2040 Vision

Purpose

Executive Summary

Enhancing planetary health

Background of 2040 Vision

Responding to a rapidly changing business environment
Achieving long-term growth with a grasp of social changes

A corporate group that contributes to enhancing planetary health in five business areas

Energy transition
Healthcare / Life sciences
High-performance functional materials
Circular economy
Industrial & Urban infrastructure

Three aspects of transformation supporting the 2040 vision

Business areas
Focused on Oil & Gas
Responding to the energy transition, expanding our business areas

Business models
Focused on EPC and manufacturing models
Transformation of EPC business model, diversifying to non-EPC models

Organization
Managed mainly from Japan; organization designed for execution of Mega-sized EPC projects
Strengthening our regional management framework and fostering a culture of innovation

Target

FY2040 operating income*
¥150–200 billion

* Adjusted Operating Income: Operating income plus interest income, dividend income and share of profit of entities accounted for using an equity method earned in each business area
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### Purpose of the JGC Group

- **Overview**
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  - Social issues that JGC Group will focus on
  - 2040 vision of the JGC Group
  - Overview of transformation supporting the 2040 Vision
  - Business area transformation
  - Business model transformation
  - Organizational transformation
  - Commitment to carbon neutrality by 2050
  - Group message
Purpose of the JGC Group

Historical roles since the company was founded
Supporting the foundations of industry and society at large, at the crossroads of challenges in balancing energy and environmental needs

I want the company to be a presence that supports the foundation of industry as well as society regardless of era

Founder Masao Saneyoshi

Purpose of the JGC Group

Enhancing planetary health

We remain committed to our traditional mission of creating a more prosperous future, which has been redefined to reflect our purpose of enhancing the intertwined health of humans and the Earth.
Greater energy demand is expected, driven by a swelling global population and economic growth.

Limiting the increase in average temperature relative to pre-industrial levels to 1.5°C will require reducing CO₂ emissions effectively to zero by 2050.

A growing awareness of climate change issues is behind the global trend toward less carbon and even net-zero carbon.

Social issues that JGC Group will focus on

Pursuing both a stable energy supply and decarbonization

Global primary energy demand by 2040: 17.1 billion toe*

Renewable power by 2040: 3.3 billion toe*

*toe: ton of oil equivalent

Source: IEA World Energy Outlook 2020
Greater consumption associated with global economic growth will exacerbate the impact of CO₂ emissions throughout manufacturing processes. Rising consumption also continues to generate more waste. Non-biodegradable plastics in particular raise concerns for ecosystems and human health. Resources with a lighter environmental footprint that limit the generation of new waste must be used.

Greater CO₂ emissions from manufacturing processes
Rising consumption also continues to generate more waste.
Non-biodegradable plastics in particular raise concerns for ecosystems and human health.
Resources with a lighter environmental footprint that limit the generation of new waste must be used.

Source: World Bank, A Global Snapshot of Solid Waste Management to 2050

Asia, Africa, and other emerging regions will see an accelerated urban influx as their economies grow, which will drive demand for industrial and industrial and urban infrastructure. Development of medical infrastructure and better healthcare will be in higher demand, especially in emerging markets with growing economies. Needs for personalized and preventive medicine will increase in Japan and other developed economies as birthrates decline and populations age.

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Source: United Nations, World Urbanization Prospects
National Institute of Population and Social Security Research "Japan's Future Population Estimate"
Social issues that JGC Group will focus on

Health of the Earth
- Pursuing both a stable energy supply and decarbonization
  - Meeting higher demand of energy
  - Responding to the low-carbon / zero-carbon transition
  - Achieving net-zero CO₂ emissions

Reducing environmental impact of resource consumption
- Reducing CO₂ throughout manufacturing processes
- Reducing the environmental impact of waste
- Popularizing environmentally protective high-performance functional materials

Building and maintaining vital infrastructure and services
- Establishing and maintaining industrial and urban infrastructure
- Establishing and improving medical infrastructure
- Promoting widespread use of personalized and preventive medical care

Health of humans
2040 vision of the JGC Group
2040 Vision of the JGC Group

A corporate group that contributes to enhancing planetary health in five (5) business areas

Establishing a stable energy supply and decarbonization

Through materials, helping to shape a more prosperous future for people and the Earth

Making widespread use of environmentally conscious resources a reality

Establishing Environmentally conscious industrial & urban infrastructure

Healthcare / Life sciences

Through medical care and healthcare, contributing to human wellbeing

Industrial & Urban infrastructure

Establishing Environmentally conscious industrial & urban infrastructure

High-performance functional materials

Establishing Environmentally conscious industrial & urban infrastructure

Circular economy

2040 vision of the JGC Group

Sales contribution by business areas and models

Taking on social issues through a variety of business models in more diverse business areas

Business areas

Business models

2020

2040

2020

2040

Oil & Gas

Renewable energy

High-performance functional materials

Industrial & Urban infrastructure

Circular Economy

Energy transition

EPC

Non-EPC

Non-EPC

Non-EPC

EPC

60%

40%

22%

78%

81%

10%

10%

10%

10%

9%

8%

2%

Others

EPC

Non-EPC
Overview of transformation supporting the 2040 Vision

Three aspects of transformation supporting the 2040 vision

**Business Areas**
- Focused on Oil & Gas
- Responding to the energy transition, expanding our business areas

**Business Models**
- Focused on EPC and manufacturing models
- Transformation of EPC business model, diversifying to non-EPC models

**Organization**
- Managed mainly from Japan; organization designed for execution of mega-sized EPC projects
- Strengthening our regional management framework, fostering a culture of innovation
Overview of transformation supporting the 2040 Vision

Path to business area expansion

The Group will be expanding into five areas that include core business, growth business and future business which will be developed into pillars of business.

Present
- Advancing into renewable energy infrastructure
- Further developing our functional materials manufacturing capabilities
- Sowing the seeds for businesses promoting sustainability

Five years of challenge (2021–2025)
- Expanding in the energy transition segment
- Actively investing in growth businesses
- Laying the groundwork for future business

Five years of harvest (2026–2030)
- Harvesting the fruit of efforts for growth business (High-performance functional materials, Healthcare / Life sciences)
- Making future business profitable

Ten years of rapid growth (2031–2040)
- Developing the future business (Circular economy, Industrial & Urban infrastructure) into pillars of business
- Establishing diversified portfolio management

Timeline

- Low-carbon / decarbonized Oil & Gas
- Clean energy
- Core business
- Growth business
- Future business

Overview of transformation supporting the 2040 Vision

Target level of operating income*

These three facets of transformation will support us in reaching ¥150–200 billion of income in 2040.

Strategic investments to be made over the long term.

Present
- ¥60 billion

Five years of challenge (2021–2025)
- ¥60 billion

Five years of harvest (2026–2030)
- ¥100 billion or more

Ten years of rapid growth (2031–2040)
- ¥150–200 billion

JGC Group will realize greater income over the long term by strategic investment

* Adjusted Operating Income: Operating income plus interest income, dividend income and share of profit of entities accounted for using equity method earned in each business area
Business area transformation
From a focus on Oil & Gas
to responding to energy transition and expansion of business areas

**Core business area: Overview of energy transition**
Adopting low-carbon / decarbonization practices in Oil & Gas and expanding clean energy, for a net-zero society

**Net-zero emissions**
- **More Energy**
- **Less Carbon**

**Low carbon / decarbonization in Oil & Gas**
- Improving energy efficiency of current infrastructure with digital technologies
- Progress in recovery of CO₂ from industrial plants

**Expansion of clean energy**
- Expanding use of renewable energy
- Progress in deploying grid-stabilizing technologies, such as storage batteries and EMS
- Progress in introducing hydrogen / fuel ammonia as a renewable energy carrier
- Making EV chargers widely available
- Establishing market mechanisms for carbon trading
Contributing to carbon reduction / decarbonization in Oil & Gas through carbon management

The Group will build on expertise and experience from past CCS facilities at LNG plants and the Tomakomai CCS demonstration project to contribute to carbon reduction / decarbonization. The Group will provide solutions from the planning stage and also participate in business that generate carbon credits.

In production of blue hydrogen / fuel ammonia (CO2-free energy derived from fossil resources), the Group will apply expertise and risk management capabilities from plant expansion in LNG operations. The Group will also invest in technology development and promote strategic partnerships.

Business area transformation

Core business area: Energy transition – low-carbon / decarbonized Oil & Gas
Contributing to carbon reduction / decarbonization in the global Oil & Gas industry

External factors
- Constant energy demand as economies grow in emerging markets
- Needs for reduced carbon and decarbonization in fossil fuel consumption

Business Development

Segments of interest

JGC Group strengths

Business area transformation

Core business area: Energy transition – clean energy
Supporting decarbonization in Japan and overseas, starting with clean energy technologies

External factors
- Global market growth in offshore wind power and hydrogen applications
- Carbon neutrality target by 2050 in the government’s Green Growth Strategy

Business Development

Segments of interest

JGC Group strengths

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Business Development

Segments of interest

JGC Group strengths
Business area transformation

**Growth business area:** Healthcare / Life sciences

Developing pharmaceutical / hospital-related business domestically and in emerging economies, promoting health through medical care

External factors

- Personalized and preventive medicine needs, mainly in Japan
- Market growth arising from higher standards of healthcare in emerging economies

Segments of interest

- Pharmaceutical plants (including GMPs*)
- Expertise in pharmaceutical plants (including GMPs*)
- Expertise in hospital construction and management

Segments of interest

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*GMPs: Good Manufacturing Practices

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**Growth business area:** High-performance functional materials

Developing and producing unique high-performance functional materials in growth segments, applying the Group’s core technologies

External factors

- Growth of semiconductor / ICT segments
- Growing needs in carbon / chemical recycling and environment / new energy segments
- Growing needs in medical / testing segments

Segments of interest

- Catalyst development, base of operations
- Nanoparticle preparation and control technologies
- Fine ceramic development and production

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**Businesses**

- **Development**

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The Group will expand operations and strategic partnerships to meet growing domestic and international pharmaceutical needs, including global vaccine demand. Production technology will be developed for pharmaceutical plants (including those serving new modalities).

The Group will acquire smart medical technologies through open innovation. Advance investments will be made in digital technologies for hospitals and clinics, for expansion of smart hospital business. In overseas expansion, the Group will seek system-building and strategic partnerships rooted in local communities.

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The Group will venture into new as well as related segments, applying core technologies and accelerate product development.

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Manufacturing technologies for products such as high thermal conductivity silicon nitride substrates and polishing nanoparticles for semiconductor will be improved and capacity expanded.

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The Group will reinforce high-performance material supply chains in growth segments, capture a larger market share and expand overseas.
Creating recycling value chains through partnerships

**Business area transformation**

**Future business area:** Circular economy, Industrial & Urban infrastructure

**Circular economy**

Showing leadership in market formation and ecosystem building to support a circular economy for sustainable society

- **Segments of interest**
  - Chemical recycling (plastic and fiber waste, etc.)
  - Process engineering
  - Networks of clients/patners

**JGC Group strengths**

- Chemical recycling technologies, such as for plastic and fiber waste, for widespread adoption in society.
- Providing licensing and operational consulting applying operational expertise from commercial demonstrations.
- Constructing industrial facilities, expanding track record, while accumulating array of technologies and a solid record in the Industrial & Urban infrastructure segment, such as for railways and water treatment.

**Business development**

- Providing environmentally conscious industrial & urban infrastructure integrating multiple systems

**Industrial & Urban infrastructure**

Providing environmentally conscious industrial & urban infrastructure integrating multiple systems

- **Segments of interest**
  - Industrial facilities
  - Water treatment
  - Railways
  - Integrated urban infrastructure

**External factors**

- Demand for industrial & urban infrastructure as economies grow in emerging markets
- Needs for resilient, low-impact infrastructure

**Business development**

- Becoming a major player in the Industrial & Urban infrastructure market, venturing into integrated infrastructure development.

- The Group will acquire chemical recycling technologies, such as for plastic and fiber waste, for widespread adoption in society. The Group will provide licensing as well as operational consulting applying operational expertise from commercial demonstrations.

- The Group will construct industrial facilities, expanding track record, while accumulating an array of technologies and a solid record in the Industrial & Urban infrastructure segment, such as for railways and water treatment. Services to be provided range from conceptual design to construction and operation of integrated infrastructure, as seen in industrial parks and urban development.

**Business model transformation**

From a focus on EPC / manufacturing models to transformation of EPC model and developing non-EPC models
Business model transformation

Toward a more sustainable EPC business model and diversification in non-EPC models

Transformation of EPC business model to stabilize income
Additionally, diversifying the revenue structure to include both non-EPC models based on EPC and new business models

More sustainable EPC business model
- Using digital technologies

Non-EPC business models
- Diversifying to include non-EPC business models
- Expanding business models based on EPC
- Exploring new business

EPC business model

Measures for transformation of EPC business model: Initiatives using digital technologies

Strengthening EPC execution capabilities by promoting the IT Grand Plan 2030 and using digital technologies
Anticipating future digital technologies and transforming EPC business through advance investments

Future goals for 2030

- Innovation in engineering capabilities through AI design
- Project digital twins and simulations based on AWP*2 and data-centric project execution
- Dramatic improvements at construction sites from 3D printers and automated construction
- Improved productivity through standardized, modular plants
- Development of smart community technology

Scenarios projected for 2040

Potential of new business models
- Providing an EPC execution platform externally (SaaS)
- Providing project execution services externally (consulting, PMC*3)
- Providing a collaborative system with engineers worldwide

New forms of EPC partnerships
- Minimizing execution risk by making project status more transparent through an EPC execution platform
- Optimal types of EPC contracts, closer integration with clients and contractors

Note:
*2 AWP: Advanced Work Packaging
*3 PMC: Project Management Consulting
### Business model transformation

**Business model diversification**
Expanding EPC-based business models upstream and downstream while venturing into new business models for diversification

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### Organizational transformation

Strengthening our regional management framework and fostering a culture of innovation
Organizational transformation

Stronger framework for regional management

Strengthening our regional management framework, with a focus on enhancing responsiveness to customers in growth markets by proposing and implementing local solutions in a timely manner.

- Clients in various regions mainly approached from the head office in Japan
- Focus on local projects by national workforce, for greater responsiveness

- Responding to client inquiries
- Focused on mega-sized projects
- Coordinated from head office

- Closely focused on clients, identifying needs and creating project opportunities
- Focused on medium or small-sized projects
- Promoting delegation of authority and more agile operations

Organizational transformation

More vibrant culture of innovation

Fostering a more vibrant culture of innovation required for technical commercialization and business model development to support transformation of business areas and models

- The Group will reinforce its environment for personnel recruitment / development, exploration, and organization / administration
  - (Innovators gather and undertake active roles)
Commitment to carbon neutrality by 2050

The JGC Group is committed to the ambitious target of reducing the Group’s CO₂ emissions to net-zero by 2050, and helping our stakeholders reduce emissions to achieve global carbon neutrality, a key element of “Enhancing planetary health.”

Group message

For all stakeholders
Creating an environment of high-motivation

Three commitments are made to our stakeholders to achieve the JGC Group’s vision in 20 years:

- We will foster a culture that challenges the unknown and encourages innovation
- We will work toward a shared purpose and maintain a tradition of mutual respect
- We will create an environment where exchanges of diverse ideas from a vibrant workforce results in positive outcomes and new values

Our goal is the satisfaction of all working for and with the JGC Group
This presentation may contain forward-looking statements that reflect JGC's plans and expectations.

Such statements are based on currently available information and current assumptions of future events which may not prove to be accurate. Such statements are also subject to various risks and uncertainties that could cause actual results to differ materially from those forward-looking statements.

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- Changes in general economic conditions, including foreign currency exchange rates, interest rates and other factors that could affect our profitability
- Changes in government regulations or tax laws in jurisdictions where we conduct business

For questions concerning this material please contact:

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