Business Overview

Initiatives for Revitalization and the Future

November 2, 2023

Chiyoda Corporation

（Stock code: 6366）

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AGENDA :

1. Executive Summary
2. New Orders
3. Major Ongoing Projects
4. Business Portfolio Transformation
5. Sustainability

Our SDGs Materiality

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Enriching Society through Engineering Value

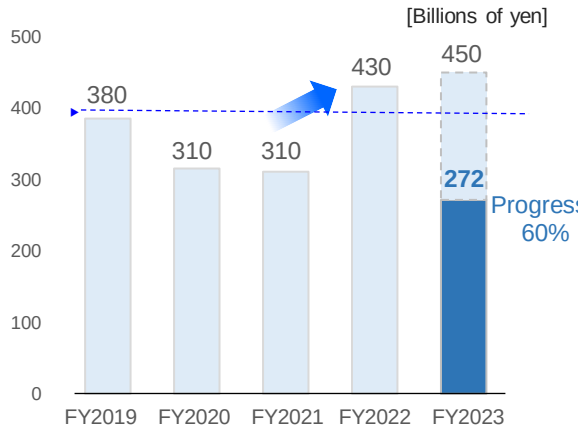
1 Executive Summary

Executive Summary

Priorities for FY2023 (Final year of the 5 Year Plan)	Progress of the First Half
1 Strengthening financial position through profit earnings by steadily executing JPY 1.1 trillion Project Backlog	➢ Generating stable earnings by executing ongoing projects as planned
2 Accelerating business portfolio transformation via continuing growth in new business areas	➢ Accumulating orders, mainly in the decarbonization field ➢ Accelerating new business initiatives, including commercialization of hydrogen business

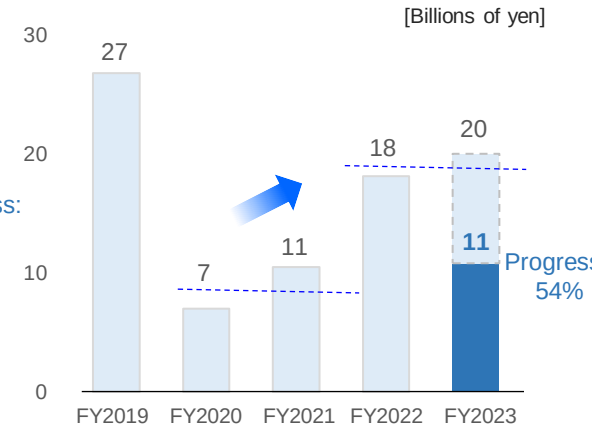
Revenue

Steadily executes ongoing projects



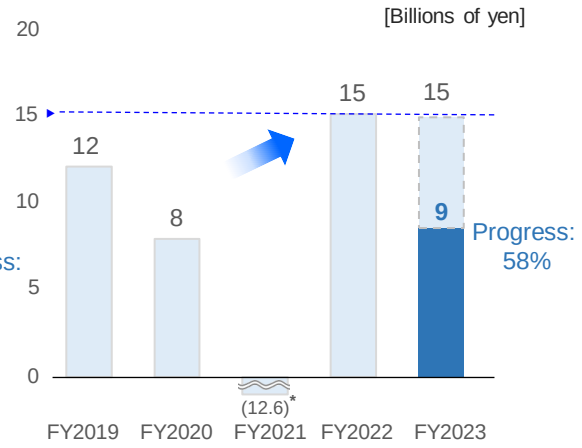
Operating Profit

Further improves earnings structure



Profit

High level and stable profit



* The figure includes Extraordinary Losses of JPY 20.4 billion related to the project losses by settlement of lawsuit with a client.

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2 New Orders

New Orders / Results for 1H and Forecasts for 2H

Increasing orders, mainly in Japan's decarbonization and life science fields, where a strong appetite for capital spending is demonstrated, leading to business portfolio transformation.

Business		FY2023 1H	FY2023 2H	Full Year Target
New Orders		**135** Billion Yen **(Progress: 45%)**		**300** Billion Yen
	Domestic	**101** Billion Yen	➢ Steady growth mainly in new business projects ➢ Enhancing the Group's overall strength through collaboration with Chiyoda X-ONE Engineering Corporation*	**250** Billion Yen
		[Major projects awarded] • Battery energy storage • Advanced materials • Biopharmaceutical manufacturing • Synthetic fuel (e-fuel) etc.	[Projects in focus] • Decarbonization • Life science etc. • Advanced materials	
	Overseas	**33** Billion Yen	➢ Focusing on activities to generate future orders such as strengthening partnerships. ➢ Change orders from clients	**50** Billion Yen
		[Major projects awarded] • Change orders from clients for ongoing projects etc.	[Projects in focus] • LNG • Hydrogen, decarbonization etc.	

* Chiyoda X-ONE Engineering Corporation was established in April 2023 from the merger of three group companies.

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3 Major Ongoing Projects

1. Tangguh LNG Expansion, Indonesia

Handover to the client in August, 2023

✓ 3.8 MMTPA* mega - project. Contributing to stable energy supply in Indonesia and Japan.

* Million Metric Tonne per Annum

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2. NFE LNG, Qatar

Construction ongoing.
Equipment installation commenced.

- ✓ Mr. Sakakida, President, Chairman of the Board & CEO of Chiyoda Corporation, accompanied Japan's Prime Minister Kishida on a visit to the Middle East

- ✓ Mr. Sakakida had the pleasure of an audience with Emir Tamim at the Royal Palace of Qatar, and was delighted by his encouraging sentiments regarding the continued steady progress of the NFE LNG project.

As of March 2023, Courtesy of Qatargas

3. Other Major Projects

Golden Pass LNG, USA

Engineering and procurement are in the final stage.
Construction ongoing.

Courtesy of Golden Pass LNG

Copper Smelting Plant, Indonesia

Construction is at its peak.
Completion is scheduled for 2024.

Courtesy of P.T. Freeport Indonesia

4 Business Portfolio Transformation

1. Energy Management Business

Awarded EPC contracts for two large-scale battery energy storage facilities for ENEOS Corporation

- ✓ Battery energy storage will be crucial to resolving issues in expanding the introduction of renewable energy, such as stabilizing the power supply and demand balance and power output fluctuations.
- ✓ Contributing to the realization of a decarbonized society through the execution of these projects by leveraging our experience in the early completion of one of the world's largest battery energy storage facilities in Hokkaido*1

Location	Muroran City, Hokkaido Muroran Plant of ENEOS Corporation	Ichihara City, Chiba Chiba Refinery of Osaka International Refining Co, Ltd.*2
Battery energy output/capacity	50 MW / 88 MWh	100 MW / 202 MWh
Construction started in	July 2022	August 2023
Operation starts in	FY 2023 (planned)	FY 2025 (planned)
Exterior view of the energy storage facilities*3 Left: Under construction Right: Completion image		

*1 Completion of the Engineering, Procurement and Construction of a Battery Energy Storage System in Hokkaido Prefecture, Japan, April 14, 2023

*2 A group business of ENEOS Corporation

*3 Source: ENEOS Corporation press release on August 17, 2023

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2. Advanced Materials

Awarded an EPC contract for an advanced materials production facility by Kureha Corporation

- ✓ EPC contract for the monomer process for a polyvinylidene fluoride (PVDF) production facility. One of the largest investments ever for Kureha.
- ✓ The project enables Chiyoda to contribute to the domestic production and supply of energy storage batteries, vital to the electrification of automobiles, renewable energy and the realization of a decarbonized society.

Source: Kureha Corporation Website

PVDF “KUREHA KF POLYMER”
(Image on the left)

- ✓ Key material for energy storage batteries (lithium-ion batteries, LiBs).
- ✓ Growing demand for LiBs in automotive market due to expansion of electric vehicles in response to increasing environmental awareness.

3. Hydrogen Business

Accelerating multilateral endeavors to create a hydrogen energy-based society

- ✓ Mr. Sakakida, Chairman of the Board, President & CEO, delivered a speech at 'Yomiuri Carbon Neutral Day' on August 30, 2023*1.
- ✓ Promoting a multilateral approach including cost reduction initiatives to the creation of a hydrogen value chain, comprising production, storage & transportation, distribution & consumption.

Production

- Production of MCH*2
- Hydrogen production by methane pyrolysis in collaboration with Chubu Electric Power and Hazer (Australia)

Transportation / Storage

- Promoting the commercialization of an international supply chain utilizing Chiyoda's expertise in transporting and storing hydrogen in the form of MCH

Use

- Hydrogen is catalytically extracted from MCH (using Chiyoda's proprietary dehydrogenation catalyst)
- Sustainable fuels and direct MCH fuel cell

Demonstration plant currently under construction (Courtesy of Hazer)

Dehydrogenation plant in Keihin Refinery, TOA Oil*3

Cost reduction initiatives

- ➢ Improving dehydrogenation catalyst performance
- ➢ Exploiting waste heat from surrounding facilities for dehydrogenation reaction (heat integration)
- ➢ Optimizing the entire water electrolysis facility

*1 A video of the speech is available on the "Yomiuri Shimbun Online Carbon Neutral Project Special Site".
*2 Methylcyclohexane is a hydrogen carrier produced by the chemical reaction of toluene and hydrogen and is liquid at room temperature and pressure.
*3 Source: Advanced Hydrogen Energy Chain Association for Technology Development / International hydrogen supply chain (Brunei-Kawasaki) demonstration facility

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4. O&M-X* Solution Business

Commencing plantOS™ Services

- ✓ Chiyoda provides hybrid Operation & Maintenance (O&M) solutions that combine cyber and physical technologies by uniting Chiyoda's advanced diagnosis and analysis service expertise with the latest digital technologies and by leveraging the collective strength of the Group in collaboration with Chiyoda X-ONE Engineering Corporation.
- ✓ We contribute to 'Business Safety' (safe and secure business activities) by resolving problems such as labor shortages, obsolete facilities and technical succession.

■ **Image**

Clients

HM Hybrid Maintenance

Safe and secure business activities (Business Safety)

Physical services
Construction planning
Routine maintenance
Shut Down Maintenance
Construction process management

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Condition monitoring
Documentation and data management
Spare parts management
Purchasing & procurement

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Digital services

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Sensors, IoT solutions

Digital twin solutions

V-Suite

Enterprise Asset Management (EAM) solutions

Consultation	Support for upgrading facility maintenance: analysis and diagnosis BCP (Business Continuity Plan)	Support for advanced operation: yield and efficiency improvement Implementation of smart factories

* Operation & Maintenance – Transformation

5 Sustainability

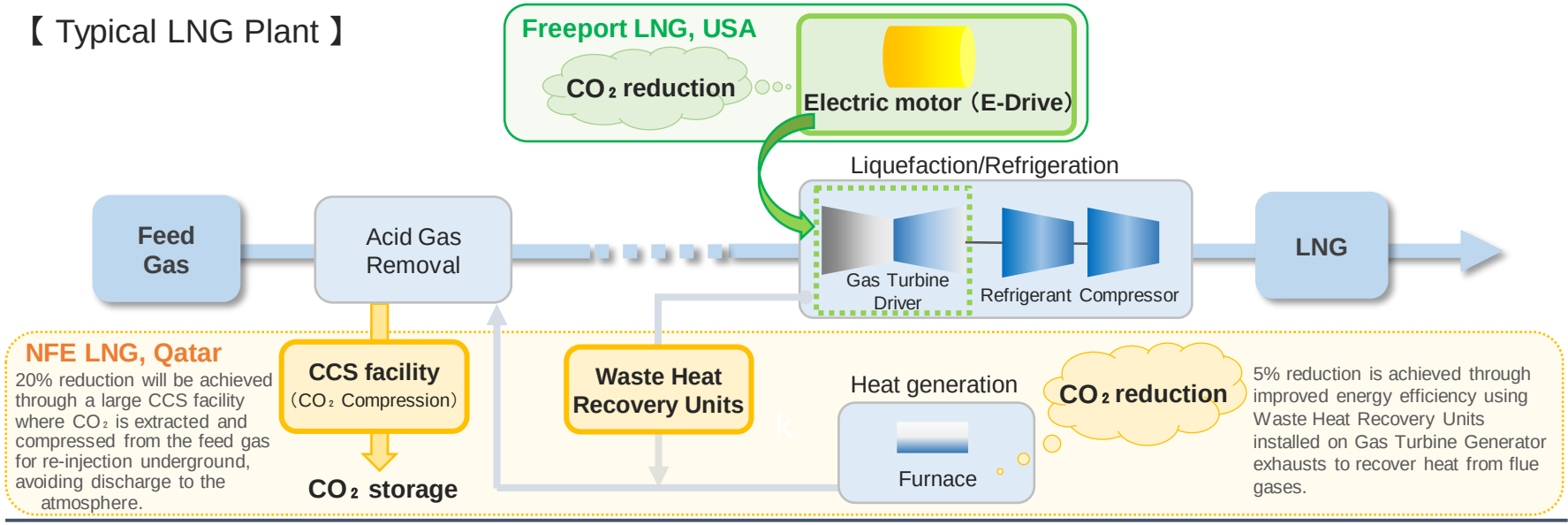
1. Reducing Supply Chain CO_2 Emissions

Promoting cleaner energy with LNG

Chiyoda continues contributing to the reduction of supply chain CO_2 emissions by focusing on the production of more environmentally friendly LNG, a major concept during the increasing demand for a stable energy supply and the transition towards renewable energy.

- ▸ NFE LNG, Qatar <EPC ongoing> : Through a large CCS* facility and Waste Heat Recovery Units, the LNG Trains will **emit 25% less CO_2** than existing similar type mega-trains when fully operational.
- ▸ Freeport LNG, USA <EPC completed> : Electric motor drives (E-Drive) are adopted in the cooling system in lieu of conventional gas turbine drive types, and **CO_2 emissions are reduced by 48%**.

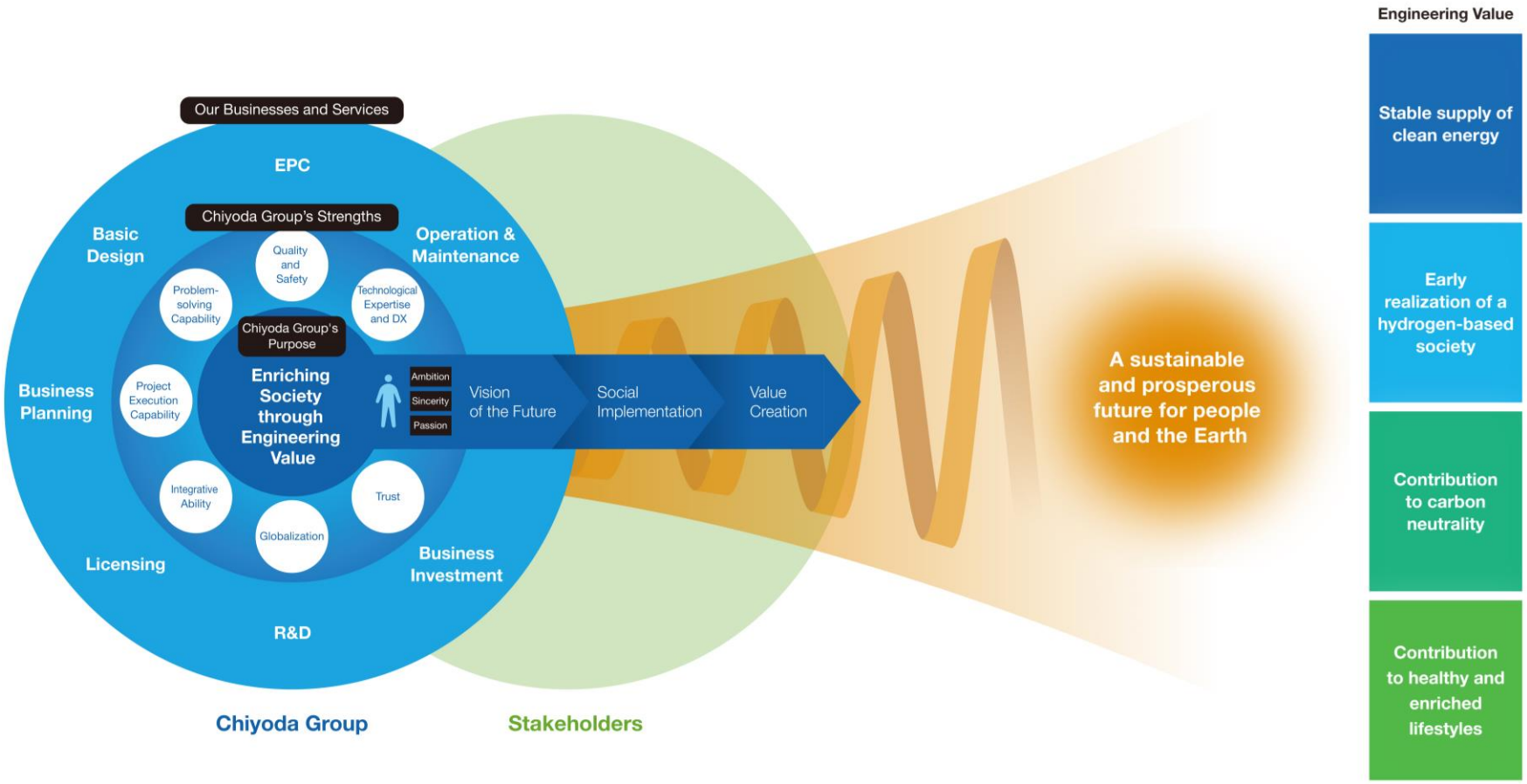
【 Typical LNG Plant 】



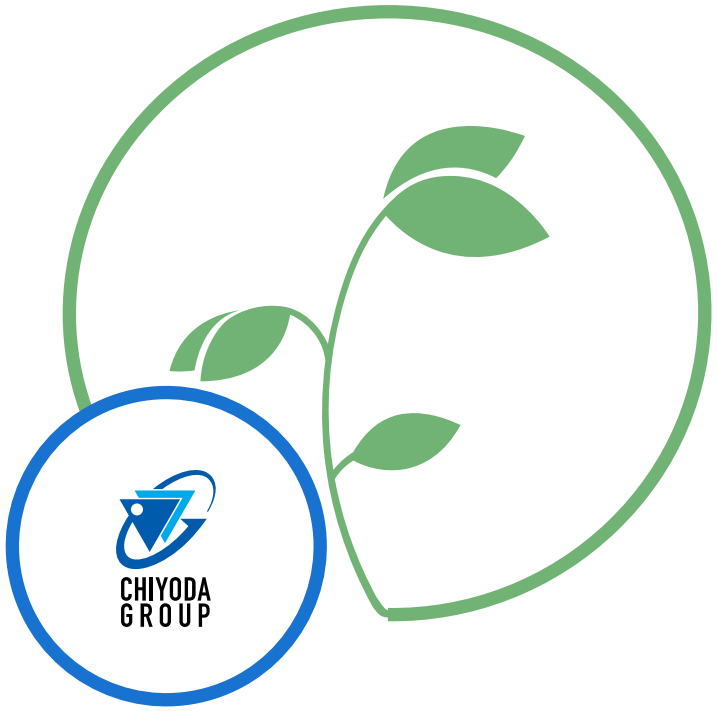
* Carbon dioxide Capture and Storage

2. Chiyoda Group's Purpose

Enriching Society through Engineering Value



Enriching Society through Engineering Value



Chiyoda Corporation Corporate Services Department IR, PR & Sustainability Advanced Section, https://www.chiyodacorp.com/en/

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