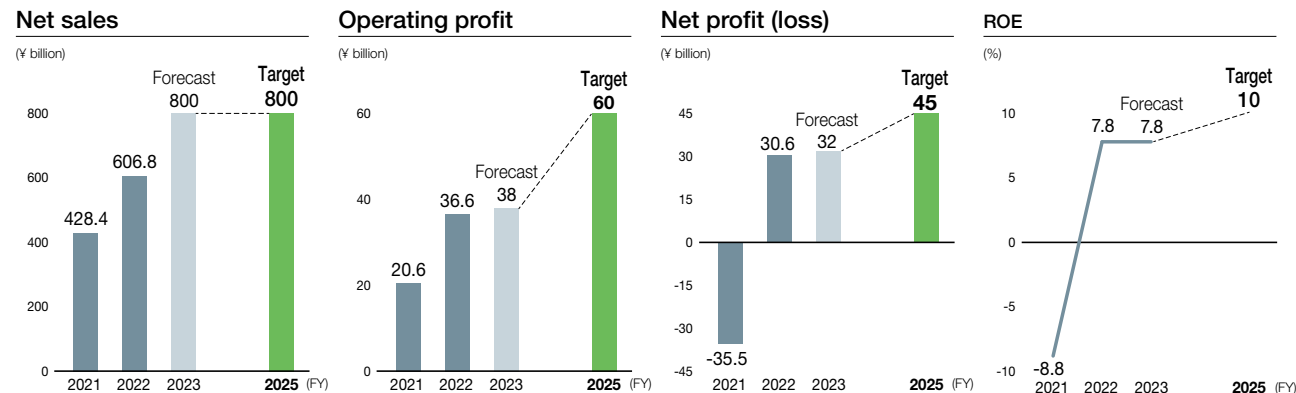
## JGC Group's Growth Strategy

## Path for Fulfilling Our Strategy

## Review of the first half of BSP 2025

Fiscal 2023 marks the third year of the medium-term business plan "BSP 2025" that commenced in fiscal 2021. Driven by significant changes in the environment related to the plant market over the past two years, coupled with steady progress with key BSP 2025 strategies, we are well on the way to achieving the financial targets of BSP 2025. We will continue making steady progress with the key strategies toward accomplishing these targets.

## Progress of financial targets



## Changes in market environment

In addition to recovery in energy demand as markets look ahead to a post-pandemic future, there is an increased focus placed on transitional energy beyond the initial scenarios envisaged in BSP 2025. Furthermore, the plant market has expanded significantly on the back of the soaring demand for LNG as a substitute for Russian gas from the standpoint of energy security, and the unprecedented pace of growth in the sustainability sector, such as hydrogen/fuel ammonia, sustainable aviation fuel (SAF) and plastic waste.

## Background to plant market expansion

Recovery in energy demand as markets look ahead to a post-pandemic future

Sudden increase in LNG demand from an energy security standpoint

Sustainability sector progressing at a faster pace than expected

## Sudden growth in plant market

## Steady progress with key strategies

Over the past two years, steady progress has been made with various measures in line with the three key BSP 2025 strategies of transforming EPC operations, expanding manufacturing business for high-performance functional materials, and establishing future engines of growth.

## Key Strategy 1

## Transformation of EPC operations

- Establish new engineering company in India
- Implement EPC DX (Construction Management System) to projects underway
- Acquisition of pharmaceutical plant EPC business from IHI Plant Services Corporation, etc.

## Key Strategy 2

## Expansion of manufacturing business for high-performance functional materials

- Appoint Chief Manufacturing Officer (CMO) and accelerate expansion of the manufacturing business
- Acquire ceramics business from Showa Denko Materials Co., Ltd. (now Resonac Corporation)
- Capital investment for increasing production of high thermal conductivity silicon nitride substrates for power semiconductors, etc.

## Key Strategy 3

## Establishment of future engines of growth

- Establish the new "Sustainable Solutions" organization serving the overseas operating company (JGC Corporation)
- Secure numerous hydrogen/fuel ammonia-related contracts for EPC projects
- Establish "SAFFAIRE SKY ENERGY LLC" for achieving the first large-scale SAF production in Japan, etc.

## Future policies for achieving BSP 2025

We are well on the way to achieving the goals of BSP 2025, however to ensure we definitely reach our financial targets, we recognize that it will first be essential to achieve our order target and earnings forecasts for fiscal 2023. Going forward, we will continue to move ahead with carefully selected contracts and ensure proper management of projects already underway, while actively promoting the three key strategies of BSP 2025 with the view to accomplishing the financial targets.

## Key Strategy 1 "Transformation of EPC operations"

Focus on increasing project execution capacity in response to the sudden growth in the plant market and developing a system capable of increasing net sales, while advancing project execution capabilities in order to improve competitiveness in securing orders.

## Awareness of business environment

- Positive environment for the plant market to continue based on the increasing trend in global demand for LNG

## Future policy

- Focus all efforts on achieving our order target and earnings forecasts for fiscal 2023, in order to achieve the financial targets of BSP 2025
- Focus on increasing project execution capacity in response to the increase in projects following growth in the plant market

## TOPICS

## New engineering company established in Chennai, India

Implemented as one approach to increasing project execution capacity. Company established in Chennai in India, staffed with many highly skilled engineers, with plans in place to expand up to 1,000 engineers in the future.



- Use modular construction method and implement EPC DX to advance project execution capabilities

## TOPICS

## JGC Integrated Module and EPC DX were adopted for the LNG Canada Project

- JGC's modular construction method, J-1•Module™, was adopted for the LNG Canada Project, integrating pipe rack, electrical room and instrument room, thereby achieving reduced on-site work.
- Despite the impact of COVID-19, modules were delivered to the site on schedule, at the highest quality and praised by numerous clients.
- EPC DX (Construction Management System) was fully adopted for standardization of the flow and quality of information required for decision-making processes in the project execution phase.



- In the overseas infrastructure sector, enhance the industrial infrastructure sector (semiconductor-related facilities, data centers, etc.)
- In the domestic sector, continue focusing on the booming life sciences sector, such as pharmaceuticals

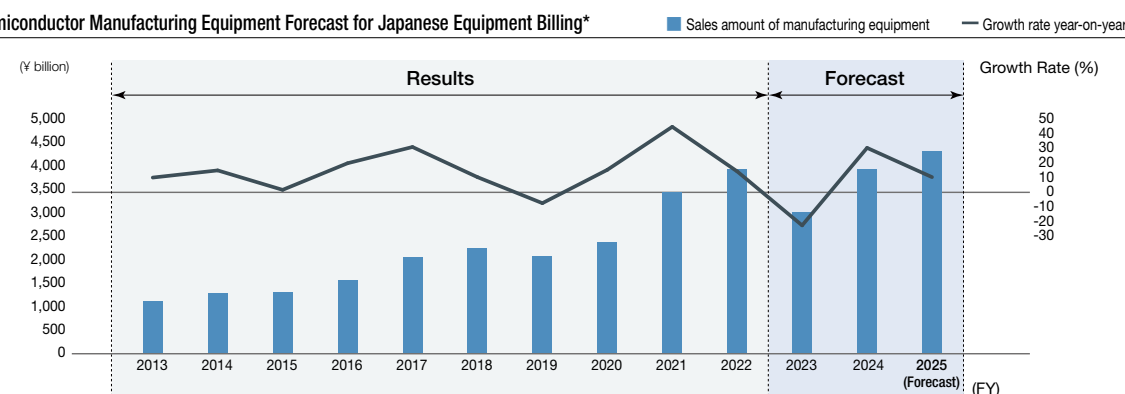


**Key Strategy 2 "Expansion of manufacturing business for high-performance functional materials"**

Diversify sources of income for the Functional Materials Manufacturing Business by discovering new customers and expanding product applications. Make capital investments as planned for ceramics products for semiconductors to respond to growing demand in the future, to lay the foundations for achieving fiscal 2025 plans with the view to increasing net sales and profits in the Functional Materials Manufacturing Business.

**Awareness of business environment**

- Market conditions in our main segment of semiconductors and the semiconductor manufacturing equipment sector are expected to remain flat through fiscal 2023, but is anticipated to recover from fiscal 2024 and beyond
- The EV-related market is expected to grow at a rapid pace with a focus on China and Europe

**Semiconductor Manufacturing Equipment Forecast for Japanese Equipment Billing\***

\* "Japanese Equipment Billing" refers to domestic and overseas billing of Japanese manufacturers (including overseas plants).

Source: Semiconductor Equipment Association of Japan, "Market Forecast Report Semiconductor and FPD Manufacturing Equipment (Fiscal years 2023-2025)"

**Future policy****[Catalysts and Fine Chemicals Sector]**

- Production facilities will be increased to meet the anticipated increase in demand for catalyst elements and various polishing materials. Production of existing products will also be increased.
- Petroleum refining and chemical catalysts that have a high market share in Japan will be marketed overseas. Efforts will also be made for uncovering new sectors for fine chemicals.
- Plan a total of ¥20 billion in capital investments, including land already purchased for businesses, from fiscal 2025 to fiscal 2030 to respond to growing demand for catalysts for carbon-neutral fuel (synthetic fuel), and catalysts and adsorbents for chemical recycling, as well as new fine chemical products such as materials for high-speed communications and functional abrasive particles for semiconductors.

**[Fine Ceramics Sector]**

- Move ahead with capital investment plans for high thermal conductivity silicon nitride substrates for EV power semiconductors expected to grow in demand. Verify investments by fiscal 2025, with the aim of setting up production
- Coordinate efforts with JFC Materials Co., Ltd. and the Sendai Plant to improve operational efficiency and profits in the engineering ceramics sector

**TOPICS****Capital investment for increasing production of ceramics for semiconductors – increase profits of existing businesses and expand sales of strategic products****<High thermal conductivity silicon nitride substrates for EV power semiconductors>**

- Make capital investments for increasing production. Operations planned to begin from fiscal 2023
- Purchase new land to respond to growing markets (total investment of ¥10 billion)

**<Ceramics for semiconductor manufacturing equipment>**

- Make capital investments for high-precision manufacturing. Operations planned to begin from fiscal 2023
- Begin capital investment plans for increasing production capacity



Tomiya Factory, which produces high thermal conductivity silicon nitride substrates and semiconductor production components

**Key Strategy 3 "Establishment of future engines of growth"**

As a sector positioned as the future engine of growth, this market is growing at an unprecedented pace, and we recognize that we need to respond with a sense of urgency. Resources will be allocated as required in parallel with responding to existing sectors, such as the soaring LNG, in order to continue generating positive results.

**Awareness of business environment**

- FEED projects for the hydrogen/fuel ammonia, SAF and plastic waste recycling sectors moved forward in fiscal 2023, and this is expected to shift to EPC projects from fiscal 2024 and beyond
- Government plans for the offshore wind power generation sector seem to be suffering from delays

**Future policy****1) General**

- Secured FEED contracts for the hydrogen/fuel ammonia, SAF and plastic waste recycling sectors in fiscal 2023, and lead this to securing EPC projects planned from fiscal 2024 and beyond
- Aim for expected net sales exceeding ¥50 billion for future engines of growth in BSP 2025

**TOPICS****Awarded contracts for SAF and hydrogen plant in Japan and oversea****Awarded contract for the first large-scale domestic SAF production demonstration facility in Japan**

- Secure contract for large-scale domestic SAF production demonstration facility on the site of the Cosmo Oil Co., Ltd. Sakai Refinery
- Construction to be completed and operations expected to begin within fiscal 2024, with plans to begin supplying 30,000 kL of SAF annually in 2025 when World Expo 2025 will be held in Osaka, Kansai
- More complex and larger plants are expected in the future to achieve the 2030 target of 1.71 million kL set by the government. This will leverage our extensive track record with design and construction of large-scale petroleum refining, petrochemical and chemical plants in Japan and overseas
- In addition to construction of SAF production plants, efforts are being made to develop a domestic SAF supply chain as a business operator



Site for the Construction of Domestic SAF Manufacturing Equipment (Sakai Refinery, Cosmo Oil Co., Ltd.)

**Awarded contract for hydrogen production plant in Australia**

- Joint project between Sumitomo Corporation and Rio Tinto Ltd. in fiscal 2023. Construct a hydrogen production plant capable of 250 tons annually on the site of the alumina refinery plant owned and operated by Rio Tinto Ltd.



Planned construction site of alumina refinery plant ©Rio Tinto 2023

**Demonstrate the development of green ammonia production technology derived from renewable energy**

- Development and demonstration of "Integrated Control System" achieved by optimizing operation of green chemical (ammonia) production plant
- Plant location agreement signing ceremony held in Fukushima Prefecture. Operations planned to begin from fiscal 2024



**Key Strategy 3 "Establishment of future engines of growth"****Future policy****2) Secure required resources**

- Secure the resources required as a steady and consistent engine of growth for the future

**TOPICS****License agreement with Toyo Engineering Corporation for SAF production plants**

- Concluded alliance agreement for FEED and EPC contracts for domestic SAF production plants in fiscal 2023
- In response to increasing demand for SAF in the future, and the increase in projects of diverse materials such as bioethanol
- In addition to the extensive track record of construction of large-scale petroleum refining, petrochemical and chemical plants owned by both companies in Japan and overseas, our range of know-how as a SAF operator will be integrated with Toyo Engineering Corporation's know-how and technical expertise related to synthetic gas-derived SAF production using materials, such as ethanol and woody biomass, to cover all aspects from the conceptual stage through to EPC projects



Alliance agreement signing ceremony

**3) Revise key areas and sow seeds for business over the long-term perspective**

- Government plans for the offshore wind power generation sector seem to be suffering from delays, so approach from a long-term perspective
- Expand into food technology-related sectors such as biomanufacturing, land-based aquaculture and cultured meat as new engines of growth

**TOPICS****Promotion of the "Integrated Biofoundry®" business**

- In addition to the medical and healthcare sectors, biomanufacturing is expected to expand into the materials, energy, food and other sectors in the future, with the market scale anticipated to be around ¥200 trillion by 2030
- Utilize scale-up technology honed with process development in the energy sector, and technology on the optimal design of fermenters developed in the pharmaceuticals production sector

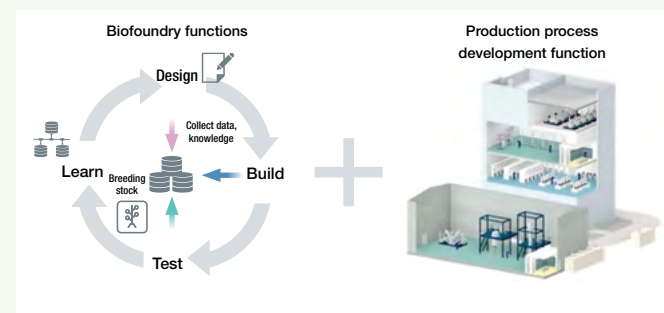


Image of Integrated Biofoundry

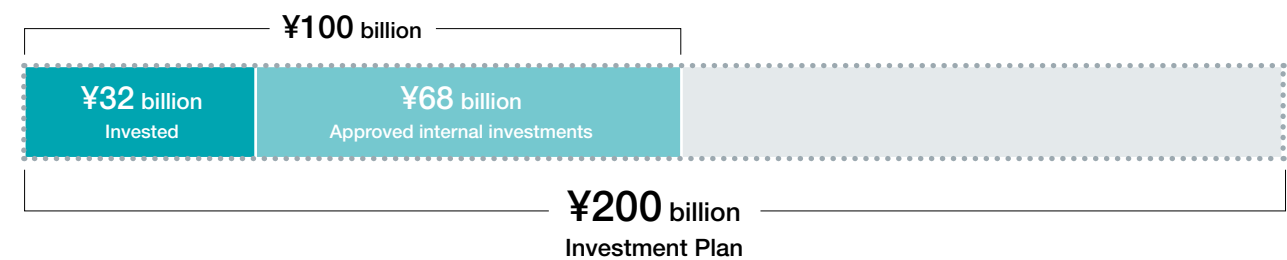
- Construct pilot plant of small modular reactors (SMRs) in Idaho, U.S. using NuScale Power, LLC modules with operations planned to begin from 2029. Dispatch JGC Group engineers and acquire know-how from the construction project of small modular reactors

**4) Diversify into non-EPC business models**

- Join various sectors as a business operator, such as SAF, hydrogen/ammonia, plastic waste recycling, cultured meat, and land-based aquaculture

**Growth Strategy Investments**

A total of ¥200 billion in growth strategy investment is planned with the aim of accelerating the three key strategies during the five years of BSP 2025. Up to ¥32 billion was invested over the two years to fiscal 2022, primarily in EPC DX-related investment, product development investment and capital investments in the high-performance functional materials business. Investments have already been approved internally, with around ¥100 billion planned including projects invested from fiscal 2023 and beyond. Suitable investment opportunities will continue being identified to make investments in order to achieve growth strategies through to 2040.



	Fiscal 2022 Results	Plan for Fiscal 2023 and Beyond
<b>Transformation of EPC operations</b>	<ul style="list-style-type: none"> <li>EPC DX, execution technology-related technology</li> <li>Establishment, operation, etc., of Operation Center in India</li> </ul>	
<b>Expansion of manufacturing business for high-performance functional materials</b>	<ul style="list-style-type: none"> <li>Capital investment related to high thermal conductivity silicon nitride substrates</li> <li>Investment to increase production facilities</li> <li>Capital investment into new products/technologies</li> <li>Acquire ceramics business from Showa Denko Materials Co., Ltd. (now Resonac Corporation), etc.</li> </ul>	
<b>Establishment of future engines of growth</b>	<ul style="list-style-type: none"> <li>DDR commercialization</li> <li>INTEGNANCE® VR</li> <li>Ammonia-related</li> <li>Food technology-related (land-based aquaculture, cultured-meat)</li> <li>Healthcare-related investments, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Biomanufacturing</li> <li>SAF business, etc.</li> </ul>

Cash will continue being used effectively, including M&A, for **ongoing growth strategic investments**

**Strategic investment framework**

The Group Investment and Loan Committee established under the holding company JGC Holdings Corporation conducts quantitative analyses that factor in capital costs when making investment decisions, and also carefully and cautiously deliberates R&D projects based on their potential to lead to future business expansion. It also monitors progress after investments are made, as part of a system that can properly study whether to withdraw from certain businesses.

