



# CHIYODA REPORT

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2022

# Pioneering a Carbon Neutral Future with New Value in Engineering

The Chiyoda Group published 'Legacy for the Twenty-first Century' in 1972, advocating the advancement of the human race in harmony with nature, while declaring its commitment to resolve energy and environment challenges through engineering and technological development.

In the 50 years since the publications release, the Chiyoda Group has significantly influenced global harmony between energy and the environment. We will continue contributing to carbon neutrality by combining our corporate strengths with technological innovation and creating new value in engineering to support the global drive towards a carbon free, hydrogen-based society.

## OUR MATERIALITY

Following an assessment of our business goals and with the aim of resolving global issues and realizing economic growth, Sustainable Development Goals (SDGs) 7, 9, and 13 are high priority for the Group.



# SPERA Hydrogen Shaping the Future of Energy





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### Corporate Philosophy

**Enhance our business in aiming for harmony between energy and the environment and contribute to the sustainable development of society as an integrated engineering company through the use of our collective wisdom and painstakingly developed technology**

Every Chiyoda Group employee engages in corporate activities with this philosophy as we strive for corporate group management that earns the trust and empathy of all of our stakeholders, including shareholders, customers, business partners, employees, and local communities.

### Business Vision

## A Grand Opportunity for the Future

The Chiyoda Group is committed to being an 'Innovative' Engineering Company, shaping the future of energy and the global environment with passion and cutting-edge technology.

### Editorial Policy

CHIYODA REPORT 2022 is a communication tool to inform all stakeholders, including shareholders, investors, business partners, customers, directors, employees, and society, of the Chiyoda Group's management policies, business strategies, financial status, corporate values, growth potential, and activities toward realizing a sustainable global society.

We continuously strive to improve the quality of information contained in the report to strengthen stakeholder awareness of the Chiyoda Group.

### Disclaimer

CHIYODA REPORT 2022 is forward-looking, compiled from information available at the time of release, and actual results may differ materially from statements made within it.



Refer to the following website for further information on the Chiyoda Group.  
<https://www.chiyodacorp.com/en/>

## Message from the CEO



Chiyoda applies its engineering expertise to sustain corporate growth, meet society's needs, and create social value while aiming for a carbon-free society.

**Masakazu Sakakida**

Chairman of the Board, President & CEO  
CSO\*1 & CWO\*2

\*1 Chief Sustainability Officer  
\*2 Chief Wellness Officer

## Financial Independence – A Top Management Mission

The purpose of my appointment as both Chairman of the Board and President & CEO of Chiyoda was to accelerate decision-making, enhance business execution, and ensure fairness and transparency through a disciplined approach to corporate governance, while remaining cognizant of outside director and internal officer opinions.

While striving to achieve our 'Vision for 2030' through the implementation of our Medium-term Management Plan, Chiyoda will continue growing to become financially independent with robust commercial foundations, facilitating a Prime Market listing on the Tokyo Stock Exchange and stable shareholder dividends.

## Our 'Vision for 2030'

Chiyoda's 'Vision for 2030' aims to **transform our business portfolio and earnings structure**, whereby new and existing businesses will contribute 50% each to earnings, instead of the current 90% contribution in the oil and gas field.

Chiyoda will continue to profit from our existing core liquefied natural gas (LNG) business, in line with LNG's rising demand and increasing significance as a transitional energy source as the global drive towards a carbon-free society gains momentum, while creating and developing new businesses to generate further revenue streams according to our 'Vision for 2030'.

## Transformation of our Business Portfolio as the Basis for Sustainability

Chiyoda is committed to **carbon neutrality** and **our business portfolio will develop as our client's needs change, in line with society's increasing demand for decarbonization through reduced CO<sub>2</sub> emissions**, and our **hydrogen business** will continue to evolve into a pivotal new business enterprise.

Chiyoda's direct CO<sub>2</sub> emissions from our internal processes and use of fuel (Scope 1) and our indirect emissions from using electricity, heat, steam, and energy supplied by external companies (Scope 2) are minor compared to emissions from third-party companies related to our value chain business activities, such as raw material production and logistics (Scope 3). Our contribution to sustainability is therefore reflected by the degree to which our engineering expertise and technological prowess supports customers to reduce their Scope 1 and Scope 2 emissions.

Recognizing the significance of climate change and as part of our contribution to global sustainability, the Sustainability Committee, which I chair in my role of Chief Sustainability Officer (CSO), is facilitating our business portfolio transformation by assessing internal business strategies and evaluating the risks and opportunities associated with supporting customers to reduce their carbon emissions.



## Expanding and Advancing Human Resources as a Key to Growth

As **our most valuable asset, expanding and advancing human resources** is a driving force for Chiyoda's growth. Our human resource system includes the appointment of a Chief Human Resource Officer (CHRO), responsible for four Human Resource Officers (HRO) appointed from each of the four disciplines who conduct career-focused interviews with individual employees to clarify their goals and desired career paths and align them with the Company's overall business objectives. All Chiyoda's human resources, whether located in Head Office or in domestic or international subsidiaries, are essential for our projects. We expand our capacity and strengthen our project execution capabilities

by developing younger generation employees, diversifying their knowledge and experience through job rotation every 3–4 years, apportioning responsibilities commensurate with capabilities and proactive assignment to overseas positions.

Chiyoda establishes unique training programs, consistent with employee career 'needs and wants', to develop the required skills and expertise and optimize human resource allocation for the steady execution of existing businesses and the development of new businesses to effectively transform its business portfolio.

Chiyoda will continue to execute projects efficiently by hiring external local and talented human resources and collaborating with our partners to realize earnings growth and the 50% balance between existing and new businesses.

## Promotion of Digital Transformation (DX) to Improve Profitability and Competitiveness

Chiyoda has created the position of Chief Digital Officer (CDO) to accelerate Companywide DX and foster a digital innovation culture.

Chiyoda's AWP<sup>\*1</sup> uses digital technology to improve our competitiveness through increased project management efficiency and enhanced Engineering, Procurement and Construction (EPC) execution management capabilities, by aligning the engineering and procurement EPC processes with construction and commissioning schedules.

Chiyoda has also developed EFEXIS<sup>TM\*2</sup>, providing customers with optimal solutions for operating and maintaining their plants with digital and AI technologies. In optimizing operations and maintenance, the production capacity of plants is expanded, improving profitability and reducing CO<sub>2</sub> emissions.

<sup>\*1</sup> Advanced Work Packaging is a process whereby construction work is packaged through integrated management to optimize EPC throughout from engineering and procurement to construction, commissioning, and handover using digital technology

<sup>\*2</sup> Chiyoda delivers digital AI products optimizing customer plant operations and maintenance under the EFEXIS<sup>TM</sup> brand

## Stabilizing Earnings

As projects become larger, more complex and of longer duration, the effective management of risk throughout a projects entire life cycle becomes more essential for stability, growth, and profitability. Chiyoda implements **stringent and comprehensive risk management** processes, managed by a Strategy & Risk Integration Division, **securing profits on project orders received following the release of our Medium-term Management Plan**.

As an important new business to stabilize earnings and distribute risk, life sciences is essential for national security, realizes early profits, and involves relatively minor, short-term (1–2 years) project risk.

Commonly used lump-sum 'fixed price' contracts, coupled with the increase in larger, longer, and more complex projects, carry significant cost and schedule risks for all EPC contractors, including Chiyoda. Such forms of contract generally result in more expensive projects as contractors allocate larger financial contingencies for their increased risk and is a topic requiring further collaborative industry-wide debate. Large lump sum contracts in particular need to be carefully analyzed and scrutinized. Chiyoda values a collaborative 'relationship' based project execution philosophy, with open and honest communication with customers, subcontractors, and suppliers and will continue to **cooperate with clients to explore cost reducing, risk-sharing arrangements**.

## Continuing to Meet Society's Needs with Our Engineering Strengths

Since first announcing our Medium-term Management Plan in May 2019, Chiyoda has progressed our Company's revitalization, increasing our competitiveness through an enhanced risk management structure, more robust financial foundations, steady transformation of our business portfolio, and empowering employees with a sense of responsibility and accountability.

The accelerating transition to a carbon-free society is a business opportunity for Chiyoda, enabling us to advance as an innovative engineering Company, **shaping the future of energy while aiming for harmony between energy and the environment and contributing to society's sustainable development**. We will continue to grow by applying our engineering expertise to provide cutting-edge solutions to our customers, meeting their needs, and creating value for society in our rapidly changing business environment as we progress towards realizing our 'Vision for 2030'.

Thank you for your understanding and continued support.



**Masakazu Sakakida**  
Chairman of the Board, President & CEO  
CSO & CWO



## Message from the CFO

### Moving steadily ahead with business restructuring while accelerating financial measures to support sustained growth



#### Review of the Fiscal Year Ended March 31, 2022

Chiyoda achieved the majority of its full-year earnings forecasts, such as revenue and operating income, in the fiscal year ended March 31, 2022, the first year following the update of the Medium-term Management Plan 'Chiyoda's Revitalization Plan—Initiatives for Revitalization and the Future', thanks to strengthened project execution capabilities and risk management.

The Company booked one-time extraordinary losses to eradicate the negative legacy of a past project that had lingered for many years, thereby stabilizing management and solidifying its footing for future sustainable growth.

#### Reinforcing our Financial Foundation

Strengthening our financial foundation to allow agile reaction to changes in our business environment and more precise execution of business strategies is a priority.

With an order backlog of ¥1.3 trillion, Chiyoda aims to increase capital and reinforce its financial position further by generating earnings by steadily progressing ongoing projects and expanding its diverse and reliable earnings base while accelerating business portfolio reform in accordance with the plan.

Chiyoda will strengthen its capital position and financial structure by appropriately controlling consolidated fixed costs and managing cash flow.

#### Increasing Business Earning Power and Improving Asset Efficiency

In the fiscal year ended March 31, 2022, the Company adopted a more sophisticated accounting management system and introduced new business management indicators to improve the earnings structure analysis in each business segment and strengthen project budget and performance management, while simultaneously advancing measures to improve employee financial literacy. Leveraging these financial measures, Chiyoda is reforming Companywide awareness of costs and earnings to increase business earning power and improve asset efficiency.

Chiyoda established the HR & DX Division in April 2022, stepping up efforts to foster a Companywide digital mindset and improve business efficiency by renewing processes.

#### Optimal Allocation of Resources to Achieve the Medium-term Management Plan

Under our Medium-term Management Plan, we will further entrench existing businesses by renewing EPC business processes and strengthening our project execution capabilities. We aim to reform our business portfolio by accelerating new businesses in the carbon neutral and life science fields that are key to our future growth. Our hydrogen business is of special focus in the carbon neutral field, where Chiyoda is a market leader, and we will continue contributing to a future sustainable environment and society while improving corporate value.

Chiyoda is also proactively instigating digital transformation to increase its competitiveness and achieve sustainable growth.

By optimizing the allocation of internal resources, we continue to be resolutely committed to the growth potential and profitability of each business to achieve our objectives and support collaboration with partners on a mutually beneficial basis. Chiyoda is accelerating measures to strengthen its financial position and steadily progressing business structure reform through resource reallocation.

#### Shareholder Returns

Chiyoda emphasizes transparent communication with stakeholders, including shareholders and promotes continuous improvement in IR and PR activities. As a part of its responsibilities as a listed company, Chiyoda intends to return profits to shareholders at an early stage, and aims to relist on the Prime Market.

In accordance with the Medium-term Management Plan, Chiyoda will continue to focus on generating steady profits while reforming our business and earnings structures to meet all stakeholder expectations.

We appreciate your continued understanding and support.

**Koji Tarutani**

Representative Director,  
Executive Vice President,  
CFO & CCO\*

\* Chief Compliance Officer



# Medium-term Management Plan Update

## Chiyoda's Revitalization Plan—Initiatives for Revitalization and the Future

The Chiyoda Group released its Medium-term Management Plan, 'Chiyoda's Revitalization Plan—Initiatives for Revitalization and the Future' in May 2019, and revised it in May 2021 to reflect changes in the business environment, the increasing drive towards a carbon-free society and the significance of emerging markets with potential for future growth.

The Group is reinforcing its business foundations for revitalization and growth to achieve its 'Vision for 2030' objectives, published as part of the revised plan. We are fortifying stable earnings by reforming our business portfolio, and creating new engineering value through DX and other initiatives in the four business domains of carbon recycling, hydrogen, energy management, and life science, to realize sustainable growth and further improve corporate value.

### Overview of Medium-term Management Plan Update

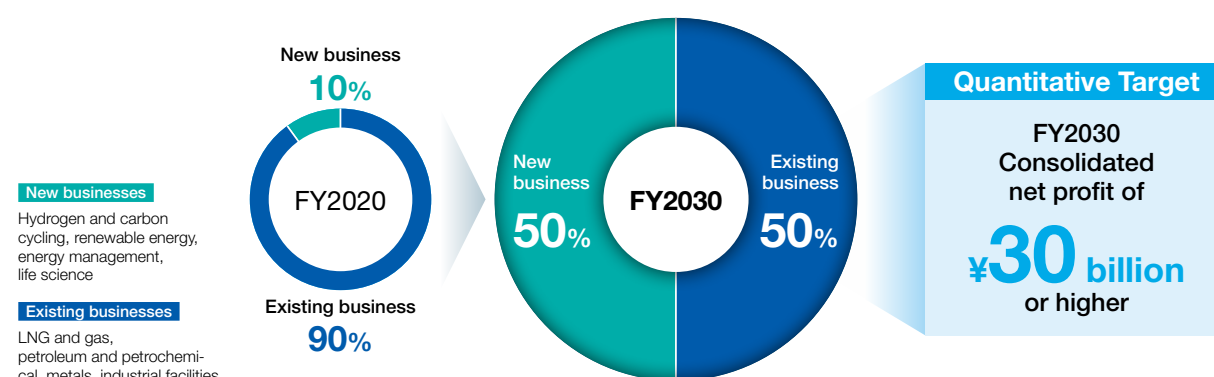
#### Vision for 2030

With our advanced technological advantage, we will accelerate the transition to a carbon-free society, including hydrogen energy, and contribute to the achievement of carbon neutrality by 2050.

We will transform our business portfolio and earnings structure by reinvigorating existing businesses while accelerating new business initiatives.

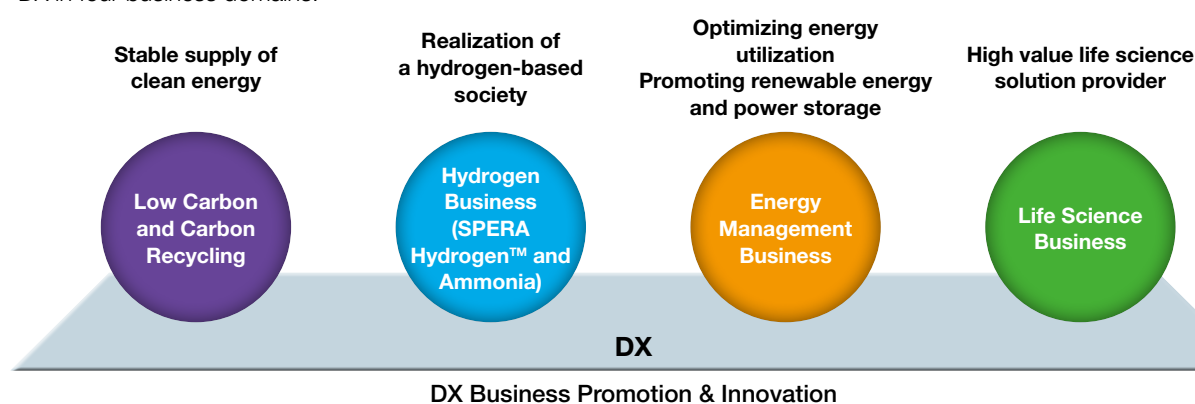
### Business Portfolio Transformation

Balanced ratio of profit contributions from existing and new businesses



### Growth Strategy: A Grand Opportunity for the Future

Chiyoda is reforming its business portfolio to create new value in engineering through initiatives and DX in four business domains.



### Recognition of the Business Environment

- Continuing spread of renewable and low-carbon energy, including LNG, as transition energy sources
- Accelerating transition to a carbon-free/hydrogen society, while providing a reliable energy supply
- Advances in life science technologies in response to growing health awareness
- Digital and AI technological innovation

### Reinforcing the Business Foundations for Revitalization and Growth

#### 1 Implementation of a Sophisticated Risk Management Structure

- ▶ An increasingly sophisticated risk management structure, implemented and operated by a Strategy & Risk Integration Division and covering all project stages, securing earnings on project orders received following release and review of the Medium-term Management Plan
- ▶ A robust order backlog of ¥1.3 trillion, including the North Field East LNG project in Qatar and a copper smelting facility in Indonesia
- ▶ Resolution of the dispute on the completed Ichthys LNG Project
- ▶ Minimizing the impacts of increasing materials, equipment, and logistics costs on projects, due to supply chain disruptions by the geopolitical crisis in the Ukraine

#### 2 Advancing EPC Execution and Management Capabilities

- ▶ Improving project management coordination and integration of EPC processes, using digital technology, through Chiyoda AWP and aligning engineering and procurement with construction and commissioning schedules throughout the entire project life cycle
- ▶ Implementing data management and real-time monitoring of profit and loss forecasts
- ▶ Strengthening project monitoring to improve earnings and promptly prevent earnings deterioration

#### 3 Expanding and Enhancing Human Resources

- ▶ Accumulation of human resource information and the introduction of a new Companywide human resource system in April 2021, which includes career categorization, improved personnel evaluation, and systematic training under a HRO system, to enhance employee career development

#### 4 Accelerating Companywide DX

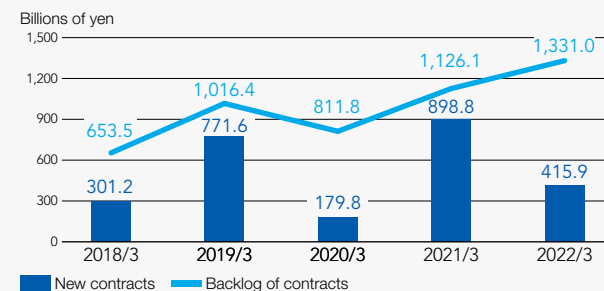
- ▶ Accelerating DX and fostering DX awareness Companywide through a newly created CDO Office
- ▶ Using DX to accelerate the development of new businesses and solutions while transforming operations

Refer to the following website for further details of Chiyoda's Medium-term Management Plan and its 2021 revision:  
<https://www.chiyodacorp.com/en/ir/managementstrategy/plan/>

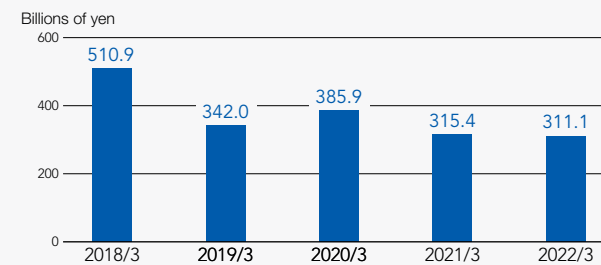
## Quantitative Results

Chiyoda is strengthening its financial position by steadily executing projects in its ¥1.3 trillion order backlog and securing profits through the stringent implementation of its comprehensive risk management processes.

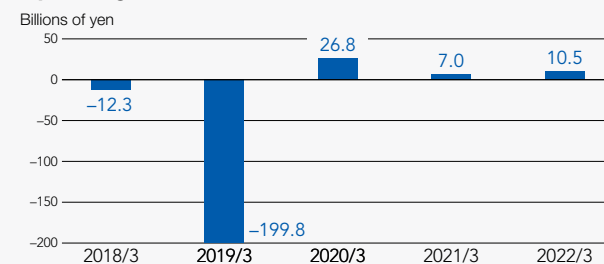
### New Contracts / Backlog of Contracts



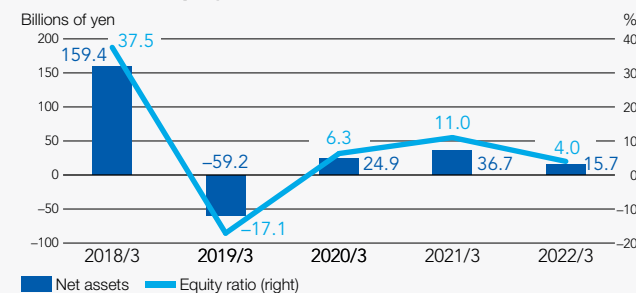
### Revenue



### Operating Income

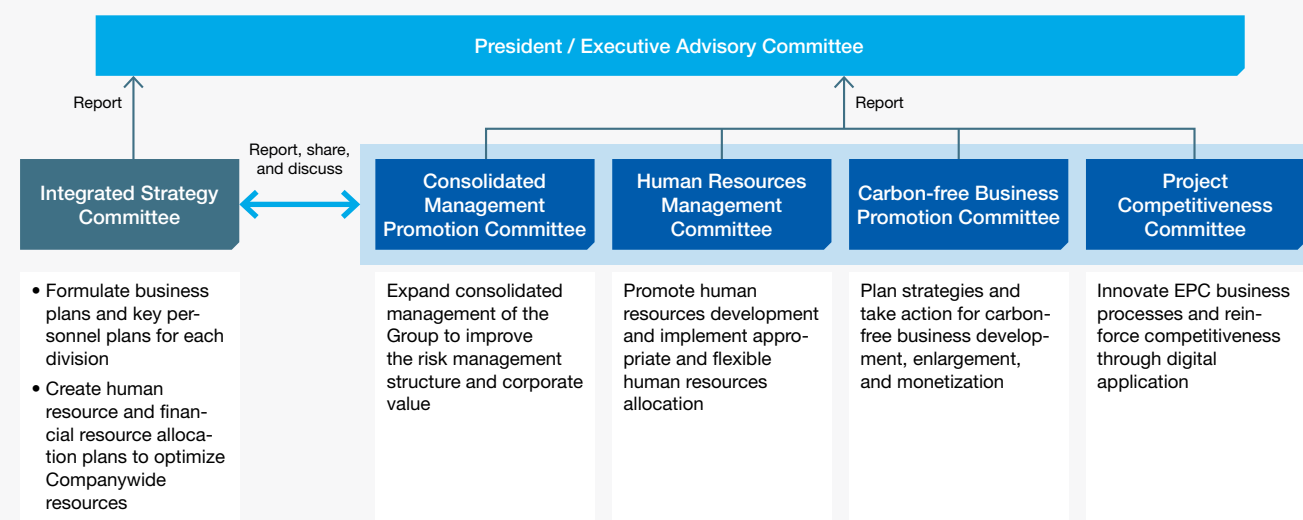


### Net Assets / Equity Ratio



## Businesses and Human Resource Committees

Chiyoda has created five Businesses Human Resources Committees, under an Executive Advisory Committee, to accelerate the realization of the Medium-term Management Plan and our 'Vision for 2030'. The committee will advance business vertically within business divisions and horizontally across the Company's organizations, enabling the Group to advance as 'One Team' through PDCA cycle's required to optimize business performance.



## Promoting Sustainability

### 1 Creation of Sustainability Committee

- Chiyoda has created a Sustainability Committee, chaired by the President acting as a CSO, to increase corporate value and sustain corporate growth.
- Sustainability is a core management value and Chiyoda is accelerating initiatives, based on our business strategies, to address sustainability issues (i.e., environment, resources, society, and the economy) from a medium to long-term perspective.

**Achieve the business portfolio transformation and quantitative target indicated in Medium-term Management Plan Update**



### 2 Carbon Neutral Declaration

- In support of a future carbon neutral society, on 1 April 2022 Chiyoda declared its commitment to becoming net carbon neutral by 2050. Based on its corporate philosophy of 'Energy and Environment in Harmony', the Chiyoda Group will continue to contribute to the realization of a carbon-free, recycling-oriented society through 'reducing' and 'recycling', leveraging its advanced technological capabilities and the ability to implement new technologies.

**~Energy and Environment in Harmony~**  
**Carbon neutrality by 2050, with engineering capabilities and innovative digital technology**

	Scopes 1 and 2	Scope 3
FY2030 Medium-term Target	50% reduction in GHG* emissions (FY2020 baseline)	Contribute to carbon recycling and the realization of a decarbonized society through 'recirculation' and 'reduction'
FY2050 Long-term Target	Net zero GHG emissions	

- Our FY2030 medium-term target for Scope 1 and 2 will be achieved through internal endeavors in our offices in Japan and by collaborating with clients, partners, and suppliers on our domestic and international construction sites.
- We will cooperate with all stakeholders to reduce GHG emissions in Scope 3, contributing to carbon-recycling and the realization of a decarbonized society by optimizing the social implementation of innovative technology.
- GHG emission reduction plans will be regularly reviewed according to technological developments, economic conditions, and policy/institutional support.

\* Greenhouse Gas



# CHIYODA GROUP'S VALUE CREATION

In this section we discuss how Chiyoda's engineering expertise continues to create value based on our ability to develop, and deliver, unique technological solutions meeting society's changing needs.

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## Our Origins

# Our Founding Philosophy

## ‘Serving Society through Technology’

Chiyoda has applied its founding philosophy of ‘Serving Society through Technology’ since its founding in 1948, expanding and increasing its engineering capabilities in parallel with society’s evolving requirements.

### Aspirations for Chiyoda’s Founding

Chiyoda was founded as an engineering company committed to resolving social issues with advanced technology over 70 years ago, following the spinoff of the engineering division from Fuji Industry Company Ltd, part of Mitsubishi Oil Co. Ltd, after the breakup of the zaibatsu conglomerates after World War II.

#### FOUNDING OBJECTIVE

**Chiyoda’s founding objective was to be an international, advanced technology company specializing in industrial equipment.**

#### SPIRIT

As a country of relatively small land area and with limited natural resources, such as natural gas, oil, etc., Japan was dependent on imported raw materials and energy to power its reconstruction following the end of World War II. Chiyoda’s founding was key to achieving Japan’s ambitious goal of constructing a high-performance industrial base, increasing productivity and strengthening export-oriented industries, to stimulate rapid economic growth through major industrial reform.

“Is this for the good of Japan, for the benefit of the country?”  
“Be a conscientious and proud employee of Chiyoda.”

Founder Akiyoshi Tamaki

As the founder of Chiyoda, Akiyoshi Tamaki developed the Company as an advanced engineering enterprise by focusing on technologies for the chemicals industry, supporting the growth of a national plant engineering industry by delivering pioneering technological solutions to its customers.

Since its founding, Chiyoda has emphasized that industrial growth must embrace the needs of the natural environment through its ‘Energy and Environment in Harmony’ philosophy.



#### Founding Management Principles

##### Improve Technical Capability

Secure customer loyalty through superior technical ability

##### Customer Service Mindset

Embed a ‘client first’ mindset in all employees and develop a service culture to drive customer satisfaction

##### Confidentiality

Prevent damage to the Company’s reputation and foster stakeholder trust by vehemently protecting against breaches of confidential information

##### Strengthen Corporate Competitiveness

Strengthen corporate competitiveness through top-level employee training and instill customer satisfaction as a core value, passionately shared by all employees

##### Positive Public Spirit

Inspire and promote a positive public-oriented corporate philosophy

1948



Founded in Shinbashi, Tokyo  
Employees: 28  
Revenue: ¥11 million

Relocated to  
Akasaka, Tokyo  
Employees: Over 2,000  
Revenue: ¥15 billion



1963

1968



Relocated to  
Tsurumi, Kanagawa  
Employees: Over 2,300  
Revenue: ¥55 billion



## The Meaning of Our Existence

### Question

**Why does the  
Chiyoda Group exist?**

### Answer

**The Chiyoda Group exists  
for the purpose of  
“Enriching society through  
engineering value.”**

### Our Spirit Spans Generations

## Positioned to Contribute to Society For Society, Energy, and the Environment

The Chiyoda Group aims to conquer the challenges facing society by applying advanced engineering expertise in its business activities; resolving issues related to climate change, energy, and health; and by delivering innovative technological solutions to realize a sustainable environment.

### ‘Declaration of Energy and Environment in Harmony’

As demonstrated by its 1972 publication ‘Legacy for the Twenty-first Century’ promoting harmony between meeting the world’s energy needs and society’s responsibilities to support a sustainable environment, Chiyoda has declared its objective of applying advanced engineering capabilities to develop innovative technology and deliver state-of-the-art solutions for the benefit of mankind.

In the 50 years since this declaration, Chiyoda has made steady progress toward attaining ‘Energy and Environment in Harmony’.



### Excerpt from ‘Legacy for the Twenty-first Century’

The oxygen in the air we subconsciously breathe as a result of photosynthesis, lakes and the flow of rivers, tree-covered mountains, the wind and dark blue seas are all a priceless heritage accumulated over billions of years.

Harmony between nature and energy embraces their coexistence, based on a relationship of complementary principles in an ecological balance, in terms of plants, animals, minerals, and microorganisms, that we must maintain for the future of mankind.

In this limitless universe, our beautiful planet is the common heritage for all humanity that we must pass into the 21st century and beyond.



## Our Strengths

## Question

How does Chiyoda contribute to society?

## Answer

Chiyoda contributes to society through its unique strengths, derived from its technological expertise accumulated and refined over more than 70 years.

## Leveraging World-Class Technological Capabilities

## Chiyoda's Four Strengths

Chiyoda continues to apply its unique competitive strengths, based on its founding principles as an integrated engineering company, to drive sustained growth.

## Strength 01

Technological Prowess and the Capability to Implement New Technologies to Support Global Energy Infrastructure

Human resources power Chiyoda's corporate value and our engineers are the driving force behind its technological capabilities.

The true value of engineering relates to the **nurturing, connection and implementation of various technological seeds** to satisfy the needs of society, industry, and our customers.

We proactively continue to refine ourselves, continuously raising our technological capabilities and our ability to implement new technologies.

## Strength 02

Proposing Solutions for Society's Challenges

All Chiyoda employees share our corporate philosophy, motivating and underpinning their activities as we deliver technological proposals to our customers. **We will continue to be a valued partner for all our customers** by providing optimum solutions to the increasingly complex challenges faced by society as a whole.

## Strength 03

Project Management that Delivers Optimum Solutions as 'One Team'

Chiyoda continues to advance as a world leading integrated engineering company, operating in over 60 countries across the globe and applying our EPC execution expertise to existing businesses and new business development and collaborating with customers, licensors, subcontractors, and suppliers as **'One Team'** to add value for all stakeholders.

## Strength 04

Building Relationships through Shared Values

Chiyoda has formed successful, robust, and long-lasting working relationships with many respected national and international organizations around the world, based on **our shared values of combining technological solutions to meet society's challenges and ensuring a sustainable environment for future generations.**

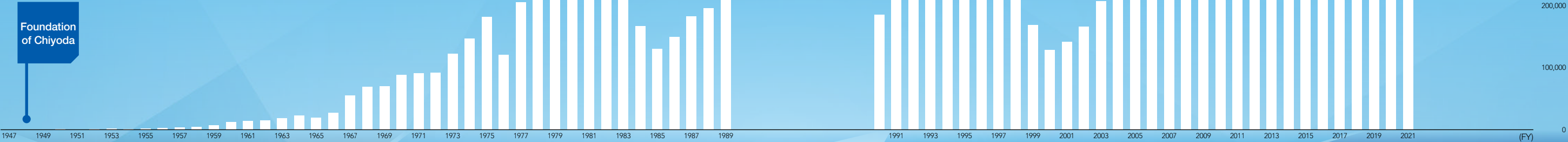
Our execution strategy of open and honest relationships with all stakeholders nurtures a respectful and trusting teamwork culture as we strive to achieve common goals.



History of Transformation and Growth

Continuing our vision of ‘serving society through technology’ and embracing the corporate philosophy of ‘Energy and Environment in Harmony’, Chiyoda has grown and developed by anticipating the changing requirements of each generation and meeting their needs. We will continue to harness our engineering expertise to support future generations in the quest for renewable sources of energy for a cleaner global environment and a sustainable society.

Revenue  
(Millions of yen)



	Founding of Chiyoda	First Transformation	Second Transformation	For the Future Growth
	1948–1970	1971–1990	1991–2018	2019–
Social Trends	<ul style="list-style-type: none"><li>Growing demand for oil</li><li>Period of high economic growth</li></ul>	<ul style="list-style-type: none"><li>Market changes resulting from the two oil crises</li><li>Accelerating overseas production as a result of the Plaza Accord (period of strong Japanese yen)</li></ul>	<ul style="list-style-type: none"><li>Increase in global demand for LNG</li><li>Increase in global needs to address climate change and environmental preservation</li></ul>	<ul style="list-style-type: none"><li>Accelerating transition towards decarbonization and carbon neutrality</li><li>Innovation of AI and digital technologies</li><li>Reinforcement of life sciences technologies</li></ul>
Business history	<ul style="list-style-type: none"><li>Contributing to Japan's industrial reconstruction through engineering</li><li>Plant engineering business supported postwar reconstruction</li></ul>	<ul style="list-style-type: none"><li>Promoting ‘Companywide internationalization’</li><li>Executing large-scale petroleum/petrifaction projects overseas</li><li>Declaration of ‘Energy and Environment in Harmony’</li><li>Take on challenge of clean energy LNG</li></ul>	<ul style="list-style-type: none"><li>Executing large-scale LNG projects overseas</li><li>Expanded into general industrial facilities and metals field</li><li>Entered renewable energy field</li></ul>	<ul style="list-style-type: none"><li>Promotion of cleaner LNG</li><li>Take on challenge of hydrogen and new energy</li><li>Promoting digital transformation</li><li>Strengthening life sciences fields</li></ul>
Environment Technology		<ul style="list-style-type: none"><li>Commenced full-scale environmental conservation</li><li>Developed CT-121® flue gas desulphurization technology</li></ul>	<ul style="list-style-type: none"><li>Developed SPERA Hydrogen™</li><li>Commenced CCS* initiatives</li></ul>	<ul style="list-style-type: none"><li>Developing technology for storing and transporting large volumes of hydrogen over long distances at ambient temperature and pressure</li></ul>

\* Carbon dioxide capture and storage

Projects



1960  
Mitsubishi Oil Co., Ltd.  
Secured order for Mizushima grassroots refinery



1969  
Fuji Oil Company, Ltd.'s  
Sodegaura Refinery  
Secured order for expansion of No. 2 plant



1977  
Secured order for the Kaduna Refinery for NNPC (Nigeria)



1984  
Constructed the Petromin-Mobil Yanbu Refinery (Saudi Arabia)



2004  
Secured orders for LNG plants for Qatargas Operating Company Limited (Plants 3 & 4)



2014  
SOL de Omura Mishima  
Secured an order for solar power generation facility



2020  
Completed demonstration of the world's first international hydrogen supply chain (Brunei-Kawasaki, Japan)

Photo courtesy of Advanced Hydrogen Energy Chain Association for technology Development (AHEAD)



2021  
Executing the large-scale North Field East LNG project in Qatar



# History of Environmental Technology and Outlook

The Chiyoda Group has developed technology with the intention of achieving 'Energy and Environment in Harmony' in the petroleum, petrochemical, and gas fields. Innovative technology, in response to the increasing drive towards a carbon neutral society, includes CO<sub>2</sub> separation and capture, carbon recycling, ammonia production, and hydrogen value chain. Development of SPERA\* Hydrogen™ (LOHC-MCH), Chiyoda's proprietary technology for the safe storage and transportation of hydrogen, was successfully achieved in 2014, having commenced in 2002, and is now under further development for commercialization.

\* A Latin word for "hope"

## History of Environmental Technology Development

1948  
Founding

### Main environment-related technology development

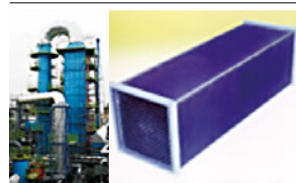
Wet limestone-gypsum flue gas desulfurization system  
**CT-121®**



CO<sub>2</sub> reforming catalyst  
**CT-CO<sub>2</sub>AR®**



Catalytic oxidation method flue gas desulfurization catalyst  
**CASOX**



2002  
Commenced  
development of  
dehydrogenation  
catalysts

Developed novel catalysts for dehydrogenation in 2011  
**SPERA Hydrogen™ (LOHC-MCH)**



For kerosene  
Hydrodesulfurization catalyst  
**CT-HBT®**



(1)  
Commercialization  
of SPERA  
Hydrogen™  
(LOHC-MCH)

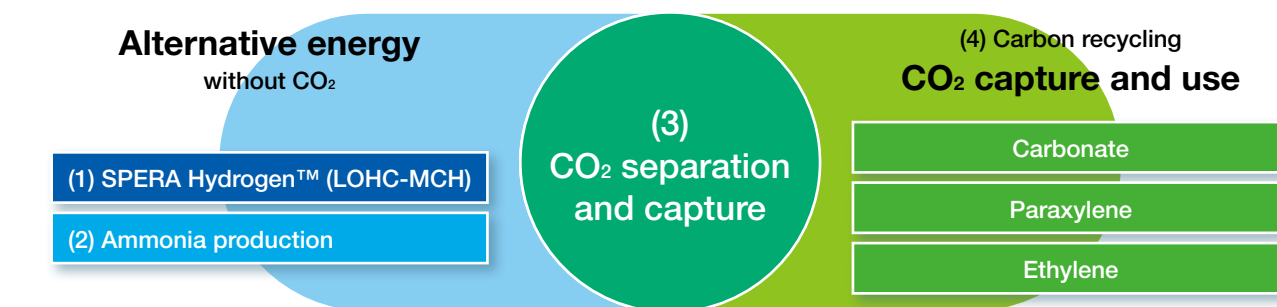
(2)  
Development of  
new ammonia  
production  
technology

(3)  
Development of  
new technology for  
separating and  
capturing CO<sub>2</sub>

(4)  
Development of  
new technology for  
carbon recycling



## Environmental Technology Development Philosophy to Become Carbon Neutral



### (1) SPERA Hydrogen™ (LOHC-MCH)

The Chiyoda Group developed the SPERA Hydrogen (LOHC-MCH) system to support the large-scale storage and transport of hydrogen.

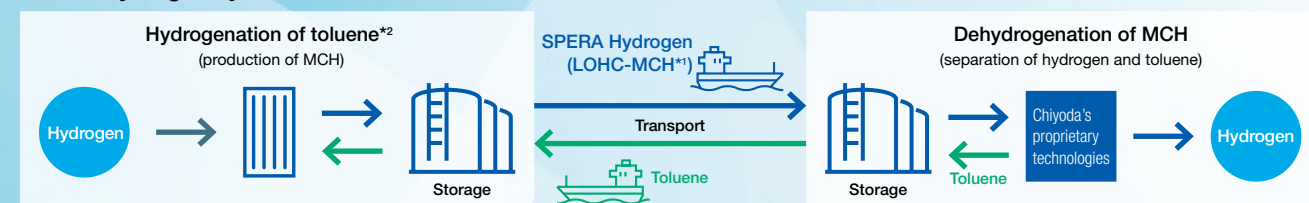
#### FEATURES

- Liquid under ambient conditions
- Safe and chemically stable
- Can be use with existing standards and equipment
- Can technologically be used at commercial scale

#### VALUE

- Economical and safe hydrogen chain
- Realistic solution for hydrogen introduction
- Capability of energy buffer
- Can be quickly commercialized

### SPERA Hydrogen System



\*1 Methylcyclohexane (MCH) is produced from toluene with hydrogen that is in a liquid state and can be handled under ambient conditions. It is widely used in many fields as products, including as a pharmaceutical agent and a solvent for correction fluids, for example.

\*2 A chemical also used in paint effluents. After dehydrogenation, toluene can be returned to the supply site and chemically combined with hydrogen to produce MCH again for the transport of hydrogen.

### (2) Ammonia production

Chiyoda is developing and verifying domestic production technologies (low-temperature, low-pressure processes) that reduce production costs with the objective of building a supply chain for expanding the use of ammonia as a fuel. (NEDO\* Green Innovation Fund Project)

\* New Energy and Industrial Technology Development Organization

#### Process development and technology verification

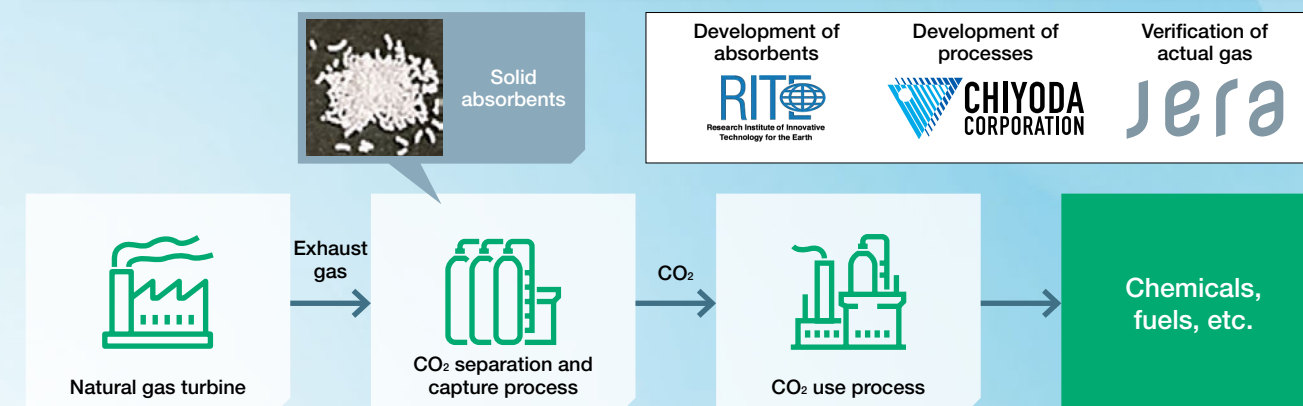


Industry-academia collaborative development team (three partners)



### (3) CO<sub>2</sub> separation and capture

Chiyoda is developing and verifying domestic production technologies centered on solid absorbents able to reduce the cost of low-density CO<sub>2</sub> separation and capture from gas turbine exhaust gases with the objective of becoming carbon neutral while using natural gas. (NEDO Green Innovation Fund Project)

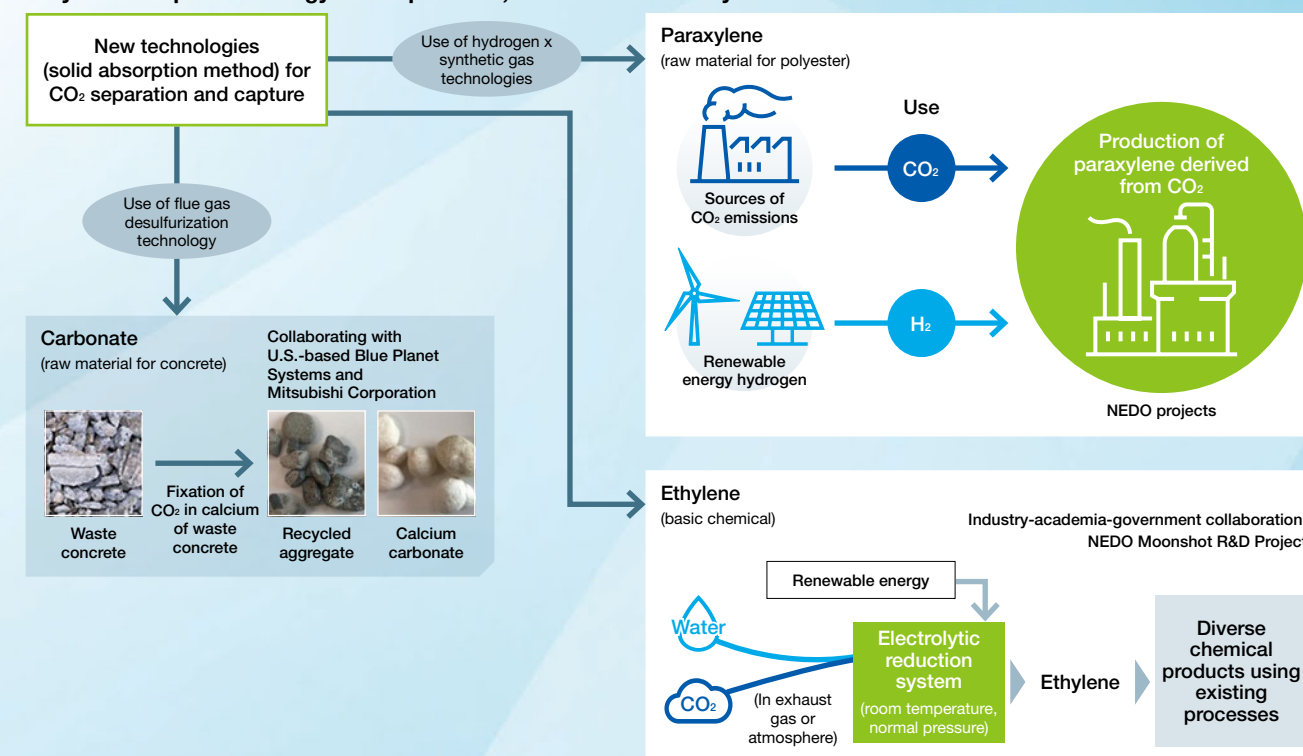


### (4) Carbon recycling (Carbonate, paraxylene, ethylene)

Chiyoda is developing technologies for carbon recycling, leveraging Group technologies and experience, as well as its familiarity with CCUS\*.

\* Abbreviation for Carbon dioxide Capture, Utilization and Storage. Capture, effective use, and storage of carbon dioxide

### Chiyoda Group's technology and experience, as well as familiarity with CCUS



# The Chiyoda Group's Value Creation Process

The Chiyoda Group has clearly identified the social issues it must address and has made them a priority management issue as a comprehensive engineering company with a prominent presence in the energy industry.

Leveraging its strengths accumulated through business cycles since the Company's founding, Chiyoda realizes sustained growth while creating new value that helps solve social issues.

**Our Priority Management Issues**  
(Chiyoda's SDGs Materiality)

**SUSTAINABLE DEVELOPMENT GOALS**



**AFFORDABLE AND CLEAN ENERGY**



**INDUSTRY, INNOVATION AND INFRASTRUCTURE**



**CLIMATE ACTION**

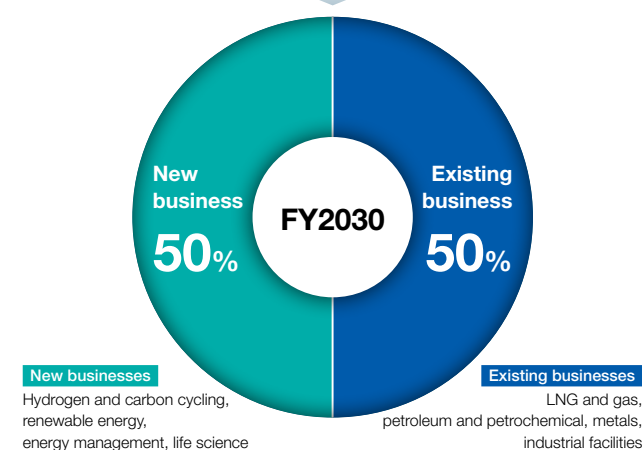
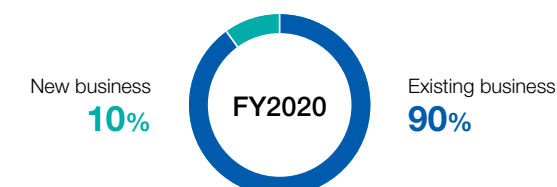
## Cycle of value creation leveraging our accumulated strengths



**Value Created**

## Our Vision for 2030

**Future of engineering**  
**Create new value in engineering**



## Social value

**Stable supply of clean energy**

**Early realization of hydrogen-based society and carbon neutrality**

**Contribute to healthy activities of people**



# SUSTAINABILITY STORY

In this section, we introduce our initiatives to realize the sustainable growth of the Chiyoda Group and a sustainable society.

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# Chiyoda Group's Vision for Sustainability: Realizing a Carbon-free and Recycling Society

The Chiyoda Group has contributed to a sustainable society under a corporate philosophy of 'Energy and Environment in Harmony' since its founding as an integrated engineering company in 1948. In response to the increasing global drive to combat climate change, the Group's mission is to combine its engineering and technology development expertise to realize a carbon-free, recycling society. In this roundtable discussion, junior and mid-career employees debate how we could further support the realization of such a society and the future of our Company, with Mr. Sato, an advisor on the Company's Sustainability Committee.



**“It is necessary to decarbonize while ensuring a reliable energy supply.”**

Tsutomu Sato

## Introduction

**Sato** Climate change is having an undeniably adverse impact on the human race and natural disasters such as heat waves, floods, typhoons, wildfires, and drought are becoming more frequent.

In response, the international community has established goals to achieve net zero emissions of greenhouse gases this century, such as the Paris Agreement signed in 2015 which advocates maintaining the average rise in global temperatures since the industrial revolution to less than 2°C, and ideally below 1.5°C. The Japanese government has declared its objective of becoming carbon neutral by 2050 as countries around the world increase their efforts to decarbonize. More than 8,000 private-sector companies, institutional investors, and higher education institutions are now engaged in private-sector initiatives under the United Nation's 'Race to Zero' campaign, and an increasing number of financial institutions are calling for net zero initiatives at companies in which they invest as the decarbonization momentum increases.

Global temperature increase is an urgent issue and decarbonization must advance accordingly, while maintaining a reliable supply of energy to support social and economic activities. This will be challenging and we should discuss how Chiyoda can support this objective and its decarbonization and recycling vision for the future, while ensuring a reliable energy supply.

## Decarbonization while Ensuring a Reliable Energy Supply with LNG

**Tanaka** It is important to optimize decarbonization and energy supply solutions from short, medium, and long-term perspectives. While decarbonizing energy is the ultimate goal, renewable energy alone is unlikely to meet demand. Renewable energy including hydrogen, ammonia, and other forms of clean energy will take time and involve substantial sums of money to develop and implement technologies in society and upgrade infrastructure. In the short and medium term, a realistic approach will be to ensure a reliable supply using traditional energy sources and, from a long-term standpoint, reduce, capture, and store CO<sub>2</sub> emitted from them while transitioning to renewable and clean energy.

As a Chiyoda core business, LNG is an essential source of energy as we progress towards decarbonization because it is reliable and has relatively low environmental impact. I am currently involved with the Qatar LNG project that reduces CO<sub>2</sub> emissions through carbon capture, utilization, and storage technology and will support a stable energy supply when complete.

The movement towards decarbonization is also pivotal to our Company's sustainability and I will create conditions whereby all Chiyoda colleagues can explore new technologies, as we tackle global challenges and successfully complete projects that generate profit.

**“LNG is an extremely important transitional energy source on the path to decarbonization.”**

Yohei Tanaka







**“I will leverage our Company’s strengths to contribute to offshore wind power generation in Japan.”**

Ryu Tange

#### Supporting the Transition to Renewable Energy with Offshore Wind Power

**Tange** There were relatively few renewable energy projects when I joined Chiyoda in 2009 but, in line with the shift towards decarbonization over the past 10 years, we have aggressively developed new business in the renewable energy, power generation, and storage fields, including solar power generation, solar thermal generation, biomass power generation, storage systems, and offshore wind power generation.

Offshore wind power generation is expected to play a major role in the transition to renewable energy as a core power source, and national and international companies are planning to develop this market around Japan. However, projects can take a decade from commercial evaluation to completion and operation and a long-term view is required to increase the weighting of renewable energy in the energy mix.

Although offshore wind power generation is still a relatively small market in Japan, Chiyoda receives orders from power generation companies to conduct feasibility studies, basic engineering work and compile budget estimates. Offshore wind power requires both civil engineering and electricity generating proficiency and, although these may not be Chiyoda’s main areas of expertise, I believe we can transfer strengths from our core disciplines into these fields. As we incorporate advanced technologies from Europe, it will be essential to adapt these technologies to the environmental conditions and regulations unique to Japan and Chiyoda is in a good position to partner with European firms

**“I wish to create new businesses while redefining the value of the Company’s diverse decarbonization technologies.”**

Hiroyuki Sekiguchi

and other foreign companies to bring European technologies here. These projects are huge and require advanced engineering and construction technologies. Chiyoda’s project management capabilities, accumulated over many years in the petroleum, petrochemical, and gas fields, will be invaluable for their successful completion.

In conversations with clients, I can sense their expectations of Chiyoda as an engineering company and I will leverage our strengths as we contribute to offshore wind power generation in Japan.

#### Delivering Optimal Decarbonization Solutions to Clients from a Multifaceted Approach

**Sekiguchi** In the Project GX Strategy & Development Department, we are developing strategies for new overseas projects and to establish decarbonization as a new business pillar. Because the different decarbonization methods have their own unique advantages and disadvantages and implementing them raises different challenges, a solid understanding of the features of each method is required to evaluate each one while, considering their applicability to the industries and companies using them. Understanding unique national and regional traits when considering overseas projects is fundamental. For example, we envision the expansion of CCS\* and the introduction of hydrogen and ammonia in countries that use LNG as a primary fuel, whereas switching to LNG is the next step towards decarbonization in countries that use a large proportion of coal. Different countries and regions have dissimilar levels of



**“Chiyoda can contribute to society by leveraging its abundant technological expertise.”**

Eiji Kawai

natural energy resources, such as solar and wind power, and varying policies and priorities for decarbonization is necessary to select the most ideal solution, with an understanding of the unique challenges faced by native companies and people.

Our technological capabilities are also key for delivering optimal solutions to the client and we are currently evaluating the company’s CCS technologies, of which there are many. I wish to create new businesses, while contributing to the decarbonization of society, by delivering optimal solutions to our clients and redefining the value of the Company’s diverse decarbonization technologies.

\* Carbon Capture and Storage.

**Sato** Everyone’s experience in the energy field and your aspirations for decarbonization reinforces the increasing momentum towards energy transition.

Energy producing equipment is durable and can last for decades. It is therefore essential to rapidly commercialize technologies for reducing, capturing, and reusing CO<sub>2</sub> emissions for installation into existing facilities. I also look forward to observing steady progress towards renewable sources of energy, such as offshore wind power. As an engineering company, Chiyoda must utilize its technological capabilities even more effectively, and leverage existing technologies while accepting new challenges.

#### Supporting Client Decarbonization Client with our Technological Capabilities and Ability to Implement Technologies in Society

**Kawai** There are four key technology issues for capturing and reusing CO<sub>2</sub>, producing hydrogen and manufacturing carbon neutral products as we progress towards decarbonization and carbon recycling. First is efficiently capturing CO<sub>2</sub> from low-density gases that contain impurities; second is stabilizing the fluctuating supply of green hydrogen for delivery to downstream facilities; third is efficiently separating byproducts containing product material for downstream delivery; and fourth is efficient low-cost production while



optimizing the overall system. However, these issues are not insurmountable. Chiyoda’s strengths derive from: (1) its technological capabilities from combining existing and new technologies based on comprehensive and fair evaluation, while compensating for variances in the physical nature of materials, and (2) its project execution capabilities, derived from business plans, to efficiently manufacture products.

Chiyoda contributes by developing proprietary technologies and through new technologies jointly developed with national and international partners. This includes the integration of digital technologies into process technologies, such as next-generation fuel production and chemical products such as paraxylene and ethylene produced from CO<sub>2</sub> and green hydrogen. This also encompasses virtual power plants, optimizing electrical power and heat including solid absorbents that efficiently absorb low-density CO<sub>2</sub>, and SPERA Hydrogen, Chiyoda’s proprietary hydrogen technology.

In addition to the optimal deployment of existing and new technologies, Chiyoda can leverage its experience of executing projects during all stages of their life cycle, from feasibility studies to operation and maintenance, to support clients achieve their decarbonization and carbon recycling objectives.

#### Optimizing the Energy Value Chain with Digital Technologies

**Furuichi** As Mr Kawai discussed, and in my experience of using digital technologies to support facility operations, I think Chiyoda is able to accomplish so much because it can combine digital technology capabilities with engineering.

There are many stakeholders in the wide variety of clean energy sources as the world transitions to a decarbonized society and, as the energy value chain becomes more complex, there will be a larger interconnected impact. The ripples from an unplanned event affect the entire value chain, and effective risk management is essential to comprehensively assess and mitigate risks that may influence schedules and costs. Such a process can only be possible





**“I aim to apply my experience in EPC projects in using digital technologies in the field of energy supply.”**

Kazuya Furuichi

by applying lessons learned from many years of EPC project experience. I hope to facilitate the use of digital technology on energy projects to enhance the Company's project engineering and execution management capabilities. We are aiming to optimize our operations while ensuring resilience by monitoring risks and opportunities throughout the entire energy value chain and applicable systems. The expected role of digital technology includes the collection and visualization of real-time data that facilitates adjustments and decisions which, when combined with experience, enables the creation of indicators and future projections to manage overall operations to the satisfaction of all parties.

Chiyoda will continue supporting client business transformation through client new technologies as their industry evolves through decarbonization and carbon recycling, and we will continue developing close and enduring working relationships with our clients as we resolve issues as 'One Team'. I aim to create systems and develop a corporate culture that continues to train teams and human resources to identify core issues and their resolution. Working together as 'One Team', we will continue to progress as an

engineering company, focusing on AI and digital technologies.

#### Reducing CO<sub>2</sub> Emissions in Procurement by Improving Transportation Efficiency

**Goto** I am responsible for the transportation of procured goods in the Procurement Department and my approach to decarbonization is slightly different. While ensuring safety and quality, procured equipment and materials must be delivered to worksites when required to avoid schedule impacts, and increasing the transportation efficiency of procured equipment and materials also reduces CO<sub>2</sub> emissions. For example, increasing the load ratio by more efficiently loading products into containers to maximize a ship's cargo, reduces the number of trips from the loading site to the ship and minimizes their CO<sub>2</sub> emissions. I ensure that all project personnel consider the size of equipment and materials at the engineering stage, including packaging specifications, to increase transportation efficiency.

**“I work with project team members to increase load ratios.”**

Eriko Goto

Using digital technology to ensure that all the parties involved in the efficient procurement and transportation of materials and equipment receive real-time information, improves the efficiency and quality of transportation.

Today's discussion was an opportunity to reflect on sustainability initiatives in transportation. Our attention is naturally drawn to impending and immediate delivery schedules and costs, but I intend to use the Company's transportation expertise and experience to initiate improvements in sustainability.

**Sato** I now have a greater understanding of the significant potential of an engineering company like Chiyoda, given the many new technologies, such as hydrogen, next-generation energy, virtual power plants, and AI. Decarbonization should be incorporated into the entire supply chain, and advancing it at the procurement stage makes a substantial contribution.

Chiyoda has earned the trust of large international clients through its technological capabilities, track record over many years client and successful execution of projects using



superior management capabilities. While responding to changes in the business environment, Chiyoda should maintain these competitive strengths and, by exploiting synergies, the Company will be able to deliver innovative solutions to clients and add value to society. Developing new businesses on the path to decarbonization comes with uncertainties in terms of technologies, markets, and regulatory restrictions. I look forward to working with everyone in exploring opportunities for the Chiyoda Group to grow and achieve future goals, while contributing to decarbonization in society.



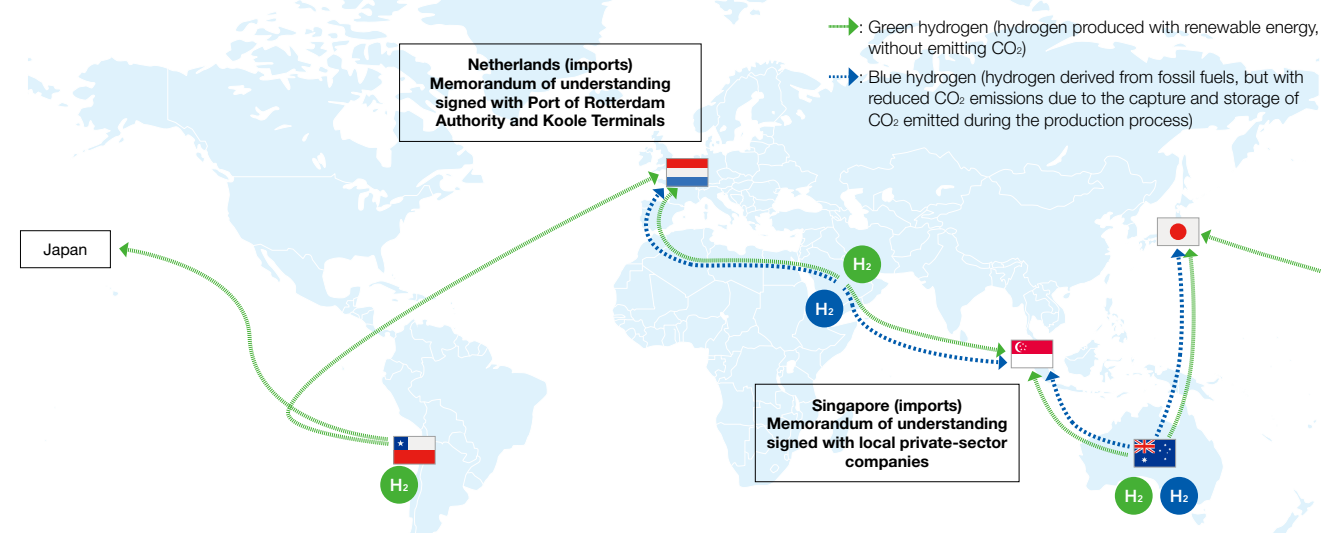
World's first marine transportation of hydrogen carrier (MCH\*)  
using a chemical tanker (February 2022)

## SPECIAL FEATURE

## Aiming for a Carbon-free Society SPERA Hydrogen™ (LOHC-MCH)— Progressing from the Demonstration Stage to Importing Hydrogen on a Commercial Scale

Chiyoda successfully completed the world's first global hydrogen supply chain demonstration project in 2020, verifying the feasibility of using SPERA Hydrogen (LOHC-MCH) technology to store and transport hydrogen on a commercial scale. Chiyoda is currently assessing the conceptual engineering of further global hydrogen supply chains with partners around the world to facilitate the worldwide commercial use of hydrogen later this decade.

### SPERA Hydrogen (LOHC-MCH) Connects a Global Hydrogen Supply Chain

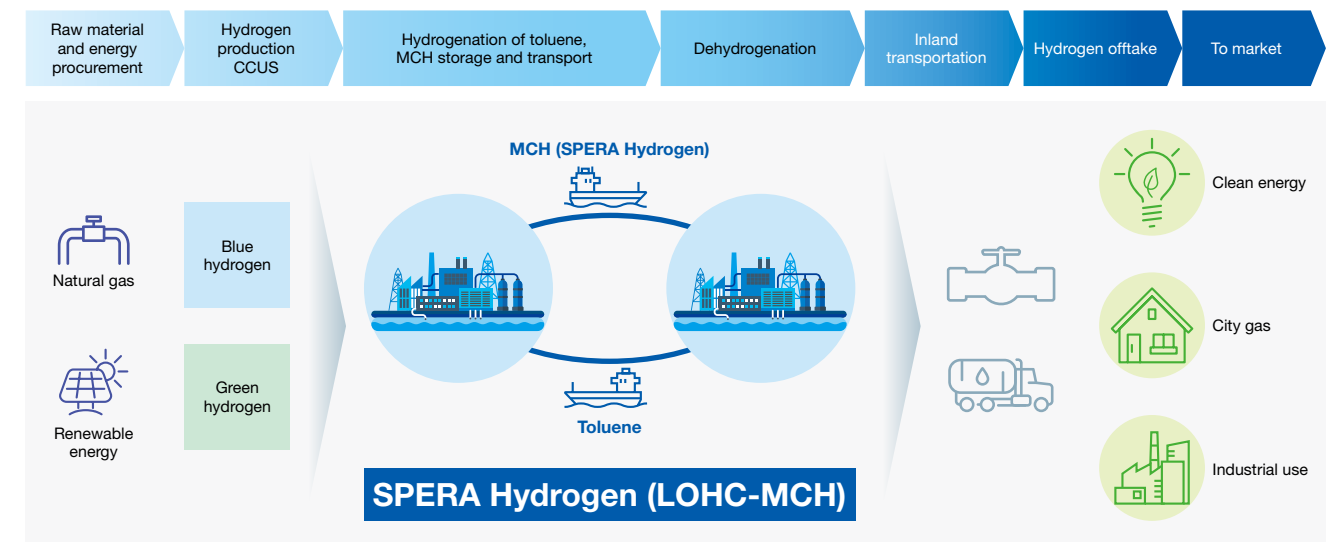


Collaborative partnerships between major international corporations on both the supply and demand side is a pre-requisite for the construction of global hydrogen supply chains. Chiyoda is cooperating with renewable energy providers, hydrogen production companies, port-related and infrastructure companies, heavy industry players, and relevant government institutions worldwide.

\* Methylcyclohexane (MCH) is produced from toluene with hydrogen that is in a liquid state and can be handled under ambient conditions. It is widely used in many fields as products, including as a pharmaceutical agent and a solvent for correction fluids, for example.

\* Liquid Organic Hydrogen Carrier (LOHC) is a method for storing and transporting hydrogen, using MCH as one of the hydrogen carriers.

### Development of a Supply Chain Business for Commercial Demonstration in Singapore



Levering on its successful track record as a leading integrated engineering company, Chiyoda is collaborating with Mitsubishi Corporation and local energy and utility companies to establish a commercial hydrogen import chain in Singapore.

### Expansion into Europe

In aiming to import 10 million tons of hydrogen by 2030, The Netherlands intends to become the gateway for importing hydrogen into Europe. Chiyoda's goal is to use SPERA Hydrogen (LOHC-MCH) technology to construct a hydrogen supply chain into Europe, transporting hydrogen from around the world to port areas and inland industrial districts, in collaboration with port authorities, terminal operators, and related government agencies.

### German Chancellor Olaf Scholz Visits Chiyoda's Dehydrogenation Demonstration Plant

In April 2022, German Chancellor Olaf Scholz visited a dehydrogenation plant at TOA OIL's Keihin Refinery, owned by the Advanced Hydrogen Energy chain Association for technology Development (AHEAD) and operated by Chiyoda using our proprietary SPERA Hydrogen (LOHC-MCH) technology. Discussions included our world first international hydrogen supply chain demonstration project completed in 2020, the characteristics of hydrogen storage and transportation technology, and our initiatives for the introduction of hydrogen in Europe.



Chairman & President Sakakida (left) and Senior Vice President Iuchi (right) explain the facility to Chancellor Scholz (center)

© Bundesregierung / Bergmann

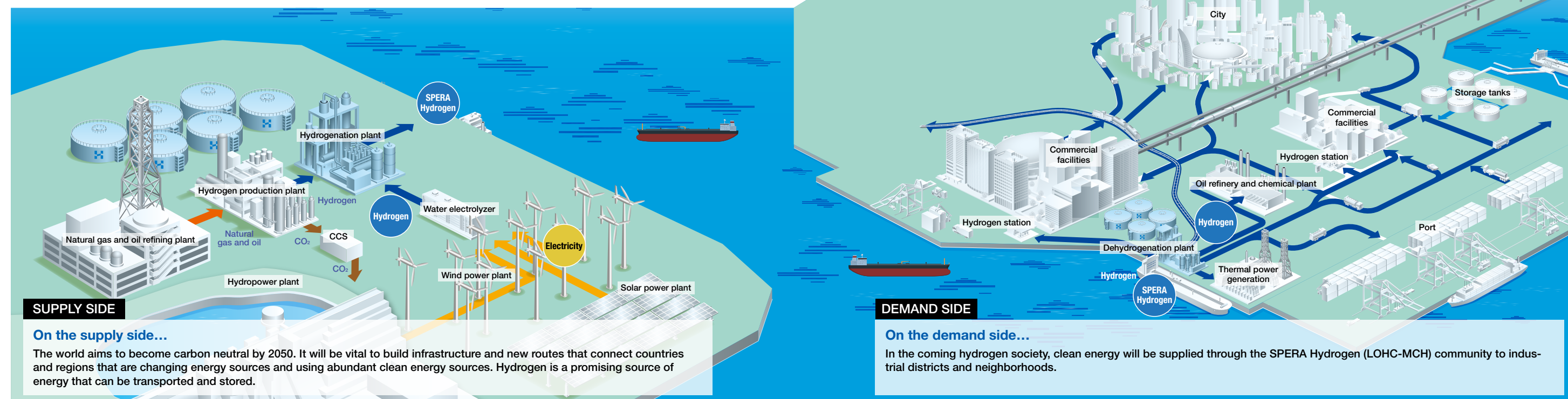


Group picture with Chancellor Scholz (fourth from the left)



## A Future SPERA Hydrogen (LOHC-MCH) Community

Chiyoda supports the realization of a hydrogen society, centered on our unique SPERA Hydrogen (LOHC-MCH) technology to realize global supply chains for the reliable supply of clean energy on a commercial scale.



### Simulation of how to use SPERA Hydrogen (LOHC-MCH) (demand side)

#### Marine transportation

- Marine transportation using existing tankers
- Hydrogen ship with on-board LOHC-MCH system

#### Ports

- LOHC-MCH receiving terminals
- Ports as hydrogen supply centers, facilitating dehydrogenation of LOHC-MCH for and distribution to customers
- Cleaner ports (storage facilities, tankers etc.)

#### Power generation

- Cleaner power generation fuel
- Effective use of heat from power generation facilities and fuel cells

#### Steel manufacturing

- Supplying hydrogen to steel manufacturing plants

#### Transport

- Hydrogen stations for large-scale transport vehicles (FCV)
- Distributed hydrogen supply for regional transport demand

#### Petroleum and chemicals

- LOHC-MCH storage and transportation utilizing existing infrastructure
- Hydrogen supply to oil refineries and downstream customers

#### Distributed energy and cogeneration

- On-site hydrogen generation
- Heat from hydrogen boilers

#### Energy storage

- Large-scale storage and stabilization of renewable energy
- National stockpiles and strategic energy stockpile bases

#### Others

- Cleaner hydrogen as CCU raw material
- Power supply (power plants, etc.)

#### Message from an Expert

### “Hope (SPERA)” for Realizing a Hydrogen Society

In the natural world, carbon stores and carries hydrogen in water, similar to carbon being a hydrocarbon carrier for fossil fuels. In a carbon-free society with renewable energy supply chains, SPERA Hydrogen (LOHC-MCH) technology converts hydrogen energy into a liquid, transportable at ambient temperature and pressure. As an alternative to carbon, SPERA Hydrogen (LOHC-MCH) uses toluene as carbon in the natural world. It truly embodies the meaning of “hope.”

We are progressing towards a hydrogen society which was, until recently, only a dream. With “hope (SPERA),” I will facilitate collaboration in hydrogen between industry, academia, and government, from basic technologies to implementation in society. The comprehensive agreement that Yokohama National University signed with Chiyoda in May 2022 will further support this endeavor.



**Shigenori Mitsushima**

Professor, Graduate School of Engineering,  
Yokohama National University  
Principal Researcher, Chemistry of  
Hydrogen Energy Conversion Research Unit,  
Institute of Advanced Sciences  
Leader of Green Hydrogen Research Laboratory,  
Advanced Chemical Energy Research Center  
President, Hydrogen Energy Systems Society  
of Japan

#### Message from an Expert

### SPERA (Hope) Hydrogen Saves the World

Executive Director Birol of the International Energy Agency (IEA) stated that the world is experiencing its first energy crisis, because of rising prices for oil, natural gas, and coal due to the geopolitical crisis in Ukraine. Although countries around the globe are endeavoring to secure energy, the IEA has also stated that the worst is yet to come, referring to the ‘IEA Shock’, as outlined in its Net Zero 2050 scenario. Demand for oil and gas is nearing a peak and unless action is taken, heavy machinery, chemicals industries, and thermal power plants, which rely on fossil fuels, will cease to function and clean hydrogen will be the only available option. The IEA was created following the Oil Shock and has a duty to strategically stockpile petroleum, but in the Net Zero world, it will probably stockpile 1.2 billion barrels of SPERA Hydrogen (LOHC-MCH), an enormous amount.



**Nobuo Tanaka**

Chair, the Steering Committee for Innovation  
for Cool Earth Forum (ICEF)  
Former Executive Director, International  
Energy Agency (IEA)  
CEO, Tanaka Global Inc.



Illustration of completed facility  
Courtesy of Qatar Energy

## SPECIAL FEATURE

# The Challenge for Cleaner LNG Plants for a Stable LNG Supply

~The North Field East LNG Project in Qatar~

## LNG Production Facility Construction Project in North Field East of Qatar

Chiyoda, in joint venture with Technip Energies\* (CTJV), is executing the engineering, procurement and construction (EPC) phase of the North Field East LNG project (NFE) for Qatargas (the Client) in Qatar, with completion in 2027. The project comprises four LNG trains of eight million tons per annum capacity each and is the largest LNG plant ever to be constructed.

A year after commencement, the geopolitical crisis in Ukraine caused the natural gas price in Europe to surge as LNG demand dramatically increased. The global transition to cleaner energy by reducing greenhouse gas emissions also continues in parallel, increasing the need to minimize CO<sub>2</sub> from LNG plants.

Chiyoda is executing the NFE mega LNG project to resolve these two global issues.

\* Technip Energies is a leading Engineering & Technology global company for the energy transition with more than 60 years' experience.

### Message from the Project Manager in Yokohama office

#### 'One Step Further' to drive the project forward.

As a project motto, 'One Step Further' illustrates how CTJV is using new values for a 'Better Tomorrow' and applying past experience to advance into the future.

Through its 'One Step Further' philosophy, CTJV is conquering unique global challenges, such as COVID-19 and the geopolitical crisis in Ukraine, to realize NFE. By applying effective tripolar execution management, integrating global supply chains, implementing an effective AWP system, utilizing valuable 'Lessons Learned,' and applying state-of-the-art CO<sub>2</sub> emission reduction technology, CTJV is delivering a world-class LNG facility, the largest of its kind ever constructed.

**Kazunori Sugimura**  
Project Manager

#### Profile

Mr. Kazunori Sugimura is the NFE Project Manager based in Yokohama. Having joined Chiyoda in 1995, he worked as a rotating equipment engineer for 12 years, being responsible for equipment during the Front-End Engineering Design (FEED) and EPC phases of LNG projects worldwide, including Qatar. He was subsequently transferred to the Project Division and was engaged on projects overseas before being promoted to FEED Engineering Manager on a floating LNG plant for a major oil company. His extensive project management experience has been accumulated in the oil and gas industry.

## Our Vision for Project Execution

The Chiyoda group has been involved in the construction of 14 trains of LNG plant in Qatar and finished EPC work on 12 of these trains. Maximizing the knowledge it has gained from this abundance of experience, Chiyoda is closely collaborating with customers, licensors, and subcontractors to successfully complete this national project while using the latest in digital technologies.

### 01

#### Tripolar Operation

By severely restricting international travel, COVID-19 affected the project from execution commencement and CTJV and the Client agreed that the CTJV Project Directorate would be based in Doha. Chiyoda applies cutting-edge IT technology to implement an efficient 'Best for Project' tripolar execution management philosophy, connecting Chiyoda's Yokohama office, Technip Energies Paris office, and the Doha project office.

By effectively exploiting time differences between office locations for rapid decision making, the project is proceeding on schedule under a 'One Team' project philosophy.

### 02

#### Global Supply Chains

Chiyoda and Technip Energies are successfully combining their respective global supply chains to maintain the project schedule since EPC award in May 2021, exacerbated by the geopolitical crisis in Ukraine, without compromising quality or schedule. All major equipment has been procured as of May 2022.

### 03

#### Enhancing EPC Execution Management with Chiyoda AWP\*

Chiyoda AWP is being applied to integrate engineering design, material and equipment procurement, and construction delivery schedules to effectively manage the project, which will employ over 45,000 workers at its peak and involves the delivery and installation of large volumes of materials and equipment.

The system utilizes digital technology to package and align engineering, procurement, construction, and commissioning to minimize 'rework' on site and NFE's civil engineering work, such as underground piping, is progressing on schedule using Chiyoda AWP.

\* Advanced Work Packaging (AWP) is an 'in-house' developed digital integrated management tool, implemented throughout a project's entire life cycle, from initial planning to completion and handover, to optimize the EPC process.

### 04

#### Lessons Learned

Six similarly large LNG trains, all designed and constructed by CTJV from 2004 to 2010, are currently in operation in Qatar. This enables the joint venture to use valuable 'Lessons Learned' from previous project experience in a stringent and comprehensive risk management program that successfully identifies, evaluates, and mitigates project execution risks.

### 05

#### Capture and Storage of CO<sub>2</sub>

The NFE project encompasses CO<sub>2</sub> capture and storage technology and stores CO<sub>2</sub>, separated from natural gas by Acid Gas Removal (AGR), underground. By successfully capturing and storing CO<sub>2</sub> that would otherwise be released into the air, emissions are reduced by more than 25% compared to existing LNG plants.



Groundbreaking Ceremony: President Joko Widodo (center)  
Courtesy of PT. Freeport Indonesia

SPECIAL FEATURE

# A Challenge! A Stable Supply of Copper to Support a Carbon-free Society.

## Construction of One of the World's Largest Copper Smelting Plants

Copper is widely used in electrical wiring, electric vehicles, storage batteries, motors, and other electrical equipment due to its superior conductivity compared to other metals and will be an essential material in a carbon-free society.

To meet the expected increase in copper demand, Chiyoda is in the execution phase of a copper smelting plant for PT Freeport Indonesia (PTFI) in the Gresik District of Indonesia, inaugurated by President Joko Widodo in a groundbreaking ceremony in October 2021 and due for completion due in 2024. The plant will process copper ore from PTFI's Grasberg Mine, one of the world's largest gold and copper mines and, with a production capacity of 480,000 tons per annum, includes one of the world's largest single line production capacities and features advanced environmental capabilities to meet standards set by the International Finance Corporation.

### Message from the Project Director

## Aiming for Success with Close Relationships Based on Trust

Key customer project personnel have been embedded in Chiyoda's project management team at our global headquarters for over seven years, collaborating in discussions covering the environment, licensor selection, constructability etc, since the initial planning stage. This open, honest, and transparent execution philosophy ensures a win-win 'Best for Project' outcome for all stakeholders. The three participants (including licensor) function as 'One Team', supported by the top management from each organization to reinforce our working relationship at the most senior level, to successfully deliver this world class project.

**Kenichi Ishiguro**  
Project Director

**Profile:**  
Since his role as Engineering Manager for Mitsubishi Materials Corporation on the copper smelting project in Indonesia from 1996 to 1998, Mr. Ishiguro has successfully completed construction projects in Japan and around the world for Chiyoda, including titanium and nickel smelting plants. Mr. Ishiguro has participated in rare earth metal resource information gathering, the development of neodymium magnet production methods and is essential in Chiyoda's pivotal role in nonferrous metal smelting.

## Successful Completion of Project

As a leading integrated engineering contractor with an extensive track-record of completing EPC projects across the globe, Chiyoda is applying its 'One Team' collaborative approach to the project, cooperating with the customer, the licensor, and subcontractors to leverage the latest digital technologies and successfully deliver a state-of-the-art plant.

### 01

#### Chiyoda's Track Record in Indonesia

Chiyoda's unrivalled track-record in Indonesia since 1980 includes the successful delivery of diverse projects across fields such as infrastructure, general industry, and energy-related industries including oil and gas, petrochemical and LNG. Chiyoda also continues to maintain the first, and hitherto only, large Indonesian copper smelting plant processing ore from the Grasberg Mine, constructed by Chiyoda in the late 1990's.

### 03

#### Strengthening Project Execution through Chiyoda AWP

As illustrated by the NFE project in Qatar, the Companywide implementation of Chiyoda AWP strengthens our project execution capabilities and increases the certainty of project outcomes for our customers.

### 02

#### Chiyoda's 'One Team' Project Execution Strategy

##### Freeport-McMoRan Incorporated (FCX) – A World Leader in Copper

FCX, a world-leading operator of large, long duration, and diverse assets with significant reserves of copper, leads the management of the project, with PTFI as the major sponsor. Chiyoda's 'relationship' strategy for successful project execution is demonstrated by the early inclusion of FCX staff members in Chiyoda's project management team at our global headquarters in Japan, fostering our shared philosophy of a collaborative and proactive project culture and embedding productivity and efficient plant operation within the projects execution planning.

##### Metso Outotec (MO) of Finland – One of the World's Few Copper Smelting Licensors

The plant's facilities include a smelting plant, electrolysis plant, sulfuric acid plant, slag collection facility, wastewater treatment facility, and peripheral equipment, engineered, constructed, and commissioned using technologies licensed by MO fulfilling the unique pivotal licensor role. As part of Chiyoda's cooperative 'One Team' approach, Chiyoda and MO transfer key engineering personnel across offices to ensure engineering expertise, experienced in the plants detailed design, is available on the project during execution and to ensure engineering design challenges and queries are resolved expeditiously.

##### CTCI Corporation

There is a single point of contract with Chiyoda's Indonesian subsidiary on the project, while engineering, procurement, and construction will be executed in collaboration with CTCI Corporation in Taiwan. Chiyoda and CTCI's ongoing close working relationship has developed over 40 years and includes a joint venture (JV), formed in 2017, to successfully deliver a sponge titanium production plant in the Yanbu industrial complex of the Madinah Province of Saudi Arabia for a Toho Titanium Co. Ltd/Saudi Arabian company client JV.



Overview of the plant under construction  
Courtesy of P.T. Freeport Indonesia



## ROUNDTABLE DISCUSSION Human Resources Create Value

The greatest asset of an engineering company is its people, its human resources, the driving force that creates corporate value. Chiyoda defines goals for human resource development with the aim of advancing and expanding its pool of human resources. In fiscal year 2021, the Company launched a human resource system under a CHRO and four HROs, appointed from the four disciplines responsible for advancing human resource development.

The picture below shows the CHRO and the four HROs discussing the results of their activities thus far, including further issues to address and their vision for the future.



(From left to right)

### Masaki Kumagai

Mr. Kumagai joined Chiyoda in 1985 and worked on overseas project instrumentation design and installation in the Instrumentation & Control Systems Department. In 2010, he was appointed the General Manager (GM) of the Construction Estimation Department and the Offshore Upstream Business Operation Department, prior to being relocated to the UK as Executive Director of the subsidiary Xodus Group Limited. In 2019, he was appointed Assistant to the Division Director of the DX Division and, after serving as Vice President of Energy Project Operations, was appointed Chief Digital Officer (CDO) and Division Director of the DX Division in April 2021. In April 2022, he was appointed CHRO, CDO and Division Director of the HR & DX Division.

### Nobutaka Nagahashi

Mr. Nagahashi joined Chiyoda in 1991 and worked as an accounting manager for overseas projects in the Accounting Department. He was appointed GM of the Secretariat Office and Corporate Planning Department in 2014, GM of the Human Resources Development (HRD) Department in July 2019 and HRO-Cx in September 2020.

### Ayako Shoda

Ms. Shoda joined Chiyoda in 1997. She holds a master's degree in chemical engineering and Professional Engineer (PE - Chemical) certifications in Japan and the USA. She has worked in the process design of oil refining for years including 5.5 years in the leader position for the section. In September 2020, she was appointed HRO-Ex and has also managed the Health Management & Diversity Promotion Office in the HRD Department since April 2022.

### Takuo Yasunishi

Mr. Yasunishi joined Chiyoda in 1994, working on process equipment and licensing operations for environmental equipment in the Environmental Technology Department. He was relocated to the Domestic Project Department in 2004, being responsible for petrochemicals on domestic projects and gaining further experience while on customer assignments for two years. He was appointed GM of the Technology Development Department in 2019, HRO-Bx in September 2020 and has served as GM of the Business Innovation Department since April 2022.

### Shimpei Saito

Mr. Saito worked in the Civil Engineering Department after he joined Chiyoda in 1995, before being responsible for overseas projects following his relocation to the Project Division in 2000. Having worked on overseas projects for 12.5 years, his extensive experience includes a copper smelting plant in Myanmar, a methanol plant in Saudi Arabia and LNG plants in Qatar and Australia. He was appointed GM of the SQEI Department in 2020 and HRO-Px in April 2022.

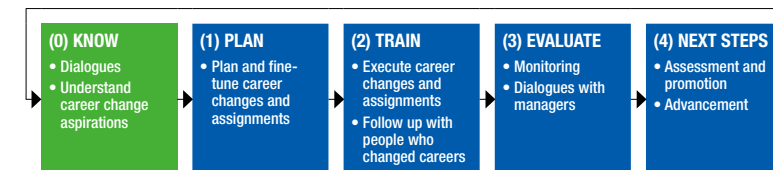
### HRO Mission

#### 1. Visualizing current position of human resources value

Career development discussions → Job category decisions → HRO interviews

#### 2. Identifying human resources visions

#### 3. Propelling processes to realize visions



\* HROs will examine new measures with HR Division based on opinions of employees and issues about human resources gleaned from dialogues

### Kumagai CHRO Mr Nagahashi, in your role as GM of the HRD Department, what are your thoughts regarding the 2021 fiscal year results?

**Nagahashi HRO** The year commenced with approximately 1,300 employees in career-track positions selecting their job categories. Firstly, I created opportunities for employees to interview with their HRO, in line with the stage of our new human resources system where we better understand career views and intentions, and approximately 700 participated. After articulating their career views and intentions, employees were able to decide on their job categories, while reflecting on the Company's training aims.

I soon learned that the diverse working, and career-focused, views of our employees are essential to advance human resource development.

### Kumagai CHRO As HRO's conversing with employees, what are your thoughts regarding Chiyoda's activities in the 2021 fiscal year?

**Nagahashi HRO** I conducted interviews with senior-level employees who were unavailable under the previous system and many were concerned about passing the skills, wisdom, and expertise accumulated throughout their careers onto the next generation. It was refreshing to learn how senior colleagues genuinely feel responsible for the future, and think about the opportunities for the younger generation of employees to verbalize their thoughts.

**Yasunishi HRO** The opportunity to meet and talk with many employees as an HRO was unforgettable and I now recognize the true diversity of our employees in terms of generation, careers, and their environments, even more than before.

In the 2021 fiscal year, the challenge for the Company was to meet the escalating requirement to assign personnel to projects, and meet additional training requirements to develop our human resources, due to increasing work volumes. When large numbers of personnel are required on projects, assigning personnel becomes more of a challenge due to capacity restraints. I am also conscious of the personal sacrifices made by employees in order-driven industries such as ours.

### FY2021: Outcome of '(0) KNOW' Process

#### 1. Career Development Discussions

All employees have conversations with their managers about their past, current, and future careers. Held every year.

→ Career development dialogues got you to think more about careers: Yes 80%

#### 2. Job Category Decisions

→ Decided upon career development discussion or HRO interview

#### 3. HRO Interviews

→ Interviewed about 50% of career-track employees

(Achieving target for FY2021)

**Shoda HRO** Interviews with employees are essential to gather information and encourages closer working relationships between the HRD department and others. As an HRO, interviews also enable me to connect names to faces and the individual subject matter.

Chiyoda aims for a profit contribution ratio of 50% between existing and new businesses. The interviews reinforced my desire to effectively assign our 1,300 employees for both their and the Company's benefit, by achieving individual and organizational goals.

The interviews are an ideal opportunity for employees to reevaluate their own careers, the meaning of work, and the roles expected of them, and reassess targets for their personal growth. I believe that our discussions changed how many employees approach their daily work, with some employees likely to seek new challenges within the Company.

Although it is not easy to match individual employee aims and personal goals with the Company's overall direction, this task has been an essential part of Company operations over the past year.

**Saito HRO** Since being appointed as GM of the Safety, Quality, Environmental and Information Security (SQEI) Department over two years ago, I have monitored our construction site activities to identify and explore ways to improve project execution workflows and enhance Companywide corporate operations, while remaining conscious that human resources are pivotal to strengthening the Company's business execution capabilities. As our human resources develops, our competitiveness will improve and, hopefully, this will lead to increased profitability, enabling Chiyoda to conquer new challenges. I want to increase awareness of the importance of strengthening our human resources, and implement initiatives that that release employee leadership qualities, for which these HRO interviews are essential.

Although I have not conducted as many interviews as I would like, I am keen to hear the thoughts of our many employees and understand their opinions, so that I can support them in their career choices and align them with business plans.

Human Resource Development Goals	Basic Attitude	Business Execution Abilities	Organizational Management Capabilities
	Professionalism as standard  • Awareness & improvement as a professional • Humbleness & communication skills • Independence & determination to take on challenges	Accelerating growth and enhancing our 'Business Execution Abilities'  • Ability to set & complete tasks • Customer oriented with a bird's-eye view • Ability to respond to changes • Ability to contribute to organization • Ability to mix digital technologies with value creation • Expertise	Early appointment and development of human resources with 'Organizational Management Capabilities'  • Capability to unite a team • Capability to accept & make the most of diversity • Capability to improve & develop human resources/organization
Four Job Categories	Ex: Engineering Professional	Exemplary knowledge in specialized technology domains	Bx: Business Incubation
	Px: Project Management	Central figure in project orders and execution	Challenge new businesses and innovations
			Cx: Corporate Professional
			Supporting organizations and projects, in charge of steadily executing corporate functions





**Kumagai CHRO** We have a solid understanding of business and management plans in our activities as HROs and aim to align Company objectives with the 'needs and wants' of our employees which become apparent during interviews. What human resource and organizational issues can be addressed?

**Yasunishi HRO** Work-fronts are constantly changing in our order-driven industry and we need a system that can nimbly reallocate human resources to match. This problem cannot be solved by the HRD Department alone. I see a need to clarify business scope and responsibilities at project and departmental levels, reform workflows, reassess appropriate employee numbers in each department while adhering to business plans, and strengthening relations with subsidiaries and affiliates. Optimizing resource allocation, hiring new personnel, and reviewing corporate culture are also required. It is essential to conduct integrated discussions on a broad range of subjects as we take these steps.

Following the creation of the new HR & DX Division and Human Resources Management Committee, the structure is in place to build systems to strengthen our competitiveness, as we facilitate discussions on broad topics that go beyond personnel matters.

**Shoda HRO** Are employees maximizing their own capacity to achieve 'stretched' goals that could initially feel 'just out of reach'?

Steady project execution is a Key Performance Indicator on Chiyoda projects. There is a belief in our corporate culture that the correct course of action is to implement methods that have proven effective in achieving targets in the past. While this is true to a degree, it is necessary to experiment and advance different methods, or instigate new ideas and perspectives, to achieve 'stretched' goals. A culture that penalizes failure will not motivate employees to experiment with original ideas. While recognizing our value systems and customs, some 'unlearning' to understand what is required in practice and encouraging new ideas could be necessary.

**Saito HRO** From HRO interviews and other activities, my belief is that some employees are exhausted and Chiyoda needs to address a personnel shortage. As the global drive towards decarbonization gains momentum, demands on the engineering industry will only increase and to secure the capacity to meet this demand, Chiyoda must consider all avenues to ensure it has sufficient personnel, including hiring mid-career operatives and utilizing external partner

human resources. Chiyoda's foundations should support the growth of diverse human resources in the Company.

A company needs to grow, both in terms of human resources and as an organization, to strengthen its competitiveness, and experience is the most effective way for employees to grow. Successful project execution in the past has required allocating experienced personnel, but a lack of delegation of authority to young and mid-career employees may prove to be a problem. Looking ahead, Chiyoda needs to modify its approach to project employee assignment to advance human resource development.

Organizational assistance is required to construct a system that also supports senior and more experienced employees, to allow unrestricted growth in human resources.

**Nagahashi HRO** Many departments are very busy and allocating time for individual human resource communication activities is challenging. Some employees also carry more of a burden than others. Initiatives are required at an organizational level to fix these problems. The Company could establish monthly meetings for HROs and the HRD Department to discuss human resources with overseas project managers to more fully understand employee training issues and collaborate to overcome these challenges. I look forward to engaging in such initiatives.

**Kumagai CHRO** Under our Revitalization Plan, Chiyoda aims to transform its business portfolio by simultaneously developing new and existing businesses. I would like to ask Mr. Yasunishi and Mr. Saito, as representatives of new and existing businesses respectively, to explain their approach to human resources.

**Yasunishi HRO** A tangible change in human resources would be required for 'new' businesses to expand enough to produce 50% of overall profits. Although it is generally assumed that additional human resources would be required for the Company to enter new business fields, this is not necessarily the case. The definition of 'new' is broad and could apply to a change in scope from an upstream to a downstream business field, for example. The types of human resources required would depend on the circumstances, but there would be many opportunities for existing employees. The human resources involved in new business development are currently mainly mid-career employees, and I would like the Company to encourage existing employees to participate in job rotation as it reforms its

business portfolio. I hope that all employees will thrive, whether in 'new' or existing businesses.

**Saito HRO** In the current situation, where our limited internal resources need to be invested in new businesses, I think the Company should change the 'mindset' that existing LNG projects require the mobilization of large numbers of employees to execute the project. Chiyoda should steadily execute projects with fewer employees to add value, especially as there are talented external human resources that we can utilize.

**Kumagai CHRO** Indeed, both our existing EPC business and new business development present challenges and we should nurture a mindset among employees that welcomes such challenges. The global demand for LNG is expected to continue rising as the world transitions to cleaner energy and this is why business reform is required. We should endeavor to instill a mindset that accepts change.

**Kumagai CHRO** Finally, please talk about your visions for HRO activities in the 2022 fiscal year.

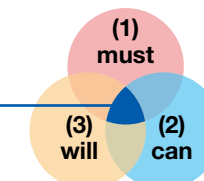
**Nagahashi HRO** HROs will continue striving to more fully understand management and employees alike, and bring them closer together. Our focus in fiscal year 2022 will be communicating the 'lessons learned' from these activities, which will involve conveying employee 'needs and wants' to management to take action and, equally, conveying management's vision to employees. As the business environment surrounding the Company and the conditions within Chiyoda change, a fundamental goal of HROs should be to continue aligning employee desires with the Company's business plans.

**Shoda HRO** I intend to implement measures and frameworks that illustrate our achievements to employees in an easy-to-understand format and, while it may take time for our employees to feel the benefits from these initiatives, this would enable me to explain our achievements in detail during the year.

#### Vision for FY2022

Put the right person in the right post

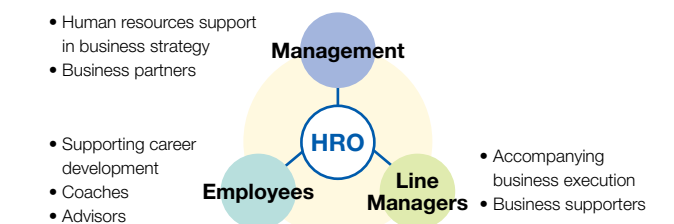
Increase number of employees positioned in ideal conditions



- (1) Identifying human resources and skills needed by the Company based on business plans
    - Updating talent management system
  - (2) Visualizing and expanding abilities of human resources
    - Career development discussions, updating talent management system, and developing human resources
  - (3) Understanding career aspirations
    - Career development discussions, and HRO interviews
- Matching of (1), (2), and (3)

#### Harnessing Value of HROs

Standing in the middle of management, employees, and line managers, HROs aim to bring everyone close together.





## SPECIAL FEATURE

# Accelerating Companywide Digital Transformation (DX)

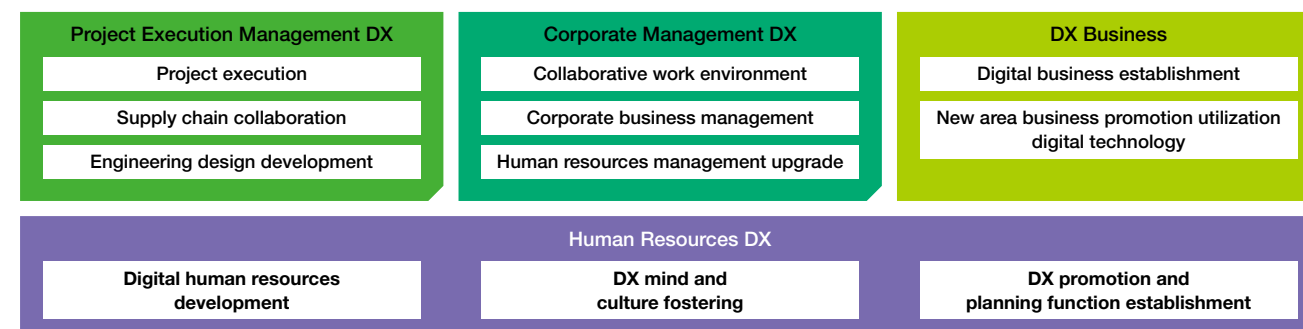
In July 2021, Chiyoda created a CDO Office to advance Companywide DX based on Chiyoda's DX Vision and the Four Basic Strategies of Project Execution Management, Business, Corporate Management, and Human Resources. The office comprises a Digital Officer (DO) selected from each division reporting to a CDO, and DX evangelists to cooperate with the DOs in accelerating DX plans.

Chiyoda has been accelerating Companywide human resources DX initiatives since establishing the HR & DX Division CDO Office in April 2022, enhancing its human resources to increase competitiveness through steady business execution, and securing profits by improving efficiency.

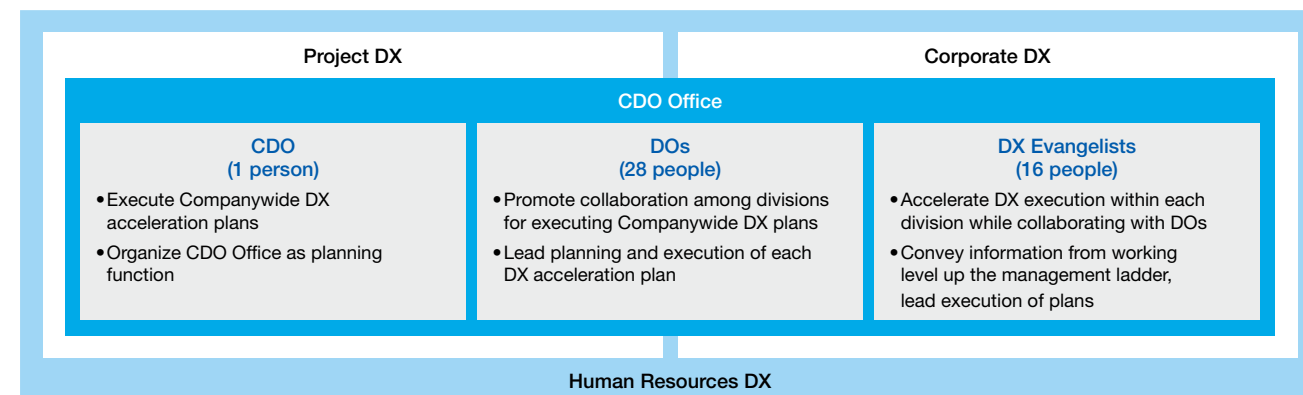
## Chiyoda's DX Vision

The Chiyoda Group aims to be a new leading engineering company by actualizing four digital transformation strategies.

## Acceleration of Companywide DX: Four Basic Strategies



## CDO Office Structure



**Message from the CDO**

**Kumagai Masaki** (Center)  
CHRO & CDO / Director of HR & DX Division

Chiyoda is accelerating Companywide DX, aiming to be fully digital in project execution and corporate management, to rapidly respond to society's varying needs and changes in our external business environment, while increasing efficiency, optimizing operations, reinforcing risk management, strengthening earnings capabilities, and flexibly allocating resources. Through DX, Chiyoda will consolidate its position as a new leading engineering company by adding value for all stakeholders.

## Interviews with DOs and DX Evangelists

### DO: Corporate Management DX

#### Human Resources Management Upgrade



**Tetsuo Matsushita**

Corporate Planning Department

Chiyoda uses digital tools to advance human resource management, enhancing the visualization and analysis of employee skills and abilities within a talent management system. The goal is to improve the alignment of personal 'needs and wants' with the Company's overall objectives to optimize employee assignment based on business plans, and increase corporate value by maximizing the potential of our human resources.

### DO: Project Execution Management DX

#### Introduction of a Scalable Project Management Environment



**Satoshi Tanaka**

Advanced Industries Project Section  
Life Science Project Department

A scalable project management environment is one where project management techniques and practices, e.g.: human resource management, risk management, cost control etc., are tailored for projects depending on their size, risk and complexity. 'Scaling' project management, i.e.: optimizing project control, according to varying demands across different projects increases business efficiency and reduces execution risk. My Global Environment & Green Energy Project Operations Division executes different size projects in many fields, including petroleum, chemicals, renewable energy, and life sciences, all of which are applicable to a scalable project platform whereby schedules and costs are managed based on the characteristics of each project. Chiyoda promotes DX initiatives to reform our operations and maximize efficiency.

### DO: Project Execution Management DX

#### Engineering, Design, and Development



**Yuji Mihara**

Piping Digital Engineering Transformation Section  
Piping Engineering Department and Engineering Innovation Team Technology & Engineering Division

Plant engineering encompasses 'concurrent engineering' in which engineering processes are simultaneously advanced while sharing design data in a continuous loop with other processes, and the coordination of procurement and construction during engineering. We use digital technologies in advanced project management to visualize voluminous and complex engineering data and strengthen risk management, improve profitability, and increase efficiency.

By accelerating Companywide DX to improve efficiency through advanced engineering execution, we improve our organizations competitiveness and add value for customers.

### DO: Corporate Management DX

#### Robotics Process Automation (RPA)



**Koichi Kawabe**

Quality and Information Security Section, SQE Department

This is the third year of using RPA to improve efficiency, productivity, and work quality by automating business processes with IT, and I am certain that its scope will widen as it becomes more widely understood across our organization. My goal is to continue accelerating Companywide DX to improve the Company's output, using RPA to complete repetitive tasks enabling employees to spend time on higher value-added activities.

### DX Evangelist: Project Execution Management DX

#### Project Execution – Chiyoda AWP



**Tatsushi Hisaoka**

NFE Team, Energy Project Operations Division

Chiyoda AWP recognizes the necessity for seamless interface between engineering, procurement, construction, commissioning and start-up and enhances our EPC execution capabilities by integrating these EPC processes throughout a projects entire lifecycle. We implement Chiyoda AWP on the NFE project, focusing on construction execution as the driver for sequencing engineering and procurement schedules, including engineering documentation 'Required on Site' dates and material and equipment delivery dates, to ensure all deliverables arrive at the 'work face' as and when required, improving productivity, increasing efficiency, and reducing costs. Managing the enormous quantity of engineering, procurement, and construction work packages required to implement Chiyoda AWP would not be possible without digital technology. My goal is to strengthen our project execution capabilities by effectively applying digital technology with Chiyoda AWP.

### DX Evangelist: Human Resources DX

#### Digital Boot Camps



**Naoki Ueda**

Human Resources Development Section  
Human Resources Development Department

Chiyoda has formed 'task teams' of DX evangelists and conducted 'Digital Boot Camps', where Chiyoda Group company employees discuss topics such as DX issues relevant for Chiyoda and the content of DX material, to promote DX employee awareness. External lecturers are also invited to discuss case studies in other companies, the latest IT tools used to develop and implement DX and the use DX within Chiyoda. We will continue advancing Companywide DX transformation by expanding on these initiatives.

Job titles are as of April 31, 2022



# BUSINESS STRATEGY

This section introduces the Chiyoda Group's business model and strategies to create sustainable value.

## CONTENTS

- 54 Business Domains / Business Models
- 55 Low Carbon and Carbon Recycling
- 56 Hydrogen Business  
(SPERA Hydrogen™ and Ammonia)
- 57 Energy Management Business
- 58 Life Science Business
- 59 Digital Transformation (DX Business)



## Business Domains / Business Models

The Chiyoda Group is addressing the increasingly complex challenges faced by our customers and society in general, while **creating new value in engineering**

through DX in the four business domains of Low Carbon and Carbon Recycling, Hydrogen, Energy Management, and Life Science.

### Digital Transformation (DX)

DX Business Promotion & Innovation

**Low Carbon and Carbon Recycling**

Stable supply of clean energy

**Hydrogen Business (SPERA Hydrogen™ and Ammonia)**

Realization of a hydrogen-based society

**Energy Management Business**

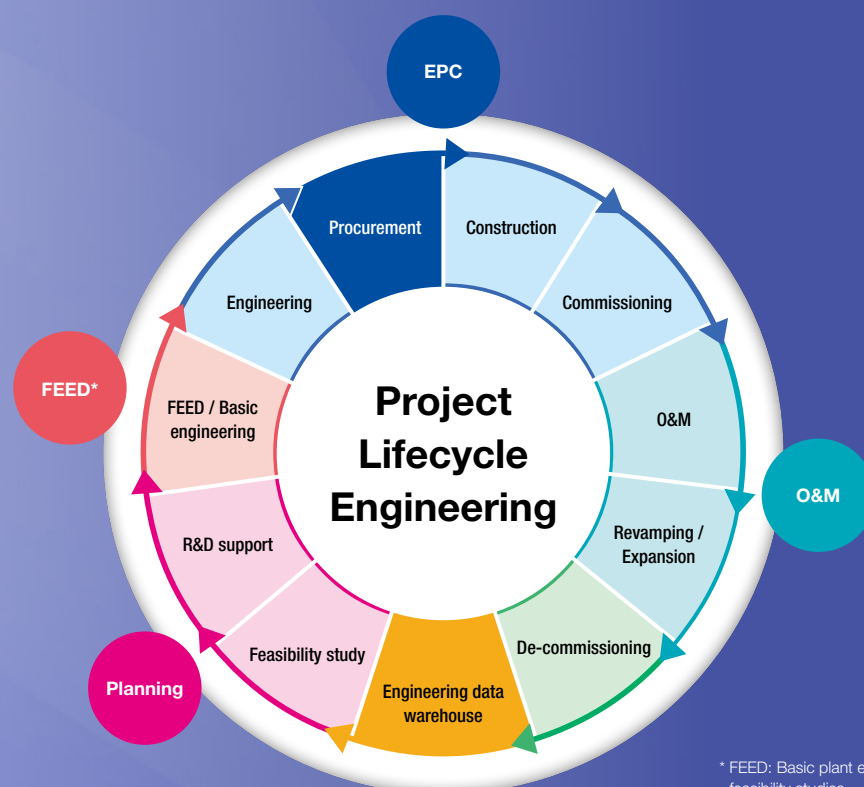
Optimizing energy utilization  
Promoting renewable energy and power storage

**Life Science Business**

High value life science solution provider

## Project Lifecycle Engineering

Chiyoda's project lifecycle engineering is core to our business model during all project stages, from planning to Front End Engineering Design (FEED), EPC, commissioning, handover, and Operations and Maintenance (O&M).

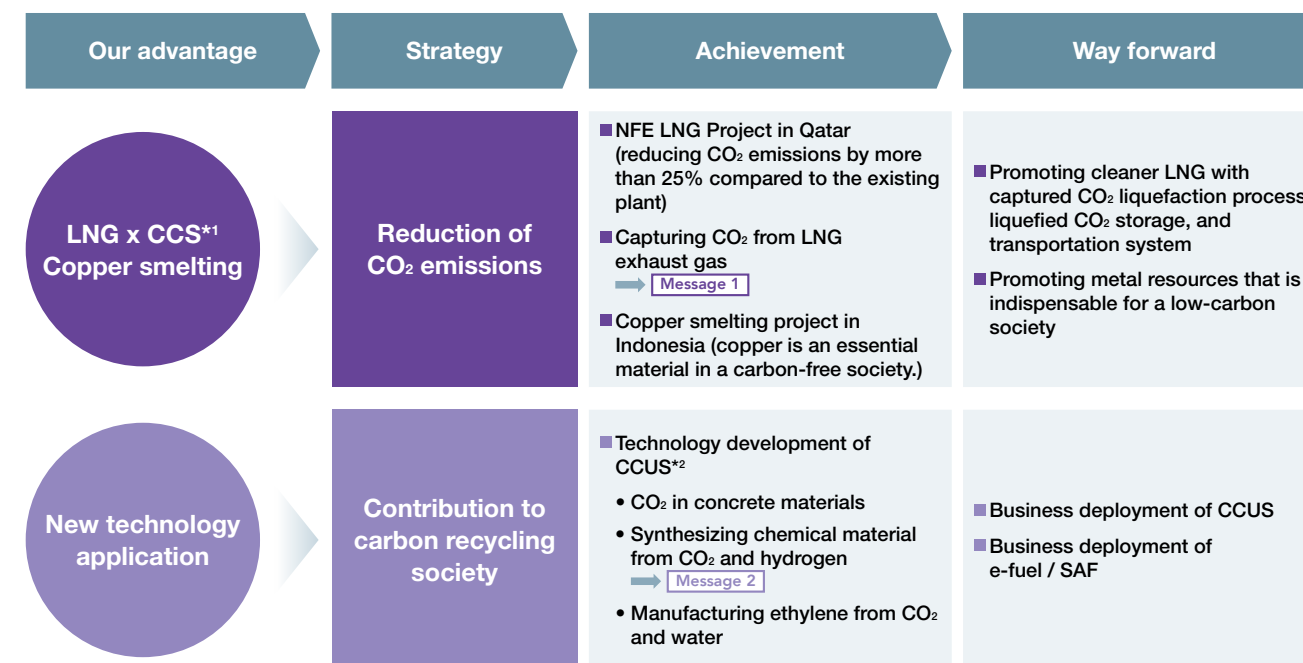


\* FEED: Basic plant engineering including planning and feasibility studies

## Low Carbon and Carbon Recycling

VISION

**Dedication to LNG through the energy transition and decarbonized energy supply**  
**Engineering application to carbon recycling**



\*1 Carbon dioxide capture and storage

\*2 Carbon dioxide capture, utilization, and storage

### Message 1



**Yu Kodani**  
Technology Development Department

### Developing the Technology to Separate and Capture CO<sub>2</sub> in LNG-fired Power Plant Flue Gas

Chiyoda's project to develop solid absorbent technology to capture post-combustion CO<sub>2</sub> from LNG-fired power plant flue gas with the Research Institute of Innovative Technology for the Earth (RITE) and JERA Co. Inc. (JERA), as proposed to the Ministry of Economy, Trade and Industry (METI), was selected for funding and development by the New Energy and Industrial Technology Development Organization's (NEDO) Green Innovation Fund.

The development and implementation of such technology in society is central to Chiyoda's business as we aim to realize our corporate philosophy of 'Energy and Environment in Harmony' by applying our process development and engineering capabilities to develop technologies that will significantly influence a future carbon-free society.

### Message 2



**Karuna Takagawa**  
Business Innovation Department

### Developing the Technology to Synthesize Paraxylene from CO<sub>2</sub> and Hydrogen

Chiyoda has been developing the technology to produce paraxylene (PX), a basic compound used to make polyester clothes and PET bottles, using CO<sub>2</sub> and hydrogen as raw materials. Using CO<sub>2</sub> as a substitute for existing fossil fuel (eg: coal and oil) derived PX, results in 'negative' emissions as the amount of CO<sub>2</sub> required during the process is greater than that emitted. Chiyoda and partners are supporting the realization of a carbon-neutral society by developing this innovative technology and the business for its rapid commercialization.



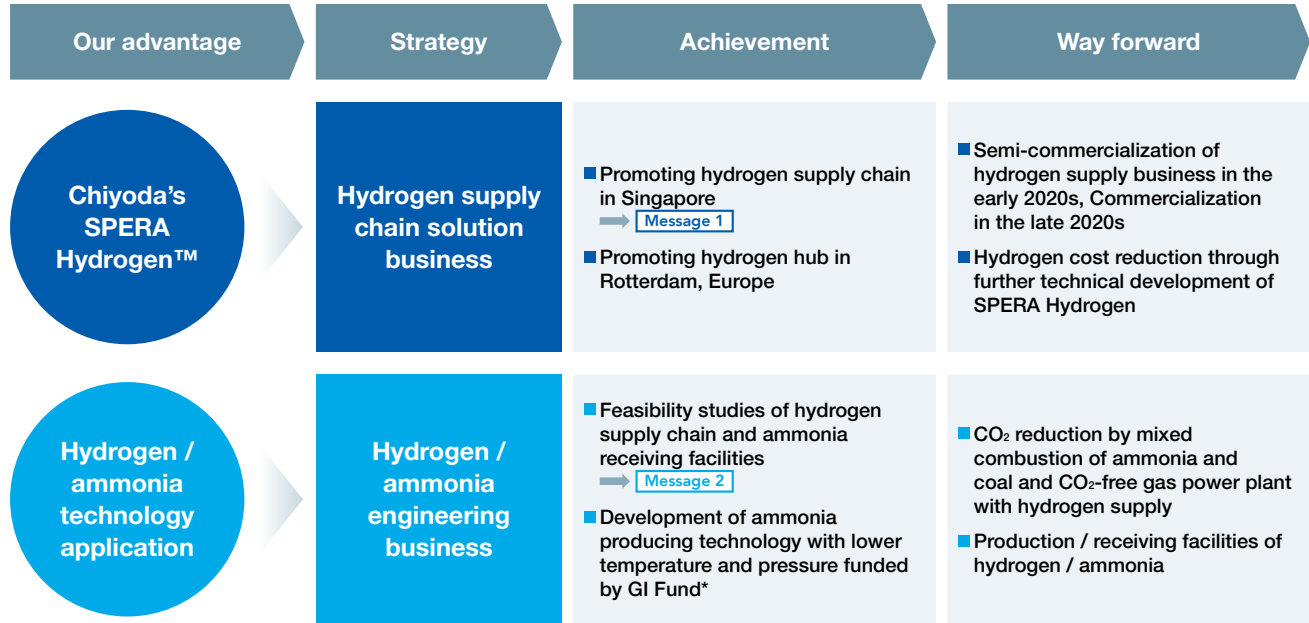


# Hydrogen Business

(SPERA Hydrogen™ and Ammonia)

VISION

Realizing a hydrogen-based society through Chiyoda's multiple hydrogen carriers, centered on our unique SPERA Hydrogen technology



\* Green Innovation Fund by New Energy and Industrial Technology Development Organization (NEDO)

Message 1



Masahiro Shinohe  
Hydrogen Business Department

## Developing the Technology and Commercializing a SPERA Hydrogen Supply Chain

The supply of hydrogen to provide cleaner energy in Singapore is key to the city-state's sustainable future. Chiyoda and partners are jointly developing the technology to commercialize a cost-effective hydrogen supply chain, using Chiyoda's 'in-house' developed proprietary hydrogen storage and transportation system SPERA Hydrogen, to import and distribute hydrogen in Singapore. A hydrogen supply chain into Singapore as a role model for a sustainable future hydrogen society would create new business for Chiyoda as a licensor and catalyst supplier of SPERA Hydrogen, and would substantially contribute towards a wider carbon-free society.

I am therefore currently examining the technological and commercial issues involved in producing low-cost clean hydrogen in countries with an abundant supply, and transporting it to Singapore on an industrial scale using Chiyoda's SPERA Hydrogen technology.

Message 2



Tetsuya Fujino  
Energy and Environmental Project Department

## Conceptual Design for Ammonia Receiving Facilities

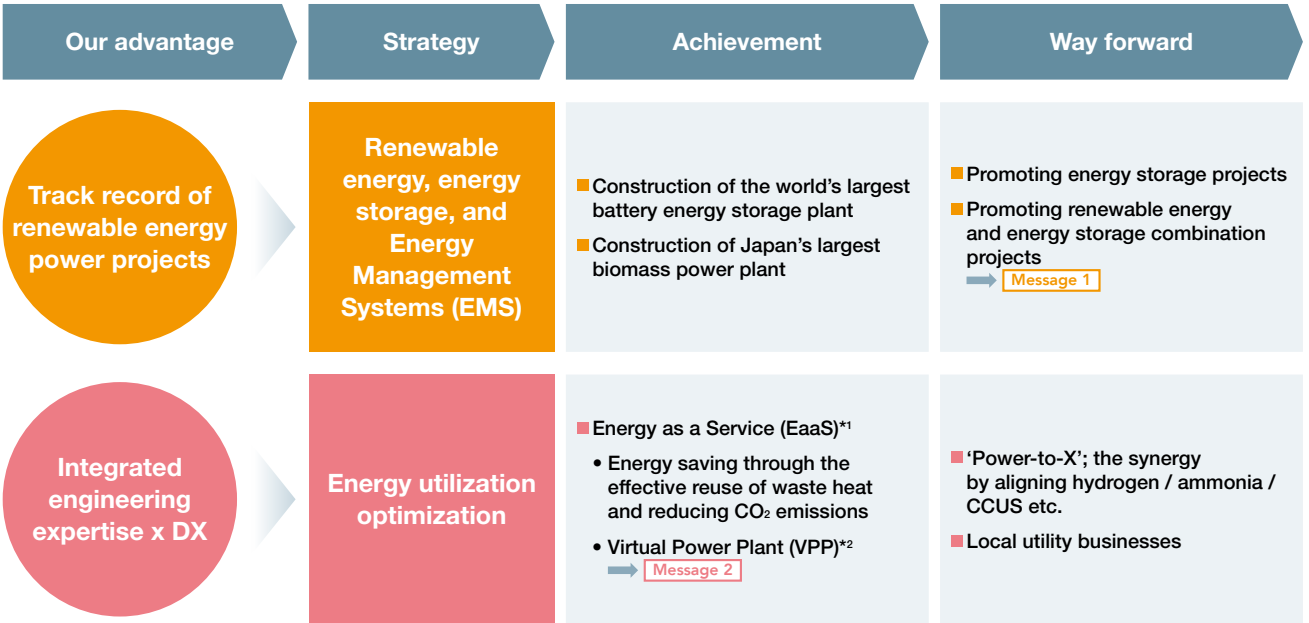
Ammonia is attracting attention as one solution whereby Japan can achieve its goal of net-zero greenhouse gas emissions by 2050 because emissions from its combustion are carbon free. With the aim of achieving the goal set by Japanese power generation company of 20% ammonia mixed combustion at coal-fired power plants by 2030, my team are progressing towards engineering the construction of ammonia receiving, storage, and dispensing facilities including the conversion of LPG terminal facilities to handle ammonia, having commenced conceptual design in 2021. EPC is a Chiyoda core strength and receiving such orders enables our Company to support carbon neutrality.



# Energy Management Business

VISION

EPC / O&M in renewable energy, energy storage, and energy management fields  
  
Creating businesses with EPC facilities expertise and data application



\*1 A 'one-stop' business offering utility-related services to reduce costs, increase asset values, and lower CO<sub>2</sub> emissions  
\*2 VPP controls power supply at industrial facilities, contributes to renewable energy prevalence and stable power supply

Message 1



Daisuke Ikegami  
Power & Green Energy System Project Department

## Development and Execution of Renewable Energy Projects

The Chiyoda Group is responding to the increasing momentum for a carbon-free society in response to climate change, by executing renewable energy projects, such as solar and wind power generation and power storage facilities.

As of 2021, more than 400 local governments in Japan have declared their goal of achieving net-zero CO<sub>2</sub> emissions by 2050. The Chiyoda Group continues to contribute to the realization of a carbon-free society, through its corporate philosophy of 'Energy and Environment in Harmony', by providing services for the local production and consumption of energy for regional revitalization and cooperating with local governments and new regional electricity providers to create a renewable energy regional microgrid system.

Message 2



Toshiki Honjo  
Business Innovation Department

## Developing a New Energy Utilization Optimization Business

Our 'Energy as a Service' (EaaS) business combines Chiyoda's comprehensive engineering capabilities with the latest partner technologies, increasing customer business value by providing solutions to reduce carbon emissions at their plants and factories and cutting operational costs. The EaaS business contributes to our Company's prosperous future by stabilizing corporate earnings by expanding recurring businesses and targeting growth through synergies with other businesses.

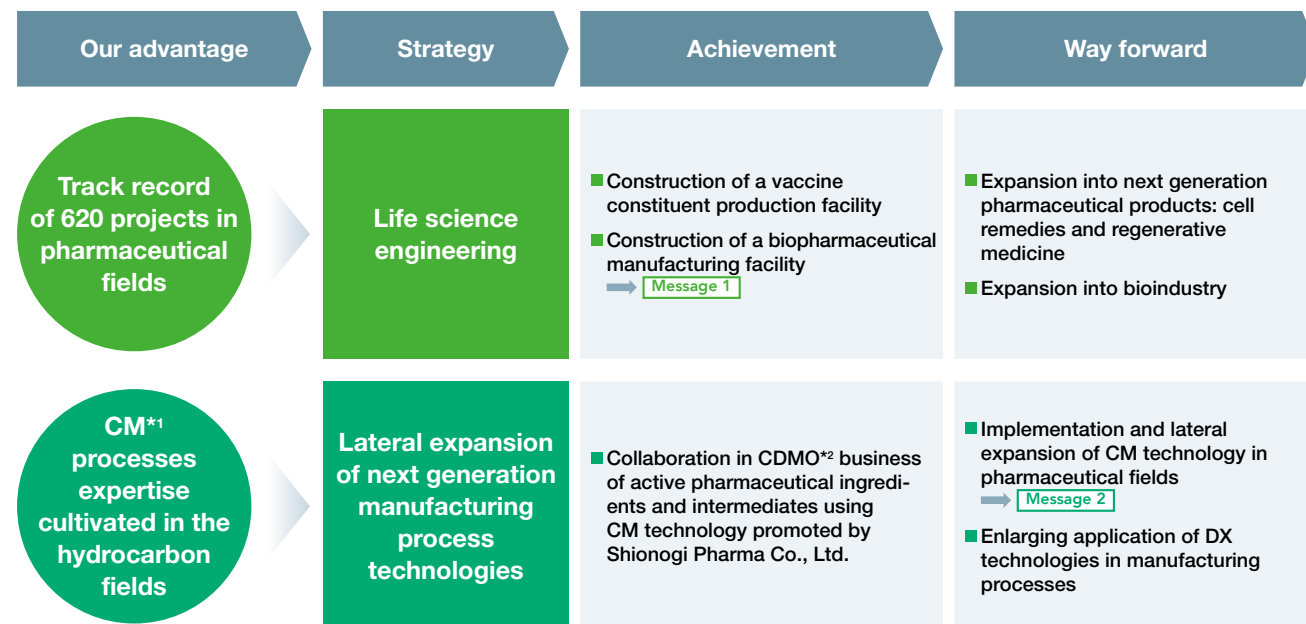




# Life Science Business

## VISION

High value-added biotechnology & life science solution provider



\*1 Continuous Manufacturing

\*2 Contract Development Manufacturing Organization

## Message 1



Shohei Matsuda

Life Science Project Department

## Space Design in Biopharmaceuticals Ingredient Production Plants

I am responsible for space design in plant facilities and space adjustments in collaboration with internal departments and external companies to enhance safety and work efficiency. Biopharmaceuticals plants include structural materials, air conditioning systems, water supply and emission facilities, production-related machinery, pipes, and electrical and instrumentation systems in a single structure, and it is essential to precisely adjust the spaces in each category during the facility's design stage for safety and efficient construction and operation and maintenance. As an engineer in the life science field, I provide high-value-added pharmaceutical production facilities through my work responsibilities and contribute to a sustainable future for future generations.

## Message 2



Yusuke Sato

Life Science Business Department

## Supporting R&D in Life Sciences

The Chiyoda Group horizontally develops integrated support services, from research and development to the manufacture of pharmaceuticals, by leveraging our engineering capabilities accumulated in the construction of pharmaceutical production facilities and the development of research testing equipment in the cosmos field. We conduct experiments in our R&D centers at the Koyasu Office & Research Park and the University of Tsukuba, to better understand the issues faced by customers in the pharmaceuticals development process, and deliver optimal solutions as we aim to reduce development timeframes and reduce costs in drug research.

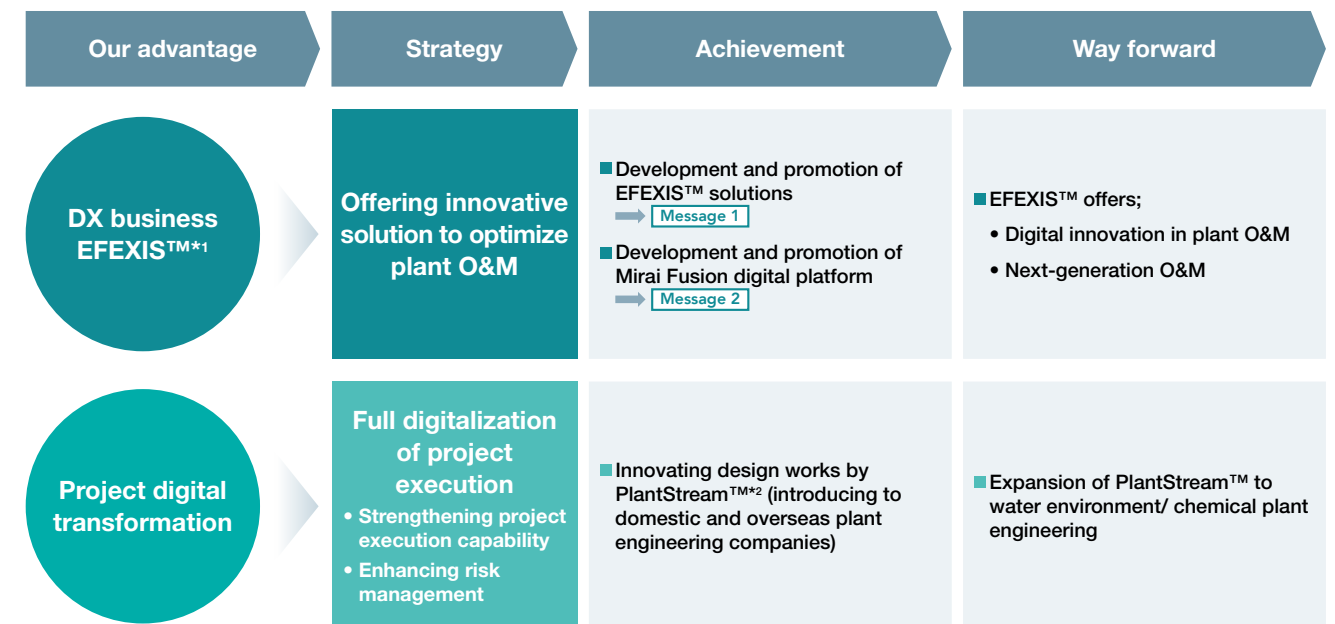


# Digital Transformation

(DX Business)

## VISION

Create new businesses through DX of client plant operations



\*1 Brand name for innovative solution to optimize plant O&M

\*2 Reduce space design processes in basic engineering by approximately 80% and accelerate 3D model creation by up to five times

## Message 1



Kaori Nagai

Digital Products Planning & Marketing Department

## Planning and Marketing New Business with Digital Technology

I am involved in the planning and marketing of DX in customer plant operations and in the creation of new businesses.

Through the provision of the Chiyoda Group's digital service EFEXIS™, we contribute to a sustainable society by maximizing the latent capabilities of plants, while improving productivity and availability, advancing operation and maintenance, and reducing the burden on the environment.

I contribute to the future of industry and society by creating new value, using digital technologies with customers and partners by transforming the value into business.

## Message 2



Wataru Fujii

Digital Products Department

## Expansion of EFEXIS™ Through the Digital Platform Solution: Mirai Fusion

I advance DX in plant operations and support customers from the early concept stage, developing and delivering solutions to challenges and providing platforms that facilitate the use of operational data.

By maximizing the power of digital technologies in plant operations, including issues such as changes in the business environment and the advanced age of plant facilities, we increase the safety and stability of plant operations while enabling work style reforms. We expand the Chiyoda Group's DX business by delivering solutions to customers, creating new value by pairing digital technologies with our accumulated engineering expertise.



# FOUNDATION UNDERPINNING SUSTAINABLE GROWTH

In this section, we describe Chiyoda Corporation's management structure for sustainable growth and other specific initiatives.

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- 69 Risk Management
- 70 Safety Management



Corporate Governance

Basic Principles

Chiyoda's vision is a management that maintains the trust and empathy of all its stakeholders, including shareholders, customers, business partners, creditors, employees, and local communities. This philosophy is the basis of our corporate activities and we continue to strengthen Chiyoda's business foundations, ensuring sound and transparent operations to realize sustainable growth over the medium to long term. We will also continue to strengthen corporate governance and reinforce our internal control system as material issues.

Governance Structure (as of June 23, 2022)	
Organizational Structure	Company with Audit & Supervisory Committee
Executive Officer System	Yes
Number of Directors Of Whom, Outside Directors (Independent Directors)	10 4 (Independent Directors)
Term of Office of Director (Excluding members of the Audit & Supervisory Committee)	One year
Number of Audit & Supervisory Committee members Of Whom, Outside Directors	3 2
Number of Board of Directors' Meetings Held (fiscal 2021)	21
Number of Audit & Supervisory Committee Meetings Held (fiscal 2021)	16
Remuneration System for Directors and Audit & Supervisory Committee members	<ul style="list-style-type: none"><li>Directors (excluding those who are Audit &amp; Supervisory Committee members): Base remuneration (according to roles and responsibilities and based on individual assessments), performance-linked remuneration (reflecting the Company's business performance each term), and performance-based stock compensation (linked to the Company's medium- to long-term business performance improvements)</li><li>Directors who are Audit &amp; Supervisory Committee members: Base remuneration (according to roles and responsibilities)</li></ul>

Note: Remuneration for Outside Directors consists solely of fixed remuneration in accordance with roles and responsibilities.

Overview of Corporate Governance Structure

Chiyoda is a company with an Audit & Supervisory Committee composed mainly of Outside Directors. Chiyoda operates a system whereby Directors who are Audit & Supervisory Committee members have voting rights at Board of Directors meetings and are involved in the nomination of Representative Directors and overall business execution decision-making (excluding decision-making responsibilities delegated to the Directors).

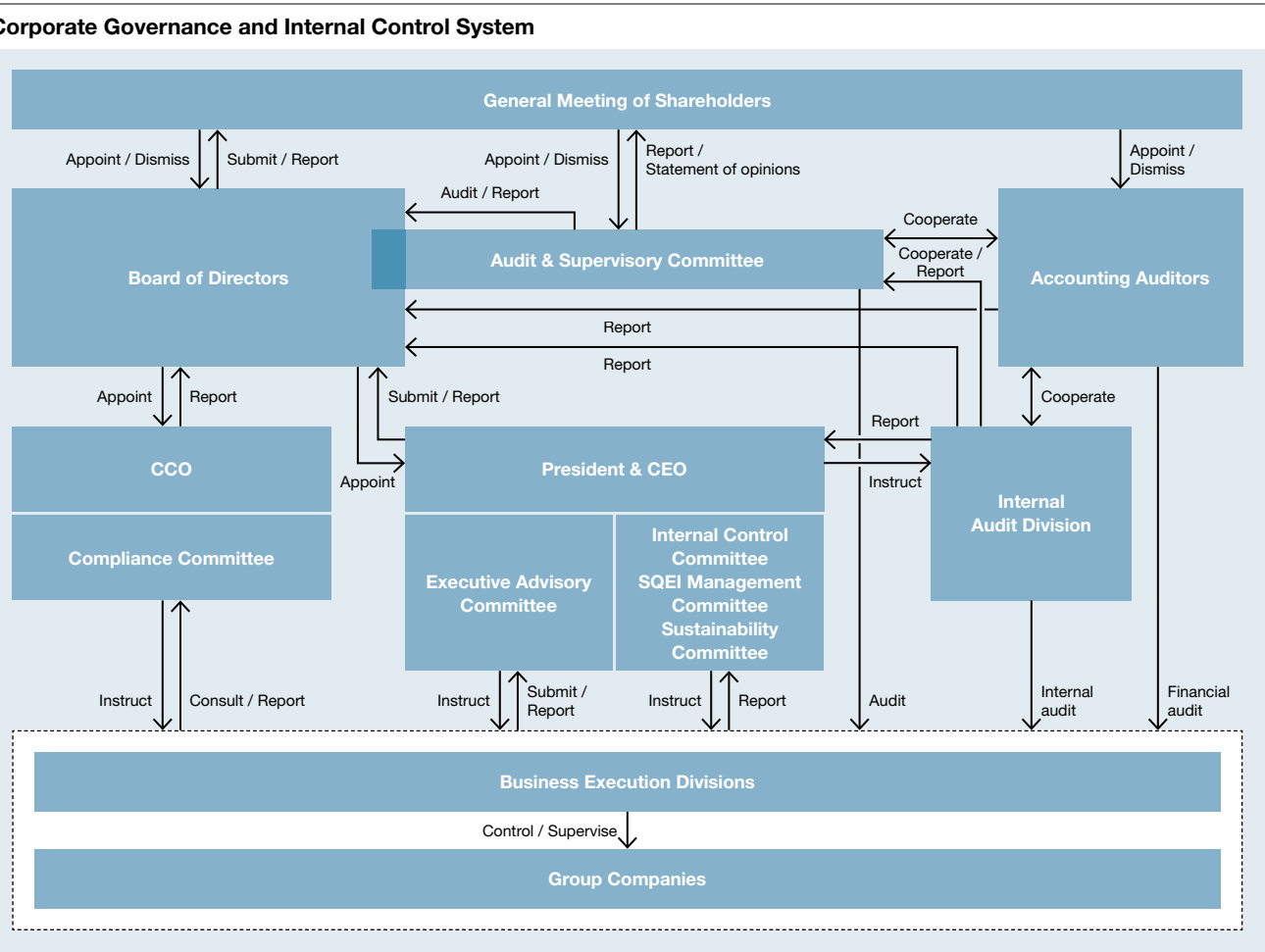
- Chiyoda has appointed four Outside Directors to ensure objective and neutral monitoring of its management functions.
- Chiyoda has improved objectivity and transparency and ensured the appropriateness of its processes for appointing and determining Director remuneration through Independent Outside Directors and full-time Audit & Supervisory Committee members in decision-making, fulfilling a similar role to a voluntary nomination and remuneration committee.

Committee	Composition and Roles / Responsibilities
Board of Directors	<ul style="list-style-type: none"><li>10 Directors, including Audit &amp; Supervisory Committee members. Monthly Board meetings.</li><li>Important management matters are determined and business execution is monitored. Appropriate decision-making and management supervision is ensured based on the objective and neutral perspectives of the Outside Directors.</li><li>Matters to be decided include management plans, important matters regarding human resources and major investments and loans.</li></ul>
Executive Advisory Committee	<ul style="list-style-type: none"><li>Through a resolution of the Board of Directors, Chiyoda has established an Executive Advisory Committee, composed of Representative Directors, who concurrently serve as Executive Officers, and other managers at Senior Vice President level or higher at Chiyoda Group Headquarters, including Division Directors. Chiyoda stipulates the participation of the majority of those members as an advisory body to the President &amp; COO, responsible for business execution of Chiyoda, enabling prompt decision-making on matters related to business execution.</li><li>The Committee decides matters regarding business execution adopted by a resolution of the Board of Directors and prior deliberation of matters to be decided by the Board of Directors, and reports to the President &amp; COO, responsible for Chiyoda business execution.</li></ul>
Audit & Supervisory Committee	<ul style="list-style-type: none"><li>Three members (one of them is full time) consisting of two independent officers and one member with extensive finance and accounting expertise.</li><li>The Committee conducts audits on the overall business execution of Directors.</li><li>To strengthen its auditing activities, a dedicated staff member is assigned to assist the Audit &amp; Supervisory Committee in the execution of its duties.</li></ul>

Development and Management of the Internal Control System

In accordance with laws and regulations, Chiyoda manages an internal control system to ensure appropriate execution of operations.

- Chiyoda established an Internal Control Committee to coordinate and summarize member opinions and proposals.
- At the end of the term, or when required, the Internal Control Committee proposes internal control improvements to the President & COO.
- The President & COO, through the Executive Advisory Committee, review proposals from the Internal Control Committee and the Board of Directors makes decisions on the internal control system as required.
- To enhance the framework for compliance with laws and regulations, Chiyoda has established the position of CCO and a Compliance Committee.



Compliance with the Corporate Governance Code

In compliance with the Corporate Governance Code of the Tokyo Stock Exchange, Chiyoda has formulated a Corporate Governance Policy, detailing its basic views and guidelines on corporate governance and promotes initiatives to strengthen corporate governance.

Please refer to the following for further information on corporate governance.

- Corporate Governance Policy  
[https://www.chiyodacorp.com/about/181227\\_GCPE.pdf](https://www.chiyodacorp.com/about/181227_GCPE.pdf)
- Corporate Governance Report  
[https://www.chiyodacorp.com/about/20190801\\_CGR\\_E.pdf](https://www.chiyodacorp.com/about/20190801_CGR_E.pdf)
- Basic Policy on Internal Control System (Japanese only)  
[https://www.chiyodacorp.com/about/20200401\\_internal\\_control.pdf](https://www.chiyodacorp.com/about/20200401_internal_control.pdf)



Board of Directors

Chiyoda's Board of Directors is composed of seven Directors and three Directors who are Audit & Supervisory Committee members, thus ensuring balance and diversity through a combination of Outside Directors with experience in their fields of expertise and Directors with specialist skills and knowledge.

Name	Position and title	Outside Officer	Gender ● Male ○ Female	Skills and experience				
				Management	Finance and accounting	Legal and compliance	Overseas experience	Project experience, technical expertise
Masakazu Sakakida	Representative Director, Chairman of the Board, President, CSO and CWO		●	●		●	●	●
Fuminori Hasegawa	Senior Executive Vice President, Executive Officer		●	●	●		●	●
Koji Tarutani	Representative Director, Executive Vice President, CFO & CCO		●	●	●	●	●	
Masao Ishikawa	Director		●				●	●
Koji Ota	Director		●	●			●	●
Ryo Matsukawa	Outside Director*	●	●	●		●		●
Yutaka Kunigo	Outside Director*	●	●	●				●
Shingo Torii	Director (Full-Time Audit and Supervisory Committee Member)		●		●	●		
Mika Narahashi	Outside Director* (Director who is Audit and Supervisory Committee Member)	●	○			●		
Hisashi Ito	Outside Director* (Director who is Audit and Supervisory Committee Member)	●	●	●	●		●	●

\* Independent Director provided in Rule 436-2 of the Tokyo Stock Exchange Securities Listing Regulations

Evaluation of the Effectiveness of the Board of Directors

Chiyoda evaluates the effectiveness of the Board of Directors annually. Improvements and issues are discussed at meetings of the Board of Directors to further enhance its effectiveness.

Initiatives to Enhance the Effectiveness of the Board of Directors in fiscal 2021	
Process	<ul style="list-style-type: none"><li>• A questionnaire on the effectiveness of the Board of Directors was provided annually to all Directors (including those who are Audit &amp; Supervisory Committee members)</li><li>• Improvements in previous evaluations were confirmed</li><li>• Opinions on the current fiscal year's evaluation and on further improvements to the Board's effectiveness were exchanged</li><li>• Results and issues going forward were confirmed by the Board of Directors</li></ul>
Questionnaires	<p>Main Items</p> <ol style="list-style-type: none"><li>1. Composition of the Board of Directors</li><li>2. Frequency and length of meetings of the Board of Directors</li><li>3. Matters for resolution by the Board of Directors and relevant materials</li><li>4. Agenda and management of meetings</li></ol>
Evaluation of the effectiveness and initiatives going forward	<p>&lt;Response of Board of Directors in Fiscal 2021, to Results of Effectiveness Evaluation Conducted in Fiscal 2020&gt;</p> <p>The Board of Directors strengthened and implemented guidance and supervision to the executive side with regards to projects under way and future projects, building a structure better able to resolve issues, while prioritizing the supervision of the execution of the revitalization plan that was updated in May 2021. The executive side continued to provide appropriate information at an appropriate time to the Directors, facilitating the smooth decision-making and more fruitful discussions of the Board of Directors.</p> <p>&lt;Evaluation in Fiscal 2021&gt;</p> <p>While being appropriately managed by the Chair, the Board of Directors continued to provide broad guidance to the executive side, which provided pertinent information about key projects in a timely manner, as each director fulfilled their roles and duties. Proactive discussions were held with opinions voiced by inside and outside directors who have abundant knowledge in response to regular reports about initiatives in new fields and the state of projects underway.</p> <p>&lt;Initiatives in Fiscal 2022&gt;</p> <p>Chiyoda still aims to reform its business portfolio based on its updated revitalization plan, and build a more stable earnings structure. The Company is delving deeper into discussions about issues related to sustainability management as the movement toward a carbon-free society gains momentum. While enhancing the information shared with directors, the Company aims to invigorate discussions by the Board of Directors with an eye on increasing corporate value.</p>


Director Remuneration System

Basic Policy and Approval at the General Meeting of Shareholders	Chiyoda's Director remuneration system was approved at the 93rd Ordinary General Meeting of Shareholders held on June 23, 2021, based on its purpose of enhancing Director awareness of the importance of contributing to improvements in business performance and corporate value over the medium to long term.
Revisions to the Director Remuneration System	<p>The following revisions were made to the Director's remuneration system, other than those Directors who are Audit &amp; Supervisory Committee members.</p> <ul style="list-style-type: none"><li>• 'Base remuneration' reflects an individual's job responsibilities and individual performance.</li><li>• 'Remuneration for acquiring treasury stock' is abolished in favor of 'performance-based stock compensation'.</li></ul>
Process	<ul style="list-style-type: none"><li>• Remuneration for individual Directors is decided by the Board of Directors based on remuneration criteria resolved at meetings of the Board of Directors each year within the framework of total remuneration determined at the General Meeting of Shareholders and following discussion among Representative Directors regarding management content and economic conditions as well as an individual's annual evaluation.</li><li>• To enhance objectivity and transparency and ensure the appropriateness of decision-making, the opinions of Independent Outside Directors and full-time Audit &amp; Supervisory Committee members are heard through their participation in discussions. In addition, the structure of the remuneration system is reviewed as required by the Board of Directors.</li></ul>

Details of the Director Remuneration System			
Position	Classification	Remuneration principles	Overview of remuneration system
Director (excluding those who are Audit & Supervisory Committee members)	Base remuneration	Linked to job duties and annual individual performance evaluations	No greater than ¥290 million per annum (no greater than ¥30 million per annum for Outside Directors)
	Performance-linked remuneration	According to the year's business results, taking into consideration quantitative factors such as net profit and dividends attributable to the parent's shareholders	
	Performance-based stock compensation	Linked to medium- to long-term business performance improvement	<ul style="list-style-type: none"><li>• The maximum cash we contribute is ¥70 million per annum.</li><li>• The maximum number of shares to be delivered to Directors, the proceeds of which will be paid to Directors, will not be greater than 240,000 shares per annum</li></ul> <p>* The initial eligible period is three fiscal years from the year ending March 31, 2022, to the year ending March 31, 2024</p>
Audit & Supervisory Committee members	Base remuneration	Linked to job duties	No greater than ¥60 million per annum



Directors and Audit & Supervisory Committee Members



**Masakazu Sakakida**  
Representative Director,  
Chairman of the Board,  
President & CEO,  
CSO\*<sup>1</sup> and CWO\*<sup>2</sup>

1981: Joined Mitsubishi Corporation (Heavy Machinery Department)  
2001: Mitsubishi International Corporation, New York, USA  
2006: General Manager, Plant & Heavy Machinery Unit, Plant & Industrial Machinery Business Division of Mitsubishi Corporation  
2012: General Manager for Group Strategy Planning, Machinery Group CEO\*<sup>3</sup> Office, and Group CIO\*<sup>4</sup>, Machinery Group of Mitsubishi Corporation  
2013: Senior Vice President, Chairman & Managing Director, Mitsubishi Corporation India Private Ltd., and Deputy Regional CEO, Asia & Oceania (Southwest Asia) (New Delhi)

2017: Executive Vice President, Corporate Functional Officer, Chief Compliance Officer and Officer, Emergency Crisis Management Headquarters of Mitsubishi Corporation  
2021: Director of Mitsubishi Corporation Representative Director, Chairman of the Board, CEO and CWO of the Company  
2022: Representative Officer, Chairman, President, CSO and CWO of the Company (current position)



**Yutaka Kunigo**  
Outside Director\*<sup>7</sup>

1977: Joined Tokyo Gas Co., Ltd.  
2010: Managing Executive Officer, Chief Executive of Resources Business Division of Tokyo Gas Co., Ltd.  
2013: Director, Managing Executive Officer, Chief Executive of Energy Production Division of Tokyo Gas Co., Ltd.  
2014: Representative Director, Vice President, Executive Officer, Chief Executive of Energy Solution Division of Tokyo Gas Co., Ltd.  
2015: Representative Director, Vice President, Executive Officer responsible for Power Business Planning Department, Business Renovation Project Department, and Sales Innovation Project Department of Tokyo Gas Co., Ltd.

2016: Representative Director, Vice President, Executive Officer responsible for Power Business Control Department, Chief Executive of Energy Production Division responsible for Power Business Planning Department of Tokyo Gas Co., Ltd.  
2017: Director and Chairman, Tokyo Gas Engineering Solutions Corporation  
2020: Outside Director, Nippon Paper Industries Co., Ltd. (current position)  
2022: Outside Director, Ise Chemicals Corporation (current position)  
Outside Director of the Company (current position)



**Fuminori Hasegawa**  
Senior Executive  
Vice President,  
Executive Officer

1982: Joined Mitsubishi Corporation  
1998: Operation Management Dept. of the Company  
2008: Group Controller, Energy Business Group of Mitsubishi Corporation  
2012: General Manager, Energy Business Group CEO Office of Mitsubishi Corporation  
2013: Division COO, Petroleum Business Division, Energy Business Group of Mitsubishi Corporation  
2014: Senior Vice President, Division COO, Petroleum Business Division, Energy Business Group of Mitsubishi Corporation  
2015: Senior Vice President, Division COO, Petroleum Business Division, Energy Business Group of Mitsubishi Corporation, and Chairman & Director of Mitsubishi Corporation Energy Co., Ltd.

2017: Senior Vice President, Division COO, Energy Resources Division (Asia Pacific), Energy Business Group of Mitsubishi Corporation  
2019: Executive Vice President, CRO and Division Director, Strategy & Risk Integration Division of the Company  
2021: Executive Vice President, and Division Director of Strategy & Risk Integration Division of the Company  
2022: Senior Executive Vice President, Head of Strategy & Risk Integration, HR & DX, and Division Director of Strategy & Risk Integration Division of the Company (current position)



**Shingo Torii**  
Full-Time Audit and  
Supervisory Committee  
Member

1990: Joined Mitsubishi Corporation  
2012: General Manager, Corporate Accounting Department, Metal One Corporation  
2016: General Manager, Administration Dept., Chemicals Group, Mitsubishi Corporation  
2019: General Manager, Industrial Materials and Petroleum & Chemicals Administration Dept., Mitsubishi Corporation  
2021: Senior Advisor of the Company Full-Time Audit and Supervisory Committee Member of the Company (current position)



**Koji Tarutani**  
Representative Director,  
Executive Vice President,  
CFO\*<sup>5</sup> & CCO\*<sup>6</sup>  
Division Director,  
Finance & Accounting  
Division

1986: Joined The Mitsubishi Bank, Ltd.  
2012: Business Risk Management Division and General Manager (Special Assignment) of Global Compliance Division of The Bank of Tokyo-Mitsubishi UFJ, Ltd.  
2014: General Manager of Credit Examination Office of Internal Audit Division of The Bank of Tokyo-Mitsubishi UFJ, Ltd.  
2016: General Manager (Special Assignment) of Internal Audit Division of Mitsubishi UFJ Financial Group and General Manager of Credit Examination Office of Internal Audit Division of The Bank of Tokyo-Mitsubishi UFJ, Ltd.  
General Manager of Legal Division of Mitsubishi UFJ Financial Group and General Manager of


Legal Division of The Bank of Tokyo-Mitsubishi UFJ, Ltd.  
2019: Representative Director, Executive Vice President, CFO and Division Director of Finance & Accounting Division of the Company  
2022: Representative Director, Executive Vice President, CFO and CCO, Head of Finance & Accounting, Legal & General Affairs, and Division Director of Finance & Accounting Division of the Company (current position)



**Mika Narahashi**  
Outside Audit &  
Supervisory Committee  
Member\*<sup>7</sup>

2000: Registered as a lawyer (Tokyo Bar Association)  
2003: Joined Anderson Mori & Tomotsune  
2007: Joined Investment Banking Division of Deutsche Securities Inc.  
2009: Joined American Life Insurance Company (currently MetLife, Inc.) Senior Manager of Legal Affairs Department of American Life Insurance Company

2015: Joined AIG American Home Assurance Company, Ltd. Head of Legal Affairs Office of AIG American Home Assurance Company, Ltd.  
2017: Senior Partner of TH Law Office (current position)  
2018: Director of the Company (Audit & Supervisory Committee Member) (current position)



**Masao Ishikawa**  
Director

1980: Joined the Company  
2011: General Manager, Gas LNG Process Engineering Department of the Company  
2013: Vice President and Deputy Division Director, Technology & Engineering Division of the Company  
2015: Senior Vice President and Division Director, Technology & Engineering Division of the Company  
2020: Executive Vice President and Division Director, Technology & Engineering Division of the Company  
2021: Senior Advisor of the Company  
Director of the Company (current position)



**Hisashi Ito**  
Outside Audit &  
Supervisory Committee  
Member\*<sup>7</sup>

1983: Joined The Mitsubishi Trust and Banking Corporation  
2005: General Manager, Money Market Activities Division, Mitsubishi Trust and Banking Corporation  
2010: General Manager, London Branch, Mitsubishi UFJ Trust and Banking Corporation Executive Officer, Mitsubishi UFJ Trust and Banking Corporation  
2012: Managing Executive Officer, Mitsubishi UFJ Trust and Banking Corporation  
2013: Managing Director, Mitsubishi UFJ Trust and Banking Corporation


2015: Senior Managing Director (Representative Director) and CIO, Mitsubishi UFJ Trust and Banking Corporation  
2016: Director, Senior Managing Executive Officer and CIO  
2017: Representative Director, President, The Master Trust Bank of Japan, Ltd.  
2019: Representative Director and Chairman, Mitsubishi UFJ Trust Systems Co., Ltd. (current position)  
2020: Audit and Supervisory Committee Member of the Company (current position)

\*1 Chief Sustainability Officer  
\*2 Chief Wellness Officer

\*3 Chief Executive Officer  
\*4 Chief Information Officer

\*5 Chief Financial Officer  
\*6 Chief Compliance Officer


\*7 Outside Director as stipulated in Article 2, Item 15 of the Companies Act



**Koji Ota**  
Director

1989: Joined Mitsubishi Corporation  
2012: General Manager, Smart Community Business Integration Unit, Environment & Infrastructure Business Division of Mitsubishi Corporation  
2013: General Manager, Environment Energy Business Unit, Environment & Infrastructure Business Division of Mitsubishi Corporation  
2015: Director, Lithium Energy Japan  
2018: Executive Vice President, Lithium Energy Japan

2019: Senior Vice President, Division COO, Plant Engineering Division of Mitsubishi Corporation  
2022: Executive Vice President, Group CEO, Industrial Infrastructure Group, Division COO, Plant Engineering Div. of Mitsubishi Corporation (current position)  
Director of the Company (current position)



**Ryo Matsukawa**  
Outside Director\*<sup>7</sup>

1979: Joined Tokyo Shibaura Electric Co., Ltd (currently Toshiba Corporation)  
2007: General Manager, Technology Management Div., Toshiba Corporation Power Systems Company  
2011: General Manager, Fuchu Complex, Toshiba Corporation  
2013: Executive Quality Leader, Toshiba Corporation Power Systems Company  
2014: Representative Director, President and Chief Executive Officer, Toshiba Plant Systems & Services Corporation  
2021: Outside Director of the Company (current position)

Executive Officers

President	Senior Vice President	Vice President	
Masakazu Sakakida (CSO & CWO)	Setsuo Iuchi	Munetaka Horiguchi	Keio Naruko
	Hideo Matsui	Masaki Kumagai (CHRO* <sup>8</sup> & CDO* <sup>9</sup> )	Masami Tamura
Senior Executive Vice President	Toshiya Momose	Toshiaki Saito	Katsuhiko Jogan
Fuminori Hasegawa	Norimasa Matsuoka	Takayuki Naito	
	Tetsuya Konno	Naoki Kobayashi	
Executive Vice President	Hidehiko Suzuki	Taku Ito	
Koji Tarutani (CFO & CCO)			
Hiroyuki Shimizu			

\*8 Chief Human Resources Officer  
\*9 Chief Digital Officer



# Compliance

Chiyoda considers compliance a core value, based on our conviction that the trust of society and its customers underpin a company's business activities. We proactively enhance compliance education and training programs to prevent unlawful and fraudulent acts and human right infringements, while continuing to reinforce our compliance systems to ensure their early detection, a swift response, and measures to prevent reoccurrence. We are unwavering in our commitment to further strengthening compliance throughout the Group.

## The Group's Compliance System

### Organizational Structure

The CCO, appointed by the Board of Directors, is responsible for overseeing compliance in all divisions. Compliance Officers in each division are responsible for compliance policies and implementing compliance measures in their respective division. Group company representatives serve as the Group Company Compliance Officer and are responsible for implementing compliance measures in their company.

### Code of Conduct

The 'Chiyoda Group Code of Conduct and Conduct Guidelines' ensure our business activities conform to national and international laws and regulations, company rules, and social ethics. All officers and employees are expected to comply with, and base their decisions and actions upon, the standards set within the code and guidelines.

## Initiatives to Enhance Compliance Awareness and Knowledge

The Chiyoda Group advances compliance by implementing multi-faceted initiatives, to enhance executive and employee compliance awareness and knowledge. We have added the following new initiatives to supplement previous ones.

Key Initiatives	Details
e-learning	Conducting annual compliance-related e-learning for all Group employees
Email newsletter	Distributing monthly compliance newsletters by email, containing news, topics, and trivia, to all employees in Japan
Harassment prevention <b>NEW</b>	Conducting Group employee harassment surveys in domestic Group companies and conducting emotion management seminars
Revision to Basic Policy on Human Rights <b>NEW</b>	Assessing business risks that could negatively impact human rights, revising Basic Policy on Human Rights, and conducting business and human rights seminars for all Group employees

## Internal Whistleblowing System

We have implemented a whistleblowing system within the Group and have established external hotlines in Group companies (to lawyers, external specialists) as 'points of contact' to report unlawful and fraudulent acts, enabling early resolution and preventing recurrence. We have also distributed 'internal whistleblowing cards' to raise awareness of the internal whistleblowing system and inform officers and employees of the 'points of contact' inside and outside the Group.

### Consultations Provided and Whistleblowing Reports Received in Fiscal 2021

Category	Number of consultations provided and whistleblowing reports received in fiscal year 2021
Legal violations and bribery (including cartel and other concerns)	1
Violation of internal rules	13
Power harassment (including consultations, canceled items, and other concerns)	37
Sexual harassment and pregnancy discrimination	7
Workplace environment	20
Other consultations	30
Total	108



Please refer to the following for Group compliance details.

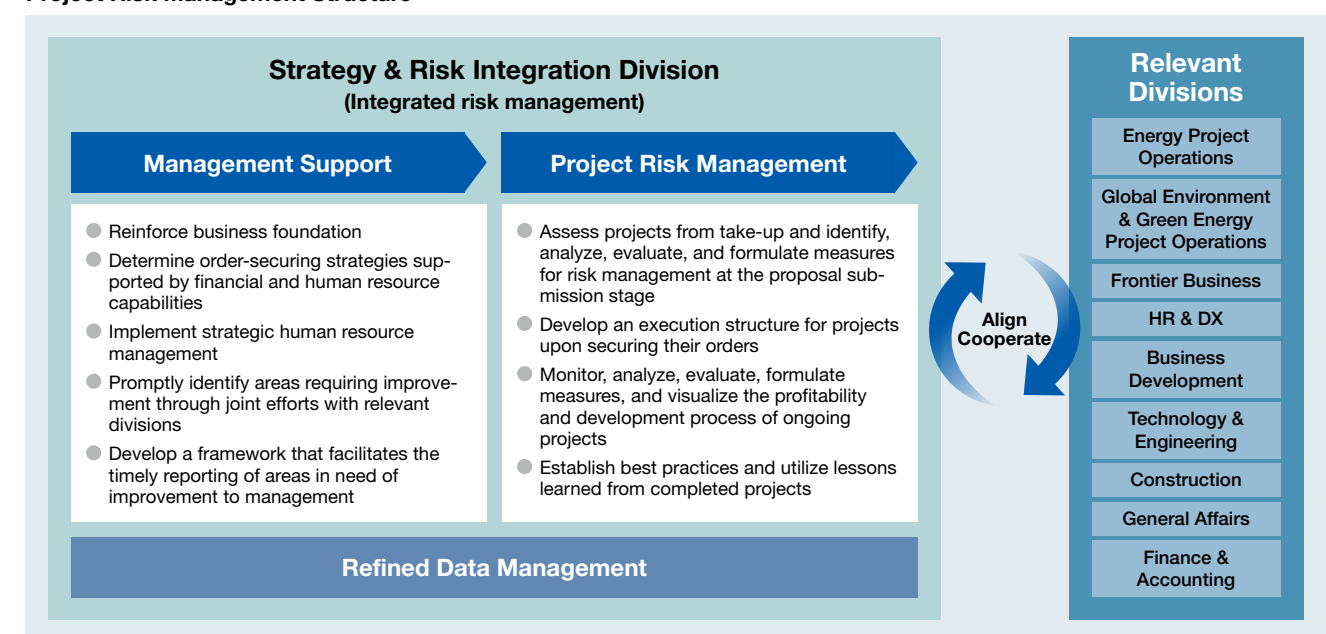
<https://www.chiyodacorp.com/en/csr/risk-management/compliance/initiatives.html>

# Risk Management

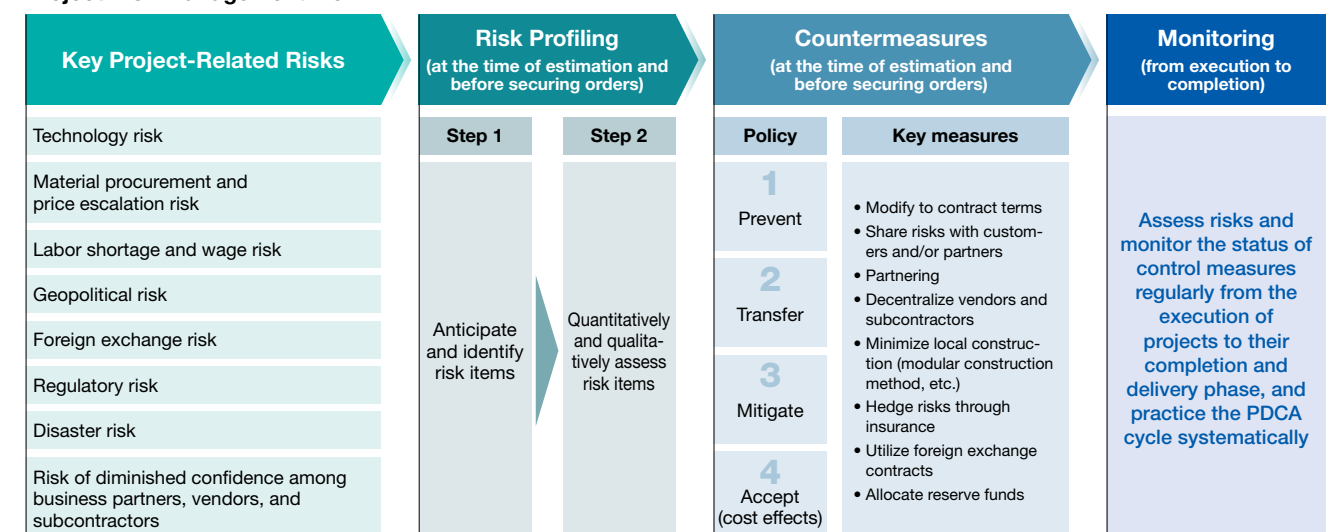
## Integration and Strengthening of Project Risk Management

- The key to executing and completing a project according to plan is risk management. At the Chiyoda Group, the Strategy & Risk Integration Division assumes the role of a control tower, assisting in strategies and managing risks throughout each stage of a project, thereby centrally managing project risks from the estimation phase prior to the receiving of orders through to the execution, completion, and delivery phases. The Strategy & Risk Integration Division is also tasked with providing management support.
- Under this integrated risk management system, we will continue to enhance the precision of our project management in terms of cost, scheduling, and quality by making more effective use of digital technology and improving data management. In so doing, we will ensure extensive risk management while continuing to aim for even higher standards in this regard.

### Project Risk Management Structure



### Project Risk Management Flow





Safety Management

Step Forward!

All Chiyoda Group employees regularly and responsibly engage in educational training courses based on our Safety, Quality and Environmental (SQE) policy, including our unique behavior-based safety assurance program, 'C-Safe'. We continuously strive to embed a sustainable culture of safety throughout our organization by tirelessly enhancing our employee SQE knowledge and skills through such training and promoting SQE activities through collective Groupwide efforts.

In the 2021 fiscal year, we advanced a step closer to achieving our safety targets by continuously improving our safety performance, meeting Total Recordable Incident Rate (TRIR) targets for a third consecutive year on overseas projects and reducing the figure by more than half compared to the previous year on domestic projects. Initiatives to improve our safety culture are delivering results and increasing awareness of SQE among employees.

In the 2022 fiscal year, we launched an initiative called 'Step Forward!' to improve outcomes with more effective communication based on mutual understanding and respect, while raising awareness of SQE even further. Through 'Step Forward!', we empower individuals with the courage to 'step-up', stimulating human resource and organizational development.



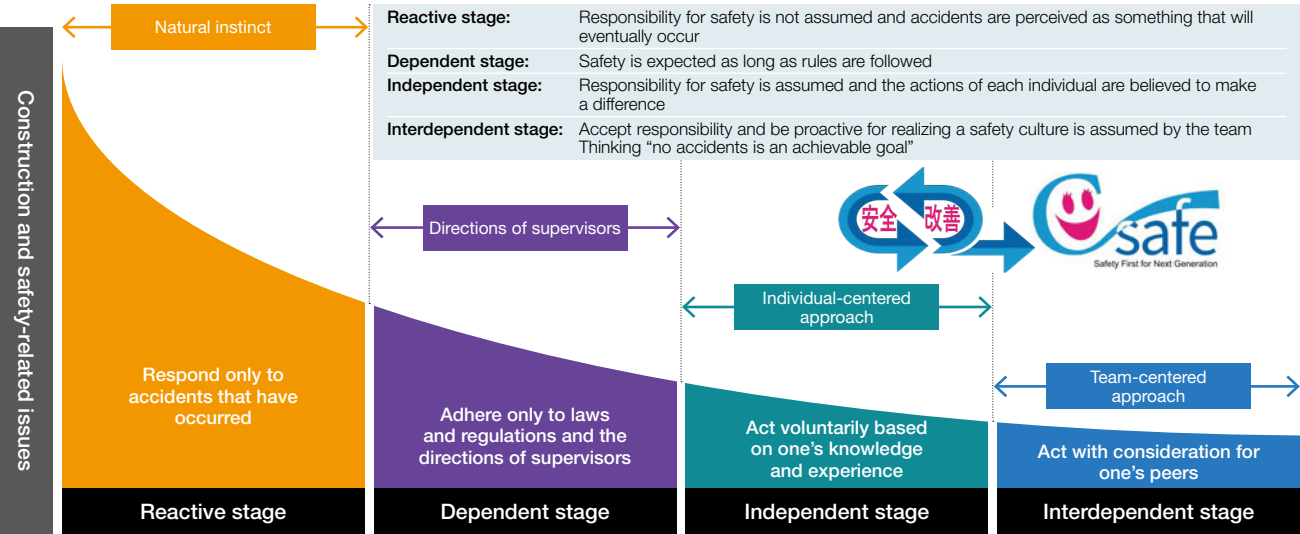
C-Safe Program

In the 2020 fiscal year, the Chiyoda Group adopted the DuPont Sustainable Solutions Bradley Curve™, identifying four stages of safety culture maturity, with a view to assessing safety on its construction sites and, by combining this approach with our C-Safe Program, we are currently advancing from the independent stage to the interdependent stage.

Encouraging results from safety awareness surveys conducted on construction sites since the 2019 fiscal year demonstrate how the 'Better Together' concept, realized through collective effort and continuous coaching and support, is positively impacting employee health and safety. We will continue with this initiative to realize our injury and incident free workplace objectives in our untiring endeavors to ensure peak safety performance.

We will continue educating and training employees in the 2022 fiscal year, using knowledge and experience gained through the construction of successful projects to 'continuously improve' our safety performance. By demonstrating safety leadership based on our 'One Team' approach, embracing change and creating workplaces that cultivate the skills geared to such change, we will continue to improve our business performance towards further growth.

Companywide Health, Safety and Environment (HSE) targets for the 2022 fiscal year emphasize the two key phrases "Leadership" and "One Team" as areas of 'continuous improvement'.



Source: DuPont Bradley Curve™

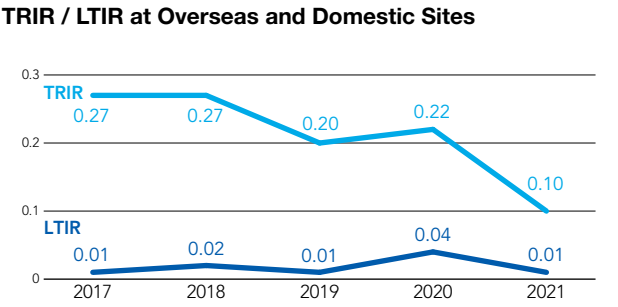
Please refer to the following website for details on our C-Safe Program.  
<https://www.chiyodacorp.com/en/csr/safety/c-safe.html>

Safety Performance

The graph on the right illustrates the Chiyoda Group's safety performance over the five calendar years up to 2021. LTIR\*1 is an indicator of past performance. TRIR\*2 is a forward-looking indicator that sounds the alarm about the risk of injuries that are more serious than accidents requiring time off from work. Although both indicators in the 2021 fiscal year were less than 50% of the 2020 level, we will continue striving to improve these results even further. The TRIR disclosed by the Chiyoda Group includes occupational illness, such as heat stroke, and does not therefore compare with other 'third party' results which do not include such results.

The Chiyoda Group believes that 'every incident is preventable' as we relentlessly pursue zero injuries in the workplace and strenuously instill a 'learner mindset' on all our construction sites.

\*1 Lost Time Incident Rate = Number of lost-time injuries (including fatalities) / Number of hours worked x 200,000  
\*2 Total Recordable Incident & Illness Rate (for injuries requiring medical treatment) = Number of injuries\* / Number of hours worked x 200,000  
\* Including fatalities, lost worktime, change in employment regulations, and incidents medical support, including heat stroke



Please visit the website below for further safety information.  
<https://www.chiyodacorp.com/en/csr/safety/safety-performance.html>



# DATA SECTION

In this section, we provide key data on the Chiyoda Group, financial results over the past 11 years and ESG initiatives.

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Key ESG Data

Environmental Initiatives						
The Chiyoda Group strives to realize its corporate philosophy of 'Energy and Environment in Harmony' and further contribute to the sustainable development of society through its business activities.						
KPI	Unit	2018/3	2019/3	2020/3	2021/3	2022/3
Environmental Data of Domestic Construction Sites						
Industrial waste disposal quantity (excluding sludge)	Tons	12,242	17,138	22,223	13,549	16,577
Final landfill disposal quantity (excluding sludge and incinerated ash)	Tons	614	1,059	1,464	1,432	828
CO <sub>2</sub> emissions	Tons-CO <sub>2</sub>	901	5,665	4,642	5,362	5,789
Industrial waste recycling rate (excluding sludge)	%	91.5	76.8	92.8	89.7	95.0
Electronic manifest penetration rate	%	93.2	94.6	90.8	90.2	99.0
Adoption of environmental proposals	Cases	197	347	236	237	132
Environmental Data of Overseas Construction Sites (Released from March 2020)						
Industrial waste disposal quantity	Tons	–	–	6,868	4,097	3,841
Final landfill disposal quantity (excluding recyclable resources and incinerated ash)	Tons	–	–	4,624	3,075	1,976
CO <sub>2</sub> emissions	Tons-CO <sub>2</sub>	–	–	56,970	86,817	51,703
Industrial waste recycling rate	%	–	–	17.0	3.5	5.6
Adoption of environmental proposals	Cases	–	–	111	150	98
Environmental Data of Chiyoda Group Company Offices						
Power consumption	1,000 kWh	11,129	10,331	9,313	8,294	8,426
Energy consumption	kl	3,430	3,295	3,018	2,678	2,754
CO <sub>2</sub> emissions	Tons-CO <sub>2</sub>	6,367	6,083	5,685	4,647	4,603
Chilled water consumption	1,000 m <sup>3</sup>	15.5	17.5	15.2	9.8	11.3
Steam consumption	GJ	5,168	4,541	4,633	4,849	5,428
Cold water consumption	GJ	11,306	14,201	13,785	10,865	10,938
Waste disposal volume	Tons	233	241	281	214	147
Waste recycling rate	%	93.8	95.4	96.5	92.9	89.7
Printing paper consumed	Tons	66	80	70	43	25

Governance Initiatives						
The Chiyoda Group is dedicated to transparency and stability in its operations in accordance with the highest ethical standards.						
KPI	Unit	2018/3	2019/3	2020/3	2021/3	2022/3
Actions for Compliance						
Number of employees receiving compliance training (new recruits, midcareer hires, and executives and associate executives)	Persons	150	112	114	114	83
Number of employees receiving compliance training (overseas assignment, site managers at field offices, export control, and bribery prevention)	Persons	314	168	248	422	1,254
Number of employees attending compliance seminars held by external instructors	Persons	662	172	711	2,021	1,235
Number of employees receiving compliance training via e-learning	Persons	5,213	4,669	5,704	5,189	5,179
Number of reports submitted under the Compliance Consultation and Whistleblowing System	Cases	25	36	98	93	108
Initiatives for Business Continuity						
Business continuity plan (BCP) training	Times	2	2	0	1	0
Actions for Information Security						
Number of serious information security-related incidents	Cases	0	0	0	0	0
Governance-Related Data						
Number of outside directors	Persons	4	5	5	4	4

Social Initiatives						
The Chiyoda Group contributes to local communities through its business, such as human resource development, human rights and labor initiatives, and social contributions. We also cultivate a corporate culture that embraces diversity and individuality, as well as the uniqueness of each director and employee, and boosts employee morale through our respect for individuals and their families.						
KPI	Unit	2018/3	2019/3	2020/3	2021/3	2022/3
Employee Status						
Average years of service	Years	13.2	12.3	12.7	14.2	14.2
Average age of employees	Years	41.6	41.0	41.3	41.2	41.4
Turnover rate excluding retirement	%	4.5	2.5	4.7	2.9	3.6
Employee Diversity						
Ratio of female employees among new recruits	%	33	25	27	31	21
Number of female employees among new recruits	Persons	19	12	14	11	7
Ratio of mid-career employment (Released from March 2019)	%	–	25.0	16.1	36.7	59.1
Ratio of women among all employees	%	19	16	16	16	17
Average years of service of female employees	Years	7.6	8.1	9.0	9.4	9.6
Number of women in management positions	Persons	24	25	28	28	54
Ratio of women in management positions	%	3.2	3.5	3.8	3.7	6.3
Ratio of employment of persons with disabilities	%	1.5	1.6	1.7	1.7	1.6
Number of non-Japanese employees	Persons	71	63	73	77	71
Employee Support						
Number of employees taking childcare leave	Persons	27	26	28	43	50
Number of employees taking sick/injured childcare leave	Persons	7	11	23	18	4
Number of employees taking nursing care leave	Persons	9	9	10	10	5
Number of employees taking temporary retirement for nursing care	Persons	0	0	1	0	0
Number of employees working reduced hours for childcare	Persons	14	12	27	24	31
Number of employees dispatched for on-site training/on-site instruction	Persons	54	42	47	24	25
Volunteer Activities						
Number of employees participating in reconstruction assistance	Persons	54	53	9	0	0
Number of employees participating in cleanup activities (around Chiyoda Global Headquarters and Koyasu Office)	Persons	157	110	120	25	8
Donation of vaccines through the collection of plastic bottle caps under ECOCAP Program	Vaccines	231	292	278	207	184
Donation of school lunches through TABLE FOR TWO	Lunches	1,581	1,561	1,557	1,386	1,288



# Eleven-Year Summary

Chiyoda Corporation and Consolidated Subsidiaries

	2012/3	2013/3	2014/3		2015/3	2016/3	2017/3	2018/3	2019/3	2020/3	2021/3	2022/3
Results for the Year												
Revenue	254,675	398,918	446,147		480,979	611,548	603,745	510,873	341,952	385,925	315,393	311,115
Gross Profit (Loss)	38,891	42,515	41,462		45,651	41,520	38,223	8,618	(181,148)	42,823	20,061	22,794
SG&A Expenses	14,693	17,402	20,383		24,185	25,505	22,543	20,948	18,647	16,033	13,046	12,249
Operating Income (Loss)	24,197	25,113	21,079		21,466	16,015	15,680	(12,330)	(199,795)	26,789	7,015	10,545
Ordinary Income (Loss)	23,793	25,518	22,837		22,271	16,205	(3,080)	(10,100)	(192,998)	18,644	8,462	11,431
Net Income (Loss) Attributable to Owners of the Parent	14,364	16,077	13,447		11,029	3,375	(41,116)	6,445	(214,948)	12,177	7,993	(12,629)
Financial Position at Year-End												
Current Assets	320,478	383,206	409,096		444,578	455,030	425,244	374,470	326,929	360,387	305,891	372,682
Current Liabilities	193,687	230,431	261,679		294,339	311,106	301,182	247,847	392,505	319,878	244,657	350,675
Total Assets	365,795	435,379	475,288		515,839	528,219	461,331	420,337	352,341	385,051	329,583	395,396
Interest-Bearing Debt	10,198	10,220	11,305		11,010	10,348	10,211	10,000	15,989	35,871	45,747	45,621
Net Assets	168,737	189,356	198,031		208,405	202,128	157,125	159,418	(59,154)	24,943	36,747	15,761
Shareholders' Equity	168,120	188,386	196,411		206,395	200,166	155,339	157,557	(60,114)	24,423	36,399	15,654
Cash Flows												
Cash Flows from Operating Activities	55,615	14,147	(17,177)		(24,145)	55,526	(4,375)	(34,115)	(37,941)	(32,217)	(20,806)	(25,591)
Cash Flows from Investing Activities	(9,140)	(5,257)	(16,796)		(5,444)	(26,750)	10,433	(1,428)	778	(7,828)	(2,250)	(3,787)
Cash Flows from Financing Activities	(2,899)	(4,432)	(5,249)		(4,569)	(3,942)	(2,693)	(1,468)	4,020	89,200	9,478	(4,197)
Cash and Cash Equivalents, at End of Year	173,769	180,229	145,303		113,246	136,919	138,889	101,767	68,306	115,932	98,738	69,099
Key Ratios												
Gross Profit (Loss) Margin (%)	15.3	10.7	9.3		9.5	6.8	6.3	1.7	(53.0)	11.1	6.4	7.3
Return on Assets (ROA) (%)	6.6	6.4	5.0		4.5	3.1	(0.6)	(2.3)	(50.0)	5.1	2.4	3.2
Return on Equity (ROE) (%)	8.9	9.0	7.0		5.5	1.7	(23.1)	4.1	(441.2)	(68.2)	26.3	(48.5)
Shareholders' Equity Ratio (%)	46.0	43.3	41.3		40.0	37.9	33.7	37.5	(17.1)	6.3	11.0	4.0
Current Ratio (%)	165.5	166.3	156.3		151.0	146.3	141.2	153.0	83.3	112.7	125.0	106.3
Debt Equity Ratio (DER*1) (Times)	0.06	0.05	0.06		0.05	0.05	0.07	0.06	(0.27)	1.47	1.26	2.91
Earnings Per Share (EPS*2) (Yen)	55.44	62.06	51.91		42.58	13.03	(158.76)	24.89	(830.02)	40.94	22.76	(56.88)
Book-value Per Share (BPS*3) (Yen)	648.95	727.24	758.31		796.89	772.89	599.83	608.41	(232.13)	(182.07)	(143.94)	(218.11)
Dividend Per Common Share (Yen)	17	19	16		13	10	6	7.5	—	—	—	—
Common Dividend Payout Ratio (%)	30.7	30.6	30.8		30.5	76.7	38.7	30.1	—	—	—	—
Dividend Per Type A Preferred Share*4 (Yen)										—	20.78	—
Price Earning Ratio (PER*5) (%)	19.0	16.9	25.6		24.1	63.3	(4.5)	40.3	(0.31)	5.2	21.0	(8.3)

\*1 Debt Equity Ratio  
\*2 Earnings Per Share  
\*3 Book-value Per Share  
\*4 Type A Preferred Share was issued in July 2019  
\*5 Price Earnings Ratio



Corporate Information

(As of March 31, 2022)

Company Profile

Company Name	Chiyoda Corporation
Established	January 20, 1948
Paid-In Capital	¥15,014 million
Number of Employees	5,061 (consolidated and equity-method affiliates)
Business Activities	Integrated engineering business
Main Offices	Chiyoda Global Headquarters Koyasu Office & Research Park
Project Experience	In over 60 countries

Major Shareholders

1. Common Stock (10 Largest Shareholders)

Shareholder	Number of Shares Owned (Thousands of Shares)	Ratio of Shares Owned (%)
Mitsubishi Corp.	86,931	33.39
MUFG Bank, Ltd.	9,033	3.47
The Master Trust Bank of Japan, Ltd. (Trust Account)	5,226	2.00
Custody Bank of Japan, Ltd. (Trust Account)	4,338	1.66
Chiyoda Employee Shareholding Association	4,091	1.57
The Mitsubishi UFJ Trust & Banking Corp.	3,874	1.48
GOVERNMENT OF NORWAY	3,059	1.17
Meiji Yasuda Life Insurance Company	2,265	0.87
SSBTC CLIENT OMNIBUS ACCOUNT	2,222	0.85
Chiyoda Kyoekai	1,960	0.75

Note: Shareholding ratio is calculated exclusive of treasury stock.

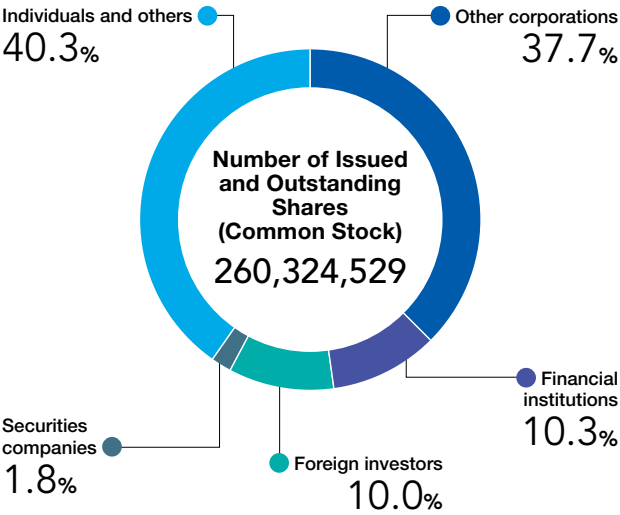
2. Type A Preferred Shares

Shareholder	Number of Shares Owned (Thousands of Shares)	Ratio of Shares Owned (%)
Mitsubishi Corporation	175,000	100

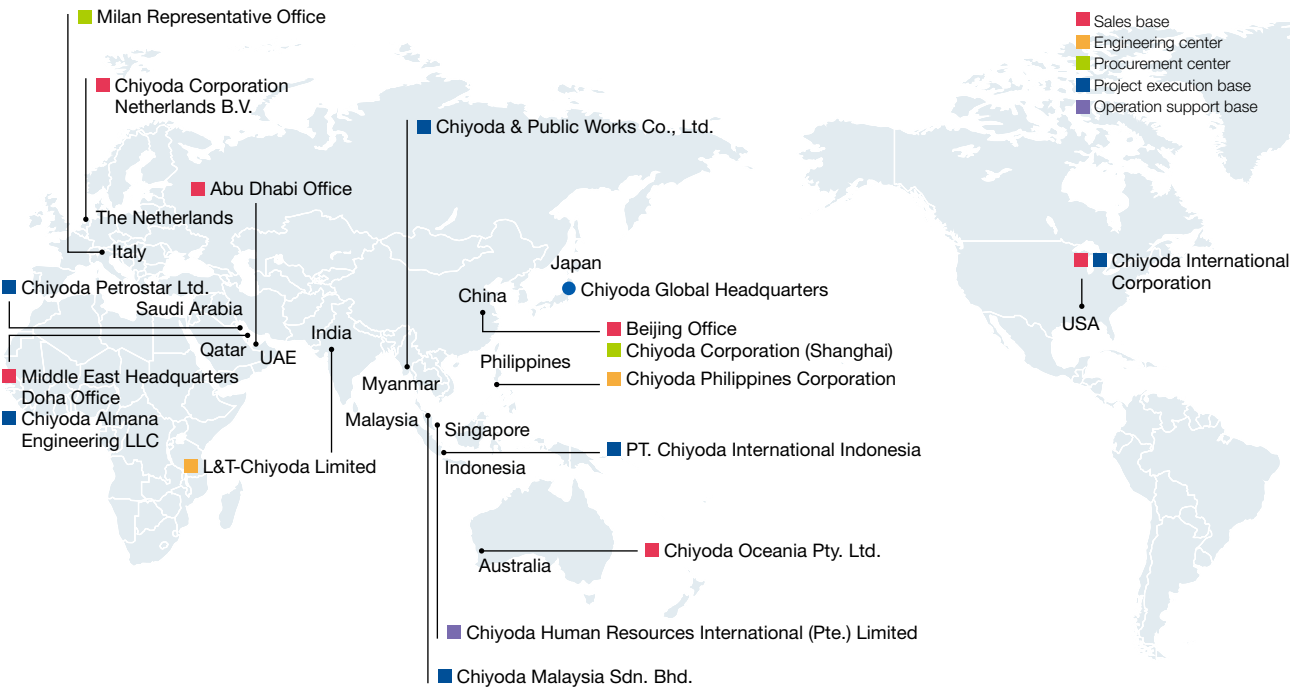
Stock Information

Fiscal Year	April 1 to March 31 of the following year	
Ordinary General Meeting of Shareholders	June	
Number of Authorized Shares	Common Stock	1,500,000,000 (As of June 23, 2022)
	Type A Preferred Shares	175,000,000
Number of Issued and Outstanding Shares	Common Stock	260,324,529 (1 unit = 100 shares)
	Type A Preferred Shares	175,000,000 (1 unit = 1 share)
Number of Shareholders	Common Stock	42,694
	Type A Preferred Shares	1
Listing of Shares	Tokyo Stock Exchange, Standard Market	
Stock Transaction Unit	100 shares	

Breakdown of Shareholders



Chiyoda's Global Network (Major Overseas Subsidiaries and Offices)



Major Subsidiaries and Affiliated Companies

Engineering

Chiyoda Kosho Co., Ltd.

Services: Design, construction and maintenance for domestic projects  
<https://www.cks-ykh.co.jp/>

Chiyoda TechnoAce Co., Ltd.

Services: Design and construction for pharmaceutical facilities  
[https://www.cta.chiyoda.co.jp/en\\_corporate/](https://www.cta.chiyoda.co.jp/en_corporate/)

Chiyoda System Technologies Corporation

Services: Engineering, procurement, construction and maintenance of electrical and instrumentation, and of social infrastructures. Supplying spare part and materials.  
<http://www.cst.chiyoda.co.jp/english/>

Digital

TIS Chiyoda Systems Inc.

Services: Consulting, development, and operation for integrated IT systems  
<https://www.tc-systems.co.jp/english/>

PlantStream Inc.

Services: Development and sales of "PlantStream™"  
<https://plantstream3d.com/>

Business Support

Chiyoda U-Tech Co., Ltd.

Services: Technical consulting of energy and environment, staffing of engineers, and outsourcing services  
<https://www.utc-yokohama.com/english/>

Arrow Business Consulting Corporation

Services: Consulting for finance and accounting

Inquiries

Chiyoda Corporation

IR, PR & Sustainability Advanced Section, Corporate Services Department  
Minatomirai Grand Central Tower 4-6-2, Minatomirai, Nishi-ku, Yokohama 220-8765, Japan



Inquiries

<https://www.chiyodacorp.com/en/contact/index.php>

WE SUPPORT



Chiyoda Corporation joined the UN Global Compact in 2012, declaring its commitment to 10 universal principles in the following four areas: human rights, labor, the environment, and anti-corruption. Guided also by the spirit of CSR Value, we are promoting initiatives in each of these four areas.





**Chiyoda Global Headquarters**

Minatomirai Grand Central Tower, 4-6-2, Minatomirai,  
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<https://www.chiyodacorp.com/en/>