Emerging onto a Still Wider Stage

Revision of Numerical Targets in Medium-Term Management Plan Ortus Stage 2

February 8, 2019

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The Gas Professionals

* Ortus: A Latin word meaning “beginning and birth”

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Background to the Revisions to Numerical Targets

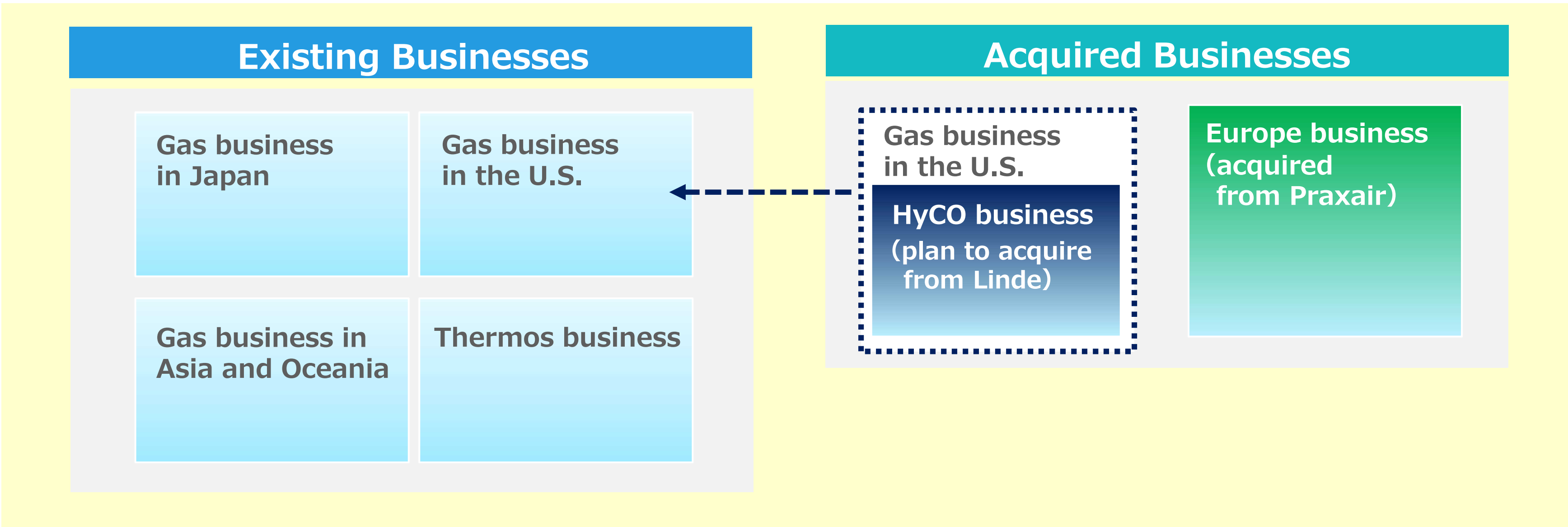
Ortus Stage 2

Background to the Revisions to Numerical Targets

With the merger of German company Linde (currently Linde AG) and U.S. company Praxair, TNSC has acquired Praxair's European business and carries forward the procedures of acquisition of Linde's U.S. HyCO business. Through these two large-scale acquisitions, TNSC's business scale will expand significantly. We have therefore revised the numerical targets for the final year of the medium-term management plan Ortus Stage 2, the fiscal year ending March 31, 2021.

Medium-Term Management Plan Ortus Stage 2

(Four-year plan spanning FYE 2018 to FYE 2021)

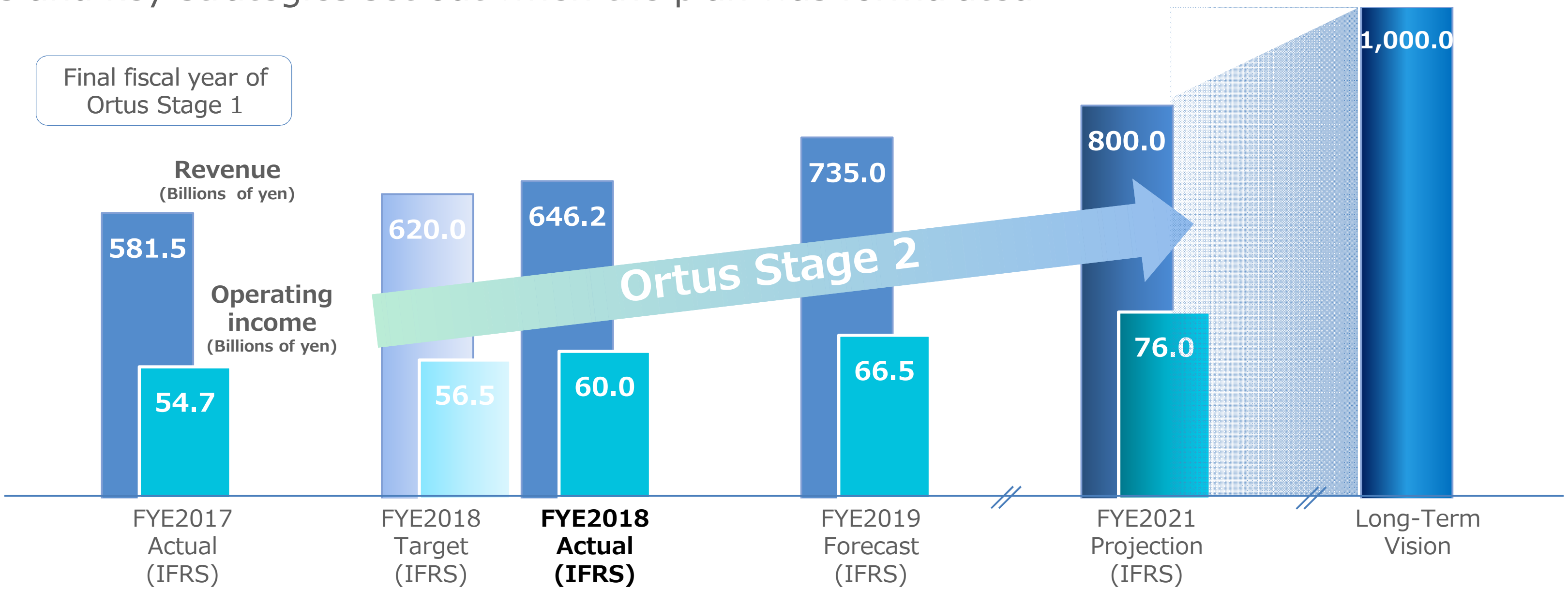


Medium-Term Management Plan
Ortus Stage 2

Progress Report

State of Progress

Continuing on from the previous medium-term management plan, Ortus Stage 1, we are making good progress overall on our targets for the second year in our current medium-term management plan, Ortus Stage 2. We will therefore continue the basic policies and key strategies set out when the plan was formulated.



	FYE2017 Actual (IFRS)	FYE2018 Target (IFRS)	**FYE2018 Actual (IFRS)**	FYE2019 Forecast (IFRS)	FYE2021 Projection (IFRS)
Revenue	581.5	620.0	**646.2**	735.0	800.0
Core operating income	54.7	56.5	**60.0**	66.5	76.0
Core operating income ratio	9.4%	9.1%	**9.3%**	9.0%	9.5%
Overseas revenue ratio	40.8%	–	**43.3%**	47.2%	45.0%
ROCE*	8.4%	7.9%	**8.4%**	6.3%	9.0%

* ROCE (Return on capital employed) = Core operating income / Outstanding Interest-bearing Debt + Equity attributable to owners of parent
* Core operating income is calculated as operating income excluding certain gains and expenses attributable to non-recurring factors (non-recurring items).
* Nonrecurring items are costs of structural reform (cost for withdrawal or downsizing business operations and special retirement allowances), losses caused by disasters or serious accidents, and other gains and expenses (such as disposal of idling assets).

Strategic Direction

Basic Policy

Reinforce Operating Foundation

- Safety, Quality, and Compliance
- Accelerating R&D Strategy
- Strengthening Corporate Functions

Growth Strategies

- Expanding Domestic Gas Business
- Globalization

Key Strategies

1. Structural Reform

Maximizing group power by augmenting collaboration

Total TNSC

- Strengthen collaboration in the sales and marketing functions
- Integration of engineering functions
- Integration of production & logistics
- Promotion of shared services

2. Innovation

Promote innovation by capitalizing on external resources and IoT

- Innovation in R&D
- Innovation in engineering
- Innovation in sales approaches
- Innovation in production & logistics

3. Globalization

Enhancement of governance

- Strengthen the functions of global operations
- Strengthen the functions of regional holding companies

Growth Strategies

- Expanding business areas
- Total Electronics

Total Electronics

4. M&A

Seek promising M&A opportunities to ensure sustainability and accelerate growth

- Expand business territory and reinforce operational density
- Acquiring new products, technologies, and supply chains
- Expansion of medical business

Key Issues and Results to Date

Key Strategy	Issues of Ortus Stage 2	Results to Date	Progress Evaluation
Structural Reform	• Strengthen collaboration in the sales and marketing functions • Integration of engineering functions • Integration of production & logistics • Promotion of shared services	• Consolidated sales bases and shared sales support tools • Consolidated technologies of Group companies and currently promoting multi-capabilities of engineers • Promoting streamlining and optimization through integration of industrial gas operations	○
Innovation	• Innovation in R&D • Innovation in engineering • Innovation in sales approaches • Innovation in production & logistics	• Launched new-model oxygen burner and high performance fluorinated resin using carbon nanotube • Alliance with and investment in three companies involved in 3D printers • Increased profitability and reduced environmental load through energy efficiency improvement (SAITEKI activities)	○
Globalization	• Strengthen the functions of global operations • Strengthen the functions of regional holding companies • Expanding business areas • Total Electronics	• Established new global support center and strengthened overseas engineering system • Appointed regional CCOs and established a global compliance structure • Acquired on-site projects in Southeast Asia • Strengthened earning power through unified response to strategic semiconductor customers • Bolstered production capacity for electronic materials gases	◎
M&A	• Expand business territory and reinforce operational density • Acquiring new products, technologies, and supply chains • Expansion of medical business	• Acquisition of European business • Acquisition of U.S. HyCO business (planned) • Acquisition of U.S. distributor • Acquisition of IMI Co., Ltd.	◎

Cost Reduction Activities at Production & Logistics Division

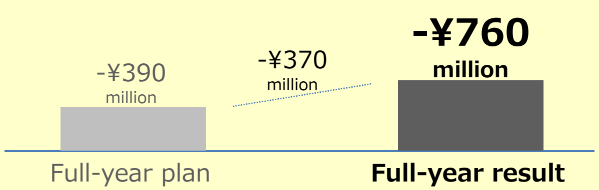
Better than planned reduction in costs related to production and delivery of bulk gas in Japan through cost reduction activities at the Production & Logistics Division launched in April 2017

Production Division	Division in Charge	Logistics Division
• Reduction in electricity consumption per unit of production in liquefied gas production	Issue	• Efficient delivery from production site to consumption site
• Increase in electricity cost associated with increase in fuel prices • Increased social demand for reduction in CO2 emissions	External environment	• Volatility of user demand (including consolidation and abolition) • Shortage of transportation personnel due to decline in Japanese working population
• Optimization of production facility operations to achieve target for electricity consumption per unit of production • Systematic replacement and maintenance of aging equipment	Specific activities	• Optimal vehicle deployment in response to demand fluctuation • Promotes delivery planning based on grasp of customers inventory using IT

Effect of Cost Reduction Activities

(Based on expected results for costs arising from production and logistics as of FYE2017)

Results in the first fiscal year (FYE2018)



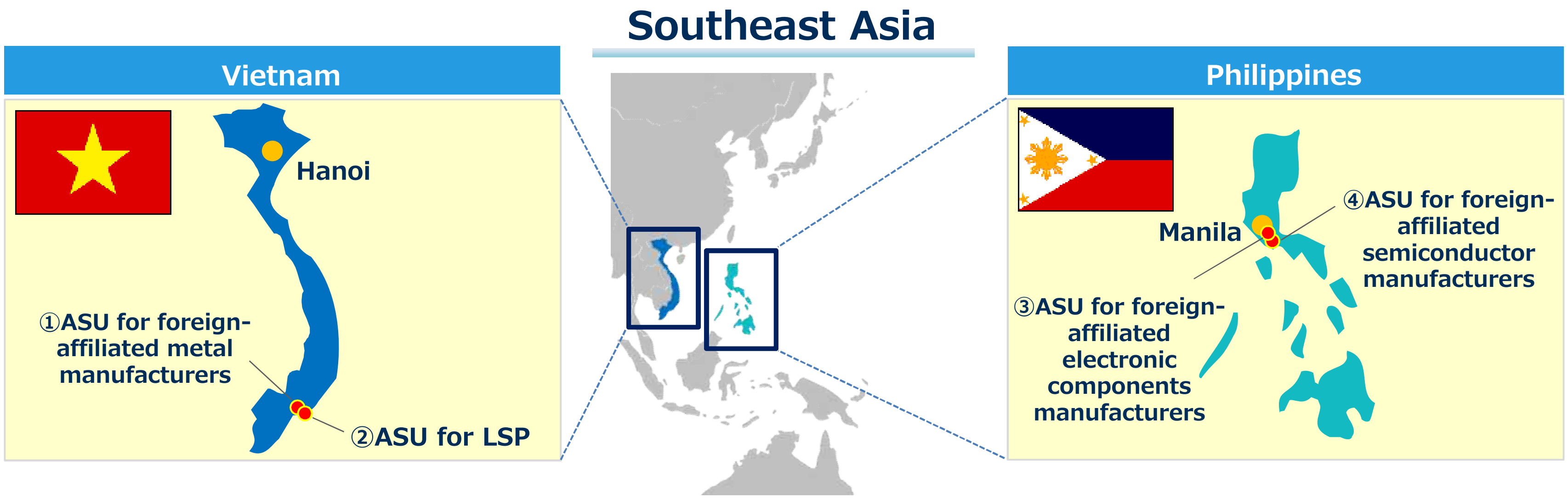
Specific Initiatives and Results

- Streamlining of liquefied gas equipment transportation through data analysis
- Suppression of repair costs through optimization of planned maintenance
- Increase in factory utilization rate through strategic sales expansion effect
- Pursuit of transport efficiency based on proposals to customers
- Optimization of helium and hydrogen management systems

Initial Plan

Expansion of On-site Business in Southeast Asia

Capture new on-site projects and establish a robust supply chain in the industrial gas markets of rapidly growing Vietnam and the Philippines



①	Main supply customer	• Foreign-affiliated metal manufacturers and chemical manufacturers
	Investment objective	• Build a stable revenue base in piped supply • Expand production capacity for air separation gas
	Completion	• Facility completion planned for middle–end of 2019
②	supply customer	• Long Son Petrochemicals (Thai petrochemical manufacturer)
	Investment objective	• Build a stable revenue base in piped supply • Expand production capacity for air separation gas
	Operation start	• 2021 (planned)

③	Supply customer	• Foreign-affiliated electronic component manufacturers
	Investment objective	• Build a stable revenue base in piped supply • Expand production capacity for nitrogen gas
	Completion	• Unit 1: December 2017
④	Supply customer	• Foreign-affiliated semiconductor manufacturers
	Investment objective	• Strengthen supply system for semiconductor and electronic component manufacturers • Expand production capacity for nitrogen gas
	Operation start	• Facility completion planned for second half of 2019

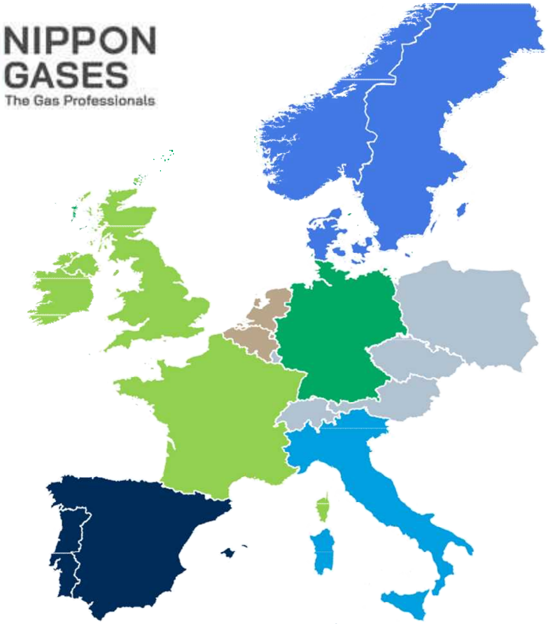
*ASU： Air Separation Unit

Acquisition of European Business

Aim to achieve the final-year targets for medium-term management plan Ortus Stage 2 and to progress further as a global industrial gas major.

Scope of the businesses to be acquired

The acquisition covers companies engaged in the industrial gas business of U.S. company Praxair in 12 European countries (including the carbon dioxide gas business) and companies engaged in helium-related businesses. The businesses acquired hold a market share of 16% throughout their market areas, with a scale comparable to the U.S. business which has been developed for over 30 years.



Significance of the acquisition

- Acquired businesses with a certain scale in Europe, the world's second largest industrial gas market behind the U.S.
- The businesses acquired are highly profitable, with a 16% share of their market areas* (internal estimate)
- Acquired talented personnel, including the current top management team, and business platforms

*In U.K., Ireland, the Netherlands and France, the scope of the businesses acquired is limited only the carbon dioxide gas business.

Post-merger integration (PMI) strategy

- Strengthen Group-wide collaboration (across Japan, the U.S., Asia, and Europe) and governance
- Strengthen the Customer Relationship Management through global business network of TNSC group
- Optimize supply chain of strategic products

Consolidated management performance of the acquired businesses (FYE2021 forecast)

The business is highly profitable including a certain scale in Bulk and Piping as well as a stable competitive environment in the European market

- Net sales: €1,440 million (approx. ¥180.0 billion*)
- Core operating income: €224 million (approx. ¥28.0 billion*)

*Converted at the exchange rate of one Euro to ¥125

Acquisition of European Business – Business Plan

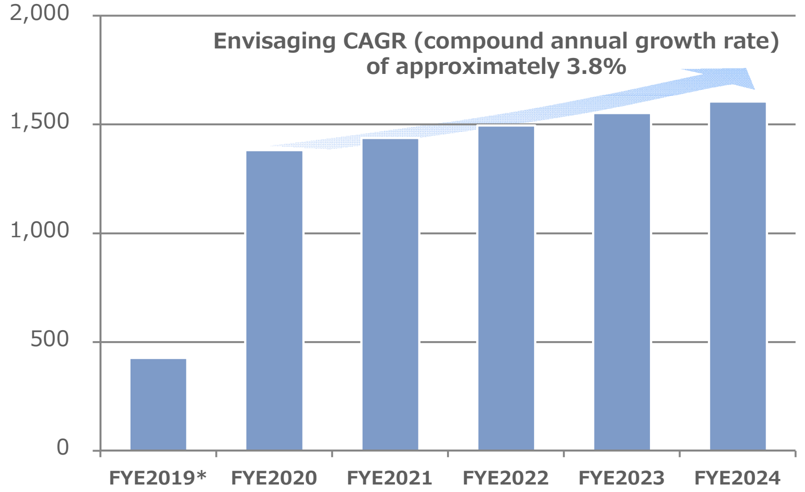
Establish Nippon Gases Euro-Holding S.L.U. in Spain as a regional headquarters for Europe and establish a governance system for the operating companies under it.

Business strategy (overview)

<Basic approach>

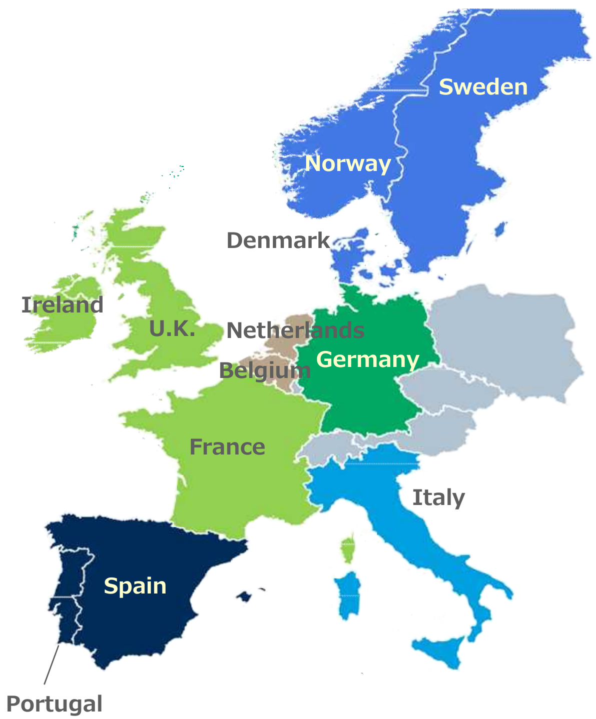
- Entrust business management to the existing senior management of the acquired companies and stably grow existing business in Europe
- Leverage synergies (use the total capabilities of the Group, develop strategic products), and plan to achieve CAGR of around 3.8% over the next five years

Net sales (Millions of euros)



*FYE2019 is the cumulative total of four months from December 2018 to March 2019.

Business areas and assets held



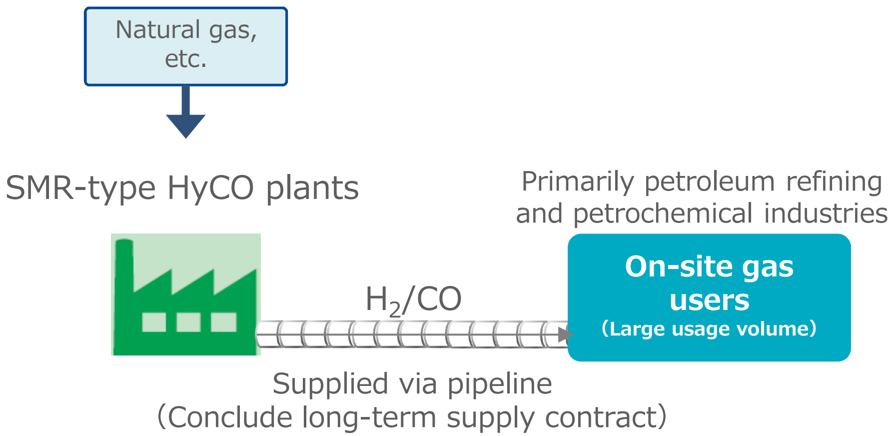
- Around 2,600 Employees
- Over 100.000 Customers
- 6 Pipelines
- 4 Specialty Gases Laboratories
- 27 Air Separation Units
- 6 Hydrogen plants
- 52 Small On-Site
- 12 CO2 plants
- Over 600 trucks
- Over 2.6 millions cylinders
- 34 Filling Stations
- 13 Dry Ice Plants
- 7 CO2 Terminals
- 3 CO2 Ships

Acquisition of U.S. HyCO business

Based on the key strategy of “Innovation,” TNSC is aiming to expand the gas technology domain using M&As. TNSC carries forward the procedures of acquisition of the U.S. HyCO business from Germany-based Linde and strengthen its proposal capabilities for customers with enhancements to its product lineup.

Business model of the HyCO business

Separate hydrogen and carbon monoxide from feedstock such as natural gas using steam methane reforming (SMR) systems and supply it to the petroleum refining and petrochemical industries through pipelines, primarily for use in the desulfurization process.



In Japan, users in the petroleum refining and petrochemical industries internally produce and consume H_2 and CO. Considering this business structure, industrial gas manufacturers have not entered this business.

Significance of the acquisition

- Achieve full-scale entry into the HyCO business in the U.S.
- Steadily generate strong earnings from on-site supply agreements for H_2 and CO
- Acquire resources that will facilitate efficient operation of the business

Post-merger integration (PMI) strategy

- Strengthen the ability to offer proposals that will capture demand for new on-site projects in the U.S. (petroleum refining and petrochemicals, etc.)

Assets to be acquired

The acquisition covers SMR-type HyCO plants (five sites), pipelines, remote monitoring centers, supply agreements, operation technologies and human resources in the HyCO business currently undertaken by Germany-based Linde in the U.S.

Medium-Term Management Plan

Ortus Stage 2

Revision of Numerical Targets

Preconditions and Definitions

Glossary	Preconditions and Definitions in this Presentation
PPA（Purchase Price Allocation)	Allocation of the purchase price in an M&A transaction The provisional result (pre-audit) of the PPA for the acquisition of the European business has been reflected in this numerical target revision. The purchase price has been allocated using the market value of property, plant and equipment (primarily ASUs) and intangible assets (mainly intangible assets related to customers), and so forth. The balance that cannot be allocated is treated as goodwill. The revised core operating income target includes depreciation and amortization expenses related to the property, plant and equipment and intangible assets evaluated at market value in the PPA.
Core operating income	Core operating income is calculated as operating income excluding certain gains and expenses attributable to non-recurring factors (non-recurring items*). *Nonrecurring items are costs of structural reform (cost for withdrawal or downsizing business operations and special retirement allowances), losses caused by disasters or serious accidents, and other gains and expenses (such as disposal of idling assets).
Hybrid finance	A form of debt financing that has features resembling equity, such as voluntary deferral of interest, extremely long-term redemption periods and subordination during liquidation or bankruptcy procedures. This kind of financing does not cause stock dilution, and a certain ratio of the funds procured in this way can be recognized as equity credit by rating agencies provided that certain conditions are met.
Equity-type debt	The amount of debt procured by hybrid finance that has been recognize as equity credit by rating agencies. In this fund procurement, rating agencies have recognized equity credit for 50% of the procured amount.

Key performance indicators	Calculations used in this presentation
ROCE (Return on capital employed)	Core operating income / (outstanding interest-bearing debt + equity attributable to owners of parent)
Adjusted net interest-bearing debt	(Interest-bearing debt − equity-type debt) − cash and cash equivalents
Adjusted net D/E ratio	Adjusted interest-bearing debt / (equity attributable to owners of the parent + equity-type debt)

Numerical Targets

Adjusted net D/E ratio will be added as a new indicator for financial soundness

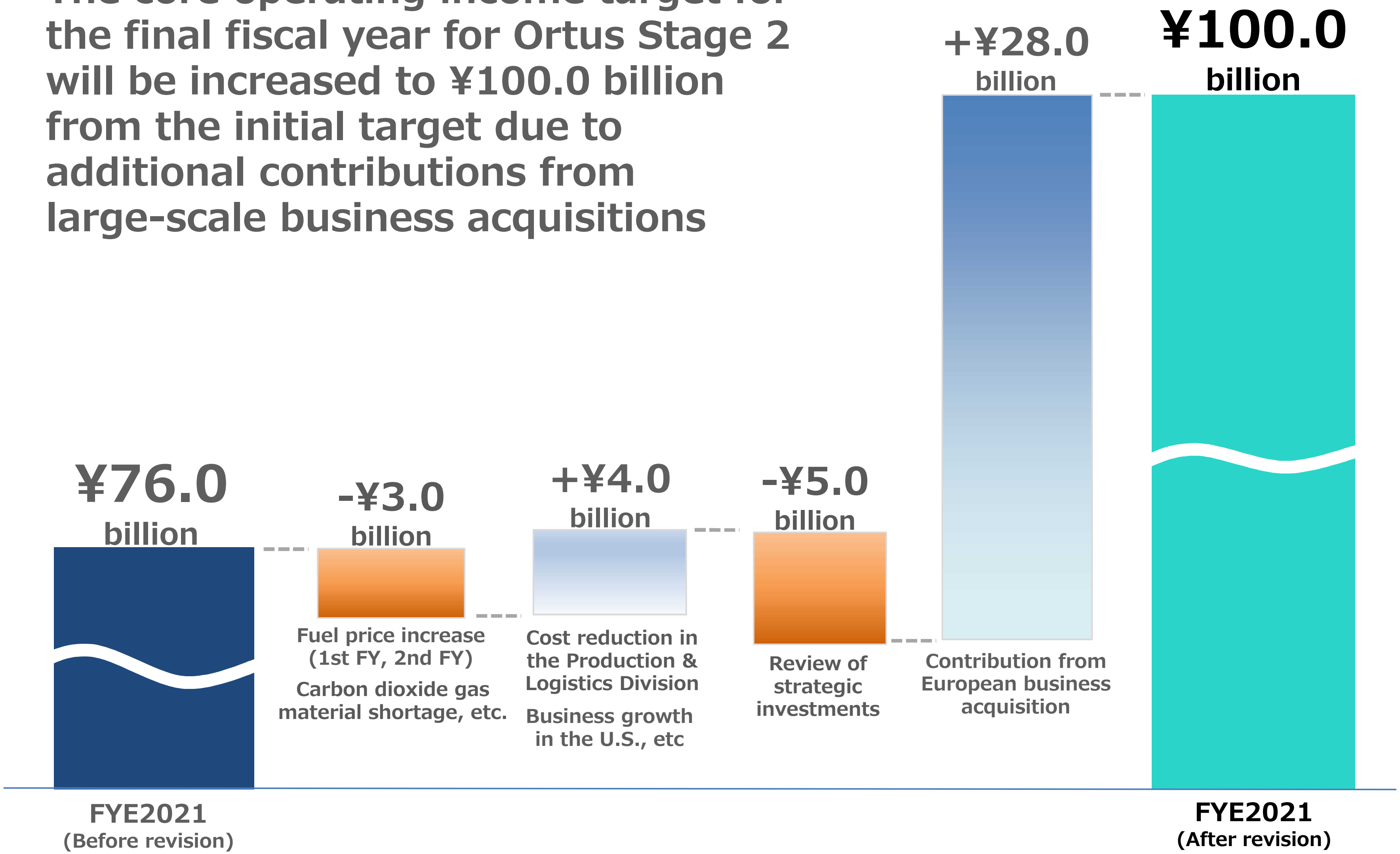
	FYE2021 Before revision (Released March 8, 2017)	FYE2021 After revisions (Released February 5, 2019)	Difference
Revenue	¥800.0 billion	¥910.0 billion	+¥110.0 billion +13.8%
Core operating income	¥76.0 billion	¥100.0 billion	+¥2.4 billion +31.6%
Core operating income ratio	9.5 %	11.0 %	+1.5 pt.
Overseas revenue ratio	45.0 %	55.0 %	+10.0 pt.
ROCE (Return on Capital Employed)	9.0 %	7.1 %	-1.9 pt.
Adjusted net D/E ratio	—	1.27x	—
Investment Plan (Capital Expenditures, Investments and loans)	¥340.0 billion	¥1,029.5 billion*	+¥689.5 billion

*Includes a total of ¥681.0 billion for the acquisition of the European businesses and HyCO business.

- Assumed exchange rates (USD→JPY): ¥110, (EUR→JPY): ¥125

Numerical Targets – Reasons for Changes in Core Operating Income

The core operating income target for the final fiscal year for Ortus Stage 2 will be increased to ¥100.0 billion from the initial target due to additional contributions from large-scale business acquisitions



Numerical Targets – Numerical Targets by Segment

Gas Business in Europe has been newly established as a segment. Following segments numerical targets will be set for the fiscal year ending March 31, 2021.

	Revenue	Core operating income	Core operating income ratio
Gas Business in Japan	¥380.0 billion	¥31.0 billion	8.2 %
Gas Business in the U.S.	¥205.0 billion	¥20.0 billion	9.8 %
Gas Business in Europe	¥180.0 billion	¥28.0 billion	15.6 %
Gas Business in Asia and Oceania	¥115.0 billion	¥13.5 billion	11.7 %
Thermos Business	¥30.0 billion	¥9.5 billion	31.7 %
Elimination or corporate	—	-¥2.0 billion	—
Total	¥910.0 billion	¥100.0 billion	11.0 %

Financial Strategy – Resource Allocation

Cash generated through sustainable growth and stable performance in the European business will be properly allocated for a stronger financial position, growth investments, and shareholder returns

Operating Cash Flow

- High profitability in the acquired European business
- Pursuit of Group synergy based on "Total TNSC" in Japan
- Active development of businesses in growth fields

Stronger Financial Position

- Maintain an "A" credit rating from rating agencies
- Systematic reduction of interest-bearing debt
- Early-stage improvements to adjusted net D/E ratio

Growth Investments

- Capital investment towards semiconductors
- Open innovation investments and alliances
- Acquisition of new on-site projects (capital investment for new ASU installations, etc.)
- Appropriate investing activities according to growth stage in each region

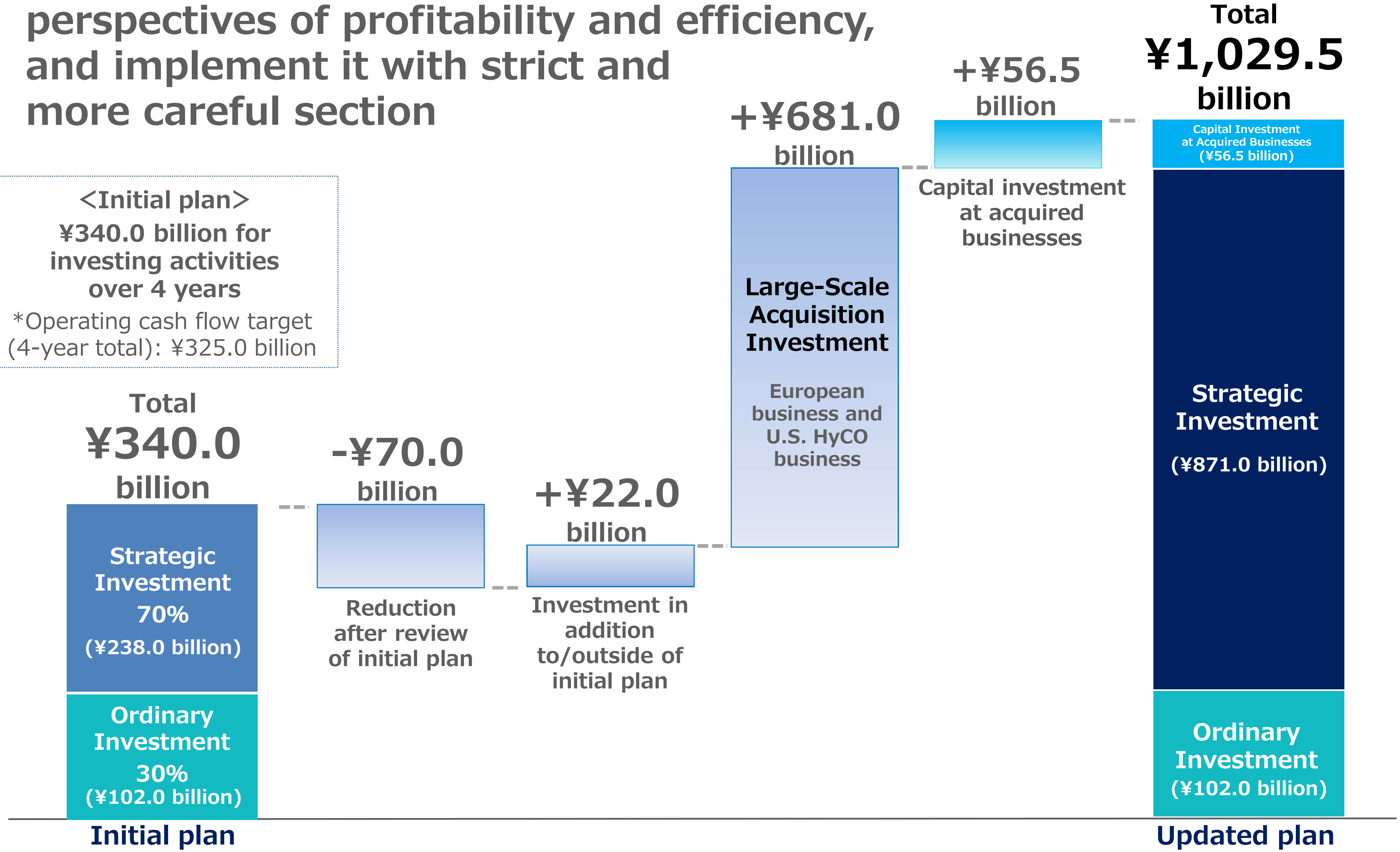
Shareholder Returns

- Implement a stable dividend while considering the balance of a stronger financial position and growth investments

Revised Investment Plan (4-year plan starting from FYE2018)

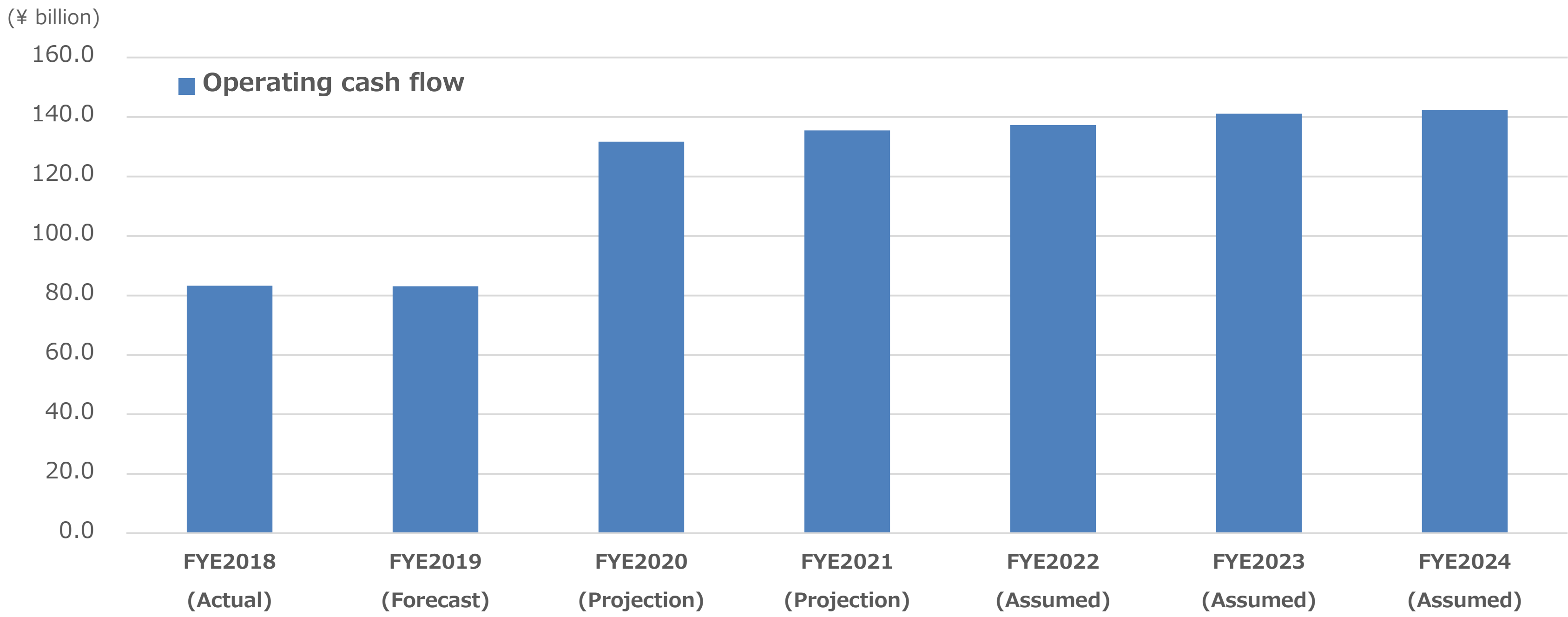
Review the investment projects from the perspectives of profitability and efficiency, and implement it with strict and more careful section

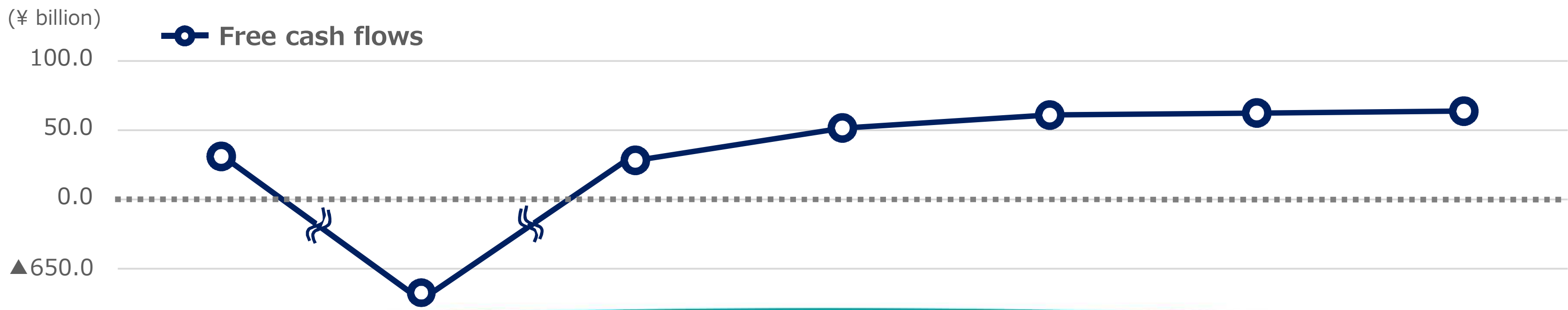
<Initial plan>
¥340.0 billion for investing activities over 4 years
*Operating cash flow target (4-year total): ¥325.0 billion



Envisaged Stronger Financial Position – Forecast for Operating Cash Flow

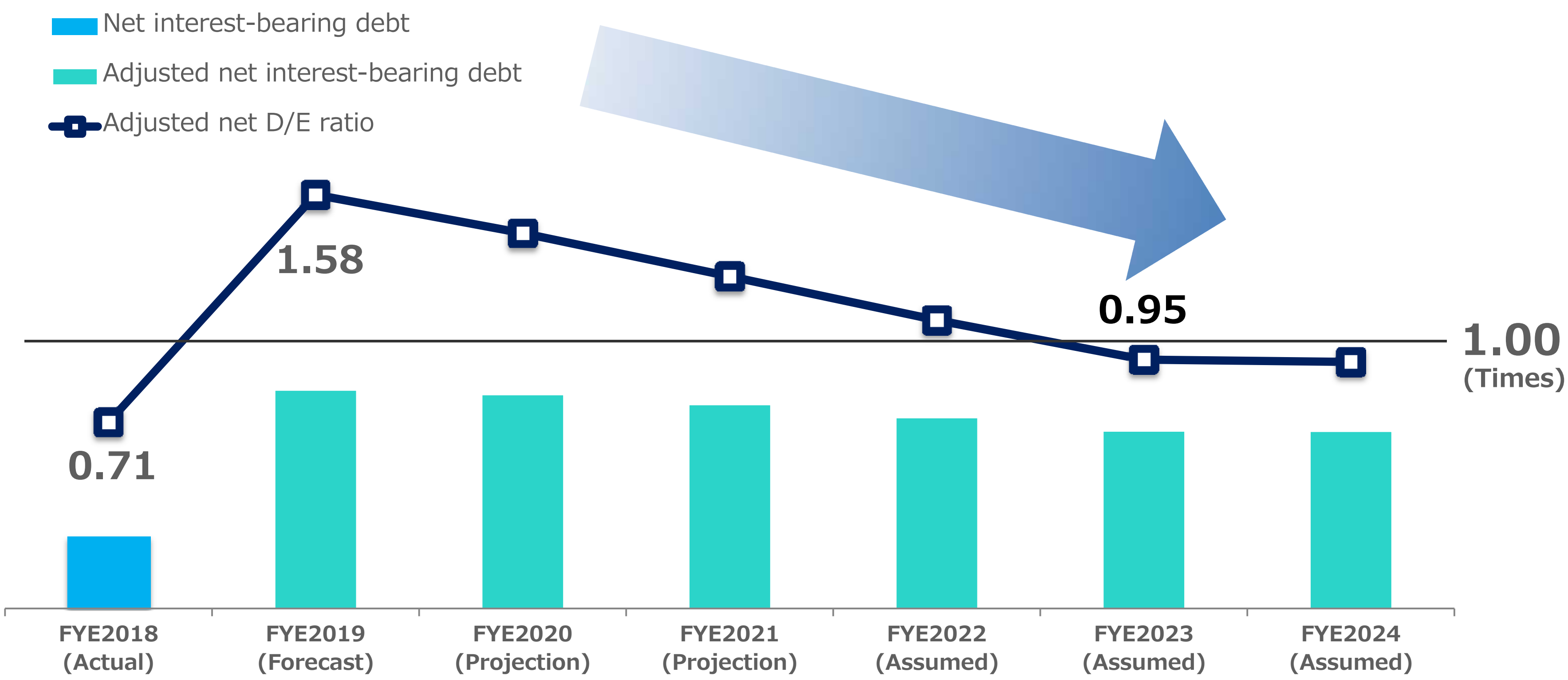
Operating cash flow is expected to steadily increase due to high profitability and stable performance at the acquired businesses in addition to the sustainable growth of existing businesses





Envisaged Stronger Financial Position – Forecast for Net D/E Ratio

Systematically reduce debt with cash generated from businesses, planning to bring the adjusted net D/E ratio to 1.0 times or lower in FYE2023



With recent large-scale fund procurement, we are aiming for early improvements to the soundness of our financial structure

Thank you

Ortus Stage 2

Reminders

- The information contained here is not disclosure information for securities trading. The accuracy and completeness of this information are not guaranteed.

- The briefing session and this material describe future plans and strategies, as well as forecasts and outlooks of business performance. These plans and strategies, as well as forecasts and outlooks, are made by Taiyo Nippon Sanso based on its judgments and estimations made in accordance with the information available at present. Actual performance will be subject to changes caused by a variety of risks and uncertainties (such as economic trends, market demand, exchange rates, taxation systems and various other systems and institutions, but not limited to them).

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