

# 'Group Management Policies 2023'



May.9.2023

**IHI Corporation**

President and Chief Executive Officer  
Hiroshi Ide

Review of 'Project **Change**'

'Group Management Policies 2023'

Review on actions of 'Project **Change**'

Business **Transformation** to Achieve Strong Sustainable Growth

**Growth Business** : Aero Engines and Space

**Development-focus Business** : Clean Energy

**Core Businesses** :

Growth Strategy Centered on Exploit and Evolution of LCB

Thorough Business Structure Reform

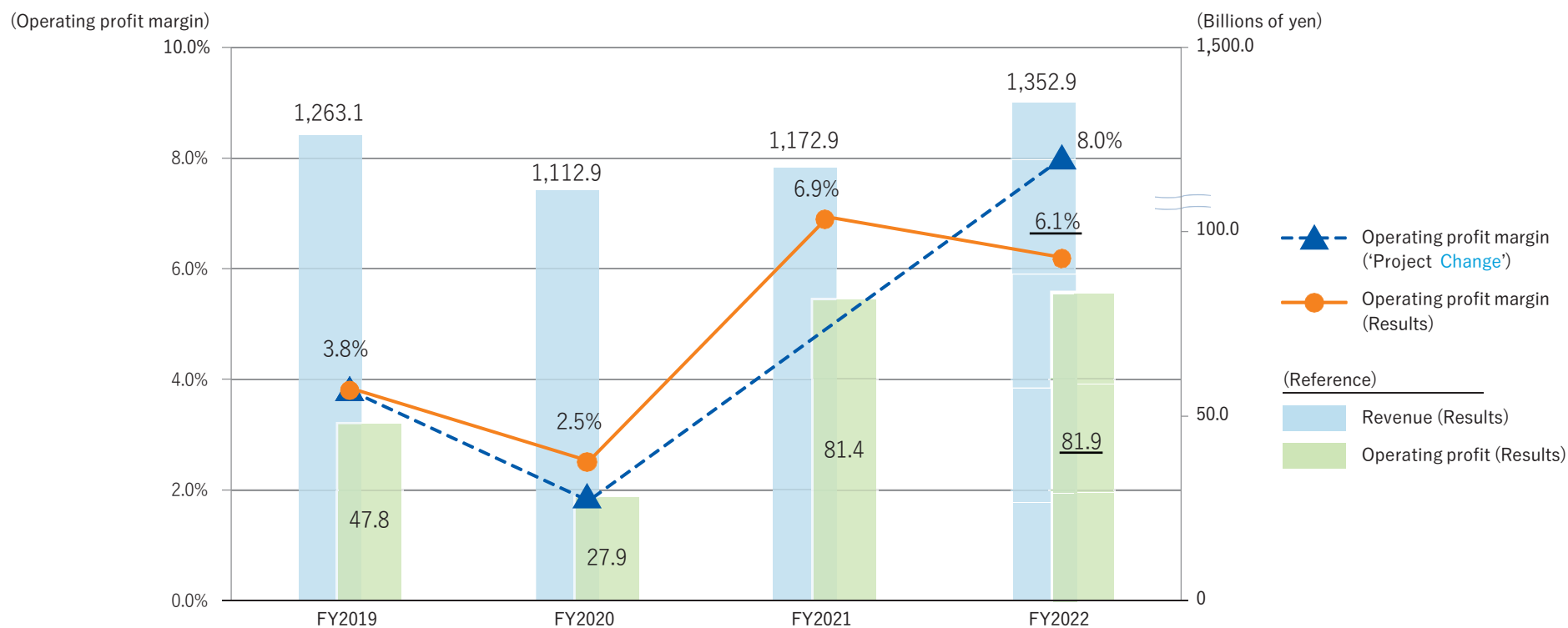
Capability of Realizing **Transformation**

Resource Allocation and Management Targets

# Review of 'Project Change'

# Results of 'Project Change'

- Given the impact of COVID-19 pandemic, we have been working on returning to growth trajectory positioning it as a preparation period for reforming businesses in response to operating climate changes. We posted record-high operating profit by transforming the business model from product and service businesses to Lifecycle businesses and strengthening the cost structure.

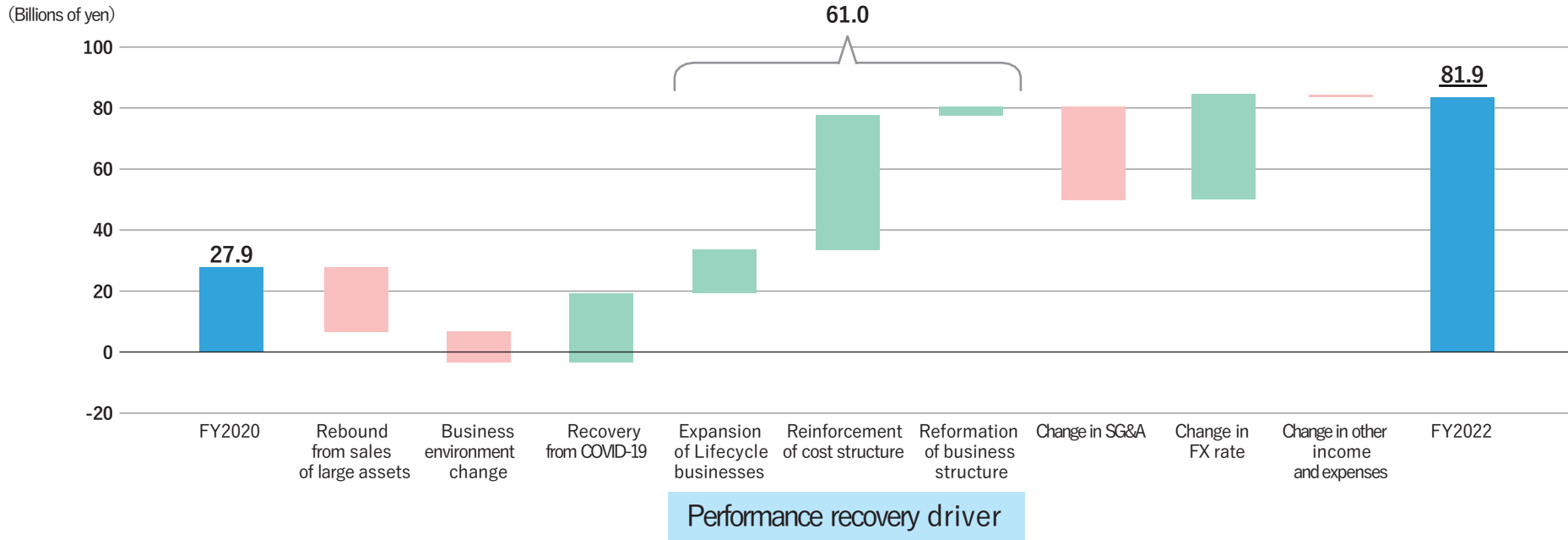


ROIC	4.1%	2.2%	6.4%	<u>6.3%</u>
FX rate	109.19yen	106.40yen	112.68yen	134.32yen

ROIC (after tax) : (Operating profit + Interest and dividend income) after tax / (Equity attributable to owners of parent + Interest-bearing liabilities)

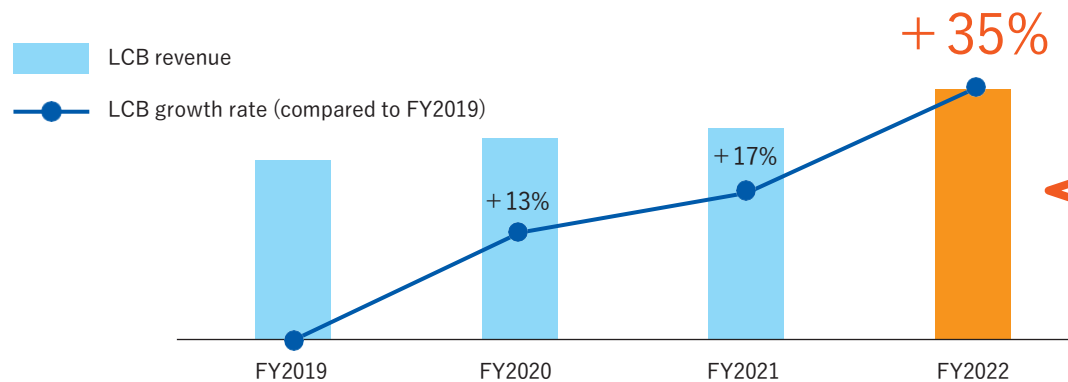
# Results of 'Project Change'

## Factors in operating profit changes (FY2020~FY2022)



## Change in LCB revenue

(\*Excluding Aero Engine, Space & Defense business fields)



Achieved the target (increase of 30% or more compared to FY2019) of 'Project Change'



## Carbon solutions

### IHI Achieves World's First CO<sub>2</sub>-free Power Generation with a Gas Turbine Completely Fueled Using Liquid Ammonia

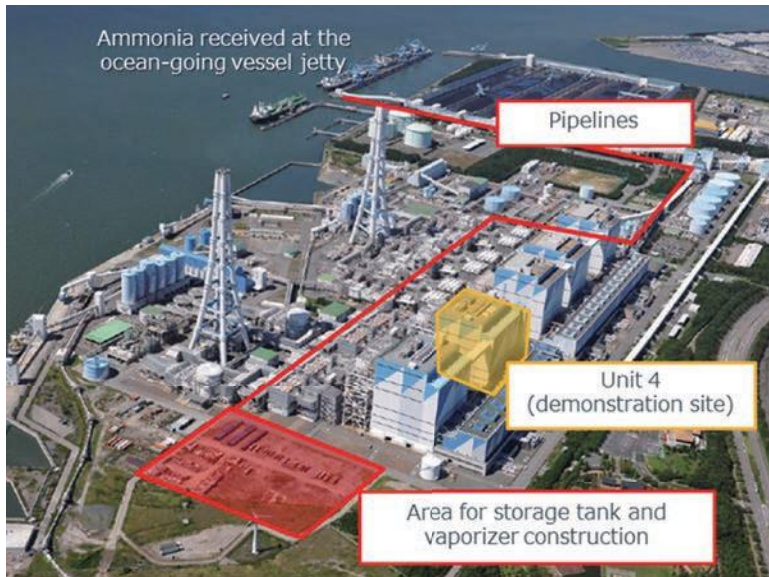
- Realized CO<sub>2</sub>-free power generation using a 2,000 kW-class gas turbine that uses only liquid ammonia as fuel
- Succeeded in reducing greenhouse gas emissions during combustion by over 99%
- Aiming for practical use in 2025 by improving operability as well as conducting durability evaluations over a long duration



## Carbon solutions

### GE and IHI Sign Memorandum of Understanding to Develop Gas Turbines That Can Operate on 100% Ammonia

- Under the MOU, the companies will cooperate to develop 100% ammonia capable combustion system
- Modification of existing large GE gas turbine power plants to use ammonia
- Also to meet the demand for new large ammonia gas turbines



Carbon solutions

Lifecycle businesses

## Ammonia Co-firing Demonstration Project at Hekinan Thermal Power Station

- Significant progress in large-scale demonstration project to establish technology in which fuel ammonia is co-fired
- Steady progress being made in adjustments to necessary facilities and the demonstration project till now
- As a result, the start of large-scale co-firing of fuel ammonia (fuel ratio of 20%) has been brought forward by about a year to FY2023



Carbon solutions

## IHI Invests in US Company NuScale Power, LLC and Participates in Its Small Modular Reactors (SMR) Project

- Joint investment with Japan Bank for International Cooperation and JGC Holdings Corporation
- NuScale Power's SMR technology's design certification review has been completed, the first in the United States
- IHI will leverage its expertise in designing and producing main machines for nuclear power plants in the SMR project

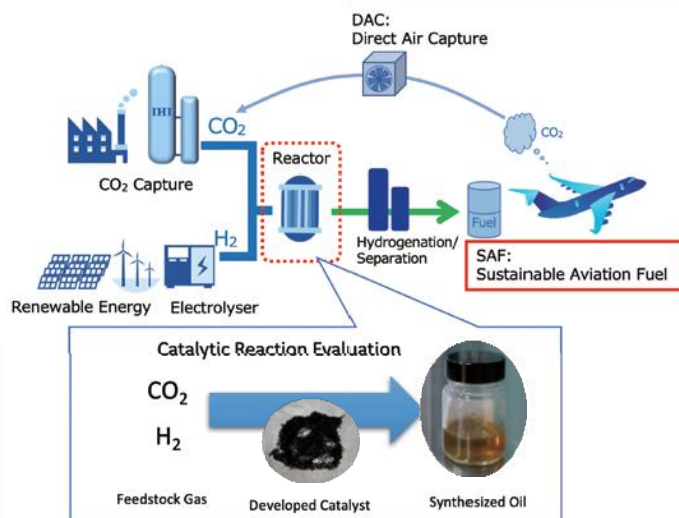


## Carbon solutions

### IHI Receives Order for the First Time for Standard Methanation Machine that Uses CO<sub>2</sub> and H<sub>2</sub> as Raw Materials for TOHO GAS's Chita LNG Terminal

- Joint research and development of catalysts with a research institution affiliated with the Singapore Agency for Science, Technology and Research (A\*STAR)
- The synthetic methane (e-methane) produced can be used as fuel for city gas, etc.
- Plan to carry out demonstration tests from FY2023 to FY2026 in anticipation of large-scale implementation in society

## IHI's SAF Concept



## Carbon solutions

## Aero engine, space

### Technology Developed for SAF Synthesis Verified as Achieving Top-ranking Yield Worldwide in Production of Hydrocarbons Derived from CO<sub>2</sub>

- Joint research and development of catalysts with a research institution affiliated with the Singapore Agency for Science, Technology and Research (A\*STAR)
- New catalyst developed for SAF synthesis, which has achieved liquid hydrocarbon yield of 26% in catalyst reaction tests
- Effective exploration and calibration of test conditions such as catalyst composition and reactive conditions leveraging AI technology





Aero engine, space

## IHI Signs MOU with a Global Aerospace and Defense Technology Company to Work Together on Artificial Satellites

- Started collaborating with Northrop Grumman Corporation, which is a global leader in detection and identification of space objects
- Aim to provide small, highly maneuverable satellites to Japan for Space Domain Awareness (SDA)
- To utilize Northrop Grumman's existing satellite buses and IHI's space situational awareness data services



Courtesy of Japan Ministry of Defense

Aero engine, space

## IHI Participates in Tri-national Next-Generation Fighter Development Program

- Engine for the next-generation fighter development program to be jointly developed by Japan, the United Kingdom, and Italy
- IHI will work closely with the government and related companies and play a vital role in the collaboration
- To contribute to developing and turning out human resources and highly skilled engineers who can succeed globally in the future

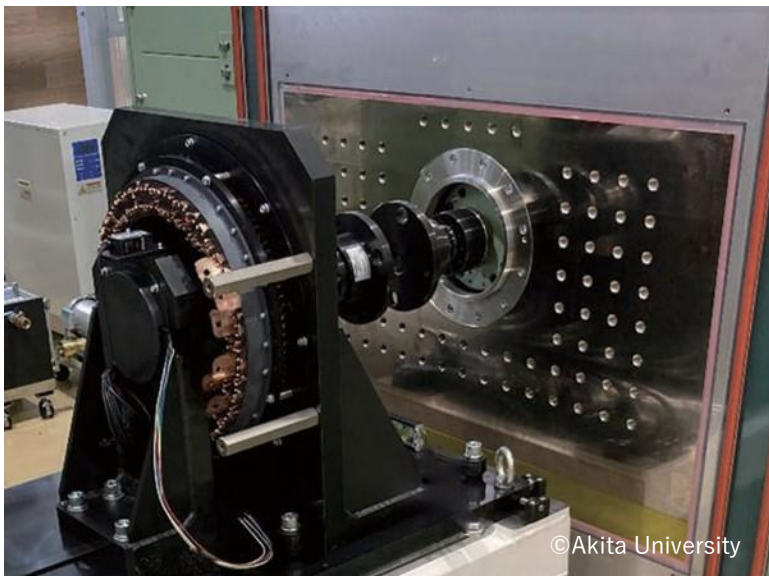


Aero engine, space

Life cycle businesses

## Tsurugashima Works, the New Base for Civil Aero Engine, Starts Operations

- Started operations of new plant for expanding the civil aero engine business centered on life cycle business
- Introduced new technologies such as IoT and AI under solid quality control system dedicated for civil aero engine maintenance
- Aims to achieve world's highest standard in aviation safety quality and efficient maintenance service



Aero engine, space

Carbon solutions

## IHI Succeeds in Developing a Prototype of a High-Power Electric Motor for Aircraft Propulsion Systems

- IHI, in collaboration with local companies in Akita Prefecture and others, succeeded in developing a prototype of a 250-kW high-power electric motor for aircraft propulsion systems
- Envisages the motor's output to be increased to more than 1MW and installed as electric hybrid propulsion system in medium-sized passenger aircraft
- While aiming for practical use in the 2030s, IHI will also work on the electrification and optimization of the entire aircraft system



## Carbon solutions

### IHI's Electric Turbocharger to be Installed in Fuel Cell System for Commercial Vehicles (Manufactured by AVL List GmbH)

- AVL is a major global automobile power train engineering company
- IHI's electric turbocharger to be installed in the HyTruck fuel cell system that will be installed in the demo truck being developed by AVL in 2023
- IHI's electric turbocharger, with its small size and power savings, contributes to miniaturization and higher efficiency of fuel cell systems



## Carbon solutions

## Maintenance and disaster prevention and mitigation

### IHI and Sumitomo Forestry Establish a Tropical Peatland Consulting Company

- Sumitomo Forestry Co., Ltd. and IHI established a joint venture company NeXT FOREST
- Started consulting service for appropriate management of peatlands
- Introduced a monitoring system that combines the data accumulated by Sumitomo Forestry and IHI's weather monitoring technology

# 'Group Management Policies 2023'

## ● Policies and Results of 'Project Change'

- Preparation period for business transformation
- Creating a new business main pillar as Aero engines

### ▶ Return to growth trajectory

- Transforming the business model from product and service businesses to Lifecycle businesses (LCB)
- Reformation of cost structure



Record-high levels for operating cash flow (FY2021) and operating profit (FY2022)

### ▶ Growth business creation

- Initiatives for the fuel ammonia value-chain business as a new business model

Preparations in place for business transformation



## ● Business Environmental awareness

Society where instability becomes the norm



Need to further enhance corporate strength

## ● Significance of this management policy

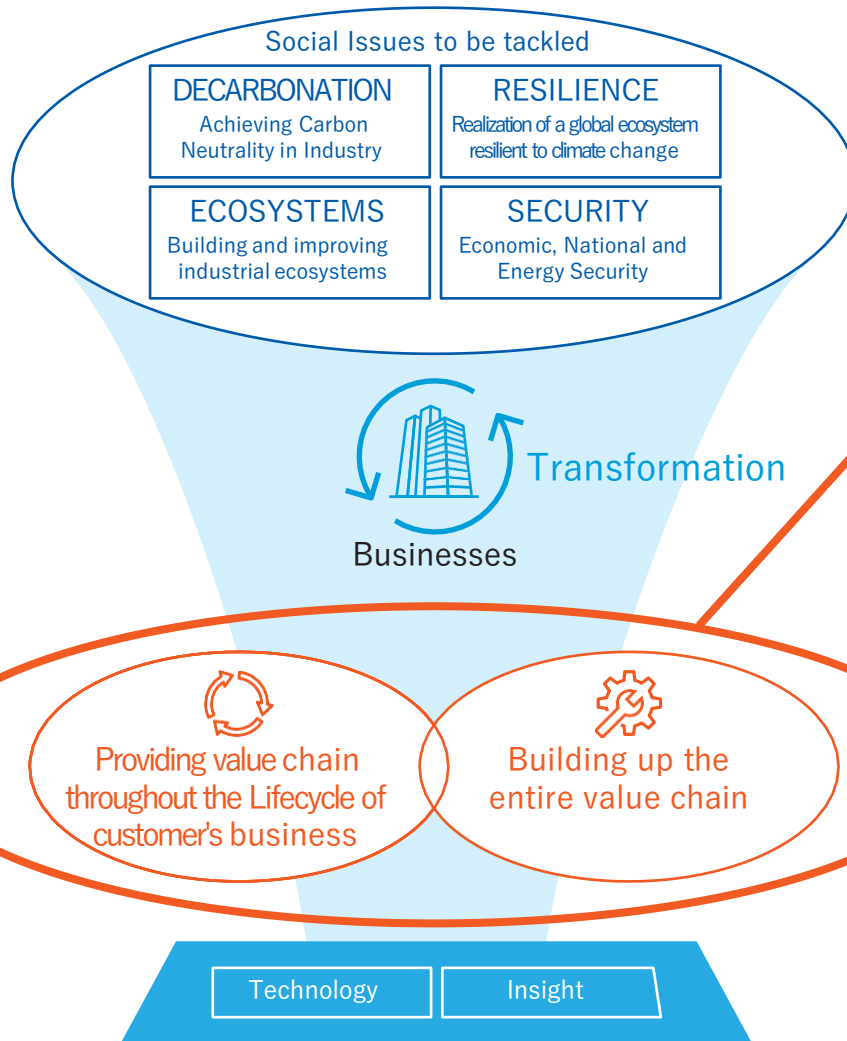


Full-scale business transformation to achieve strong sustainable growth



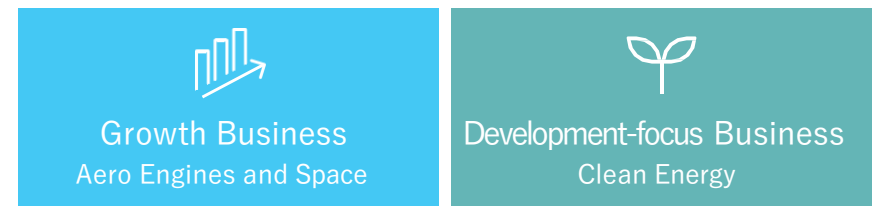
Accelerating transformation into a company that can quickly respond to disruptive environmental changes

## ● Group Corporate Strategy



## ● Key points for the 'Group Management Policies 2023'

- Leaping forward to become a sustainable high-growth company through a **bold shift of management resources** to growth areas



Allocating management resources  
(cash and human resources)



- Capability of realizing transformation



- **Lead the growth of the corporate** by pursuing business and production transformation, in addition to strengthening and expanding the civil aero engine and defense business.
- **Creating new businesses** from the viewpoint of Lifecycle and value chain

Expanding businesses from the viewpoint of lifecycle and value chain

## Initiatives for Next-generation aircraft

- Light weight composite material
- Electrification
- SAF/synthetic fuels

Environmentally friendly and economically viable aircraft to achieve carbon neutrality

Strengthening existing businesses

Business environment  
Recovery from pandemic and return to growth  
Expanding demand in defense market

## Aero Engine business

- Develop Advanced gas turbine technologies
- Develop Next-generation fighter engine
- Incorporate IHI's own technologies to next-generation aero engines
- Establish New engine maintenance site
- Enhance Raw material business



Improve profitability and asset efficiency by transforming production systems and business structures

## Rocket business

- Expand production systems to meet increasing defense demand
- Enhance competitiveness of Solid rocket motors
- Establish Rocket launching service

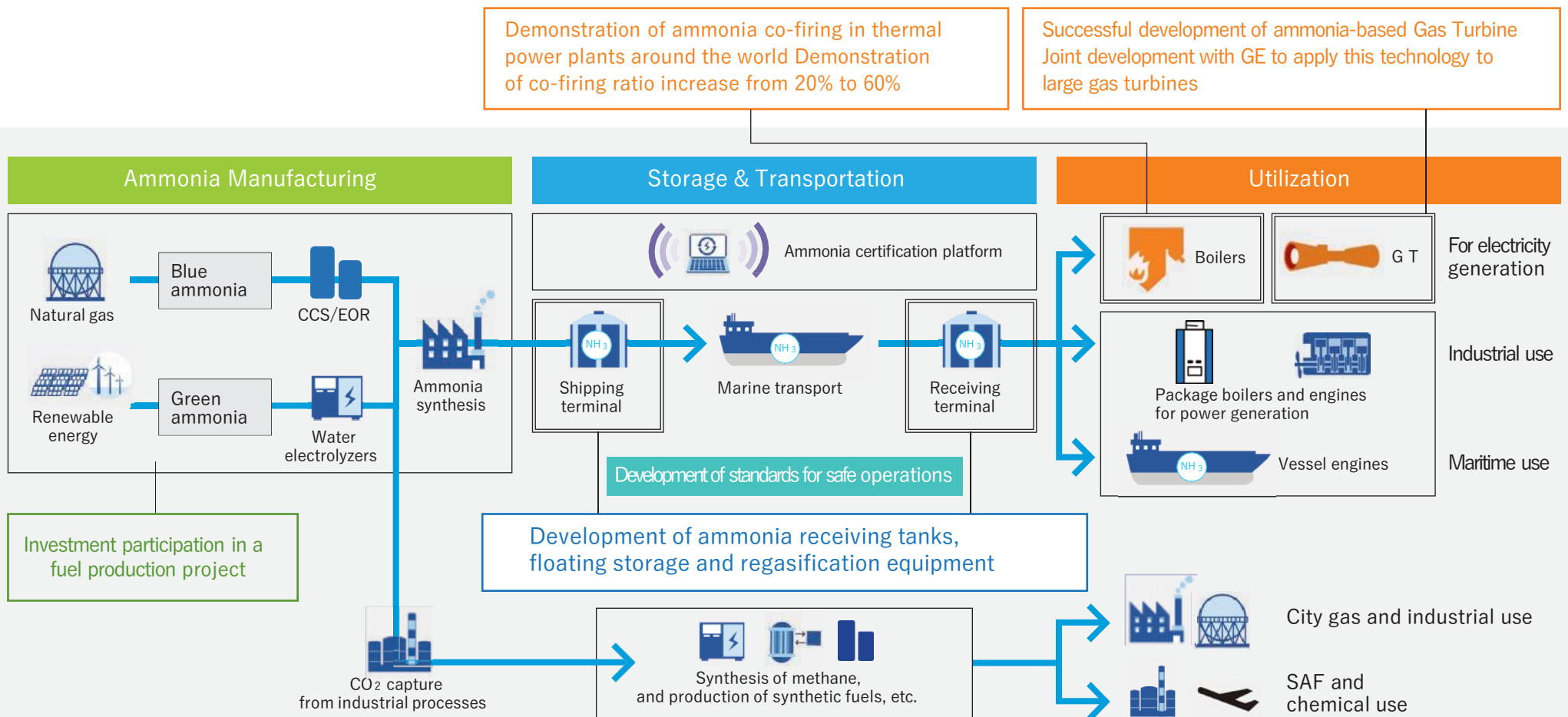


## Initiatives for Space, Land and Underwater data utilization

- Defense systems
- Ship surveillance and forest management collaborating with satellite utilization partners

# Development-focus Business : Clean Energy

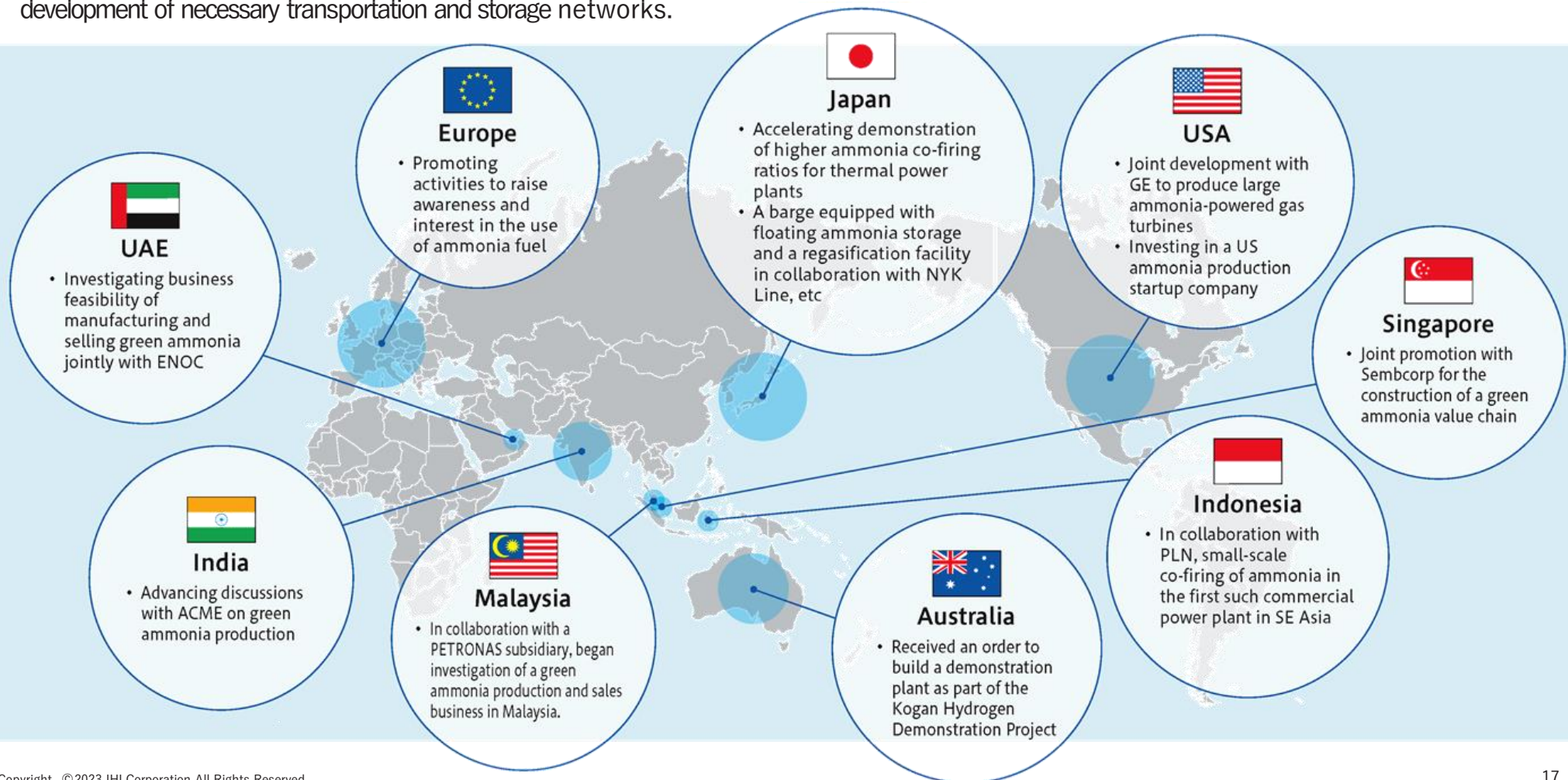
- Building it into a business that will be main pillar as Aero Engines, Space
- We will work to create and improve our entire value chain. This includes power generation equipment such as Gas Turbine that utilizes world-leading ammonia combustion technology, as well as our storage and receiving terminals with top-tier performance.
- While investigating investment in fuel manufacturing projects, we will utilize our engineering capabilities to build a new business model.



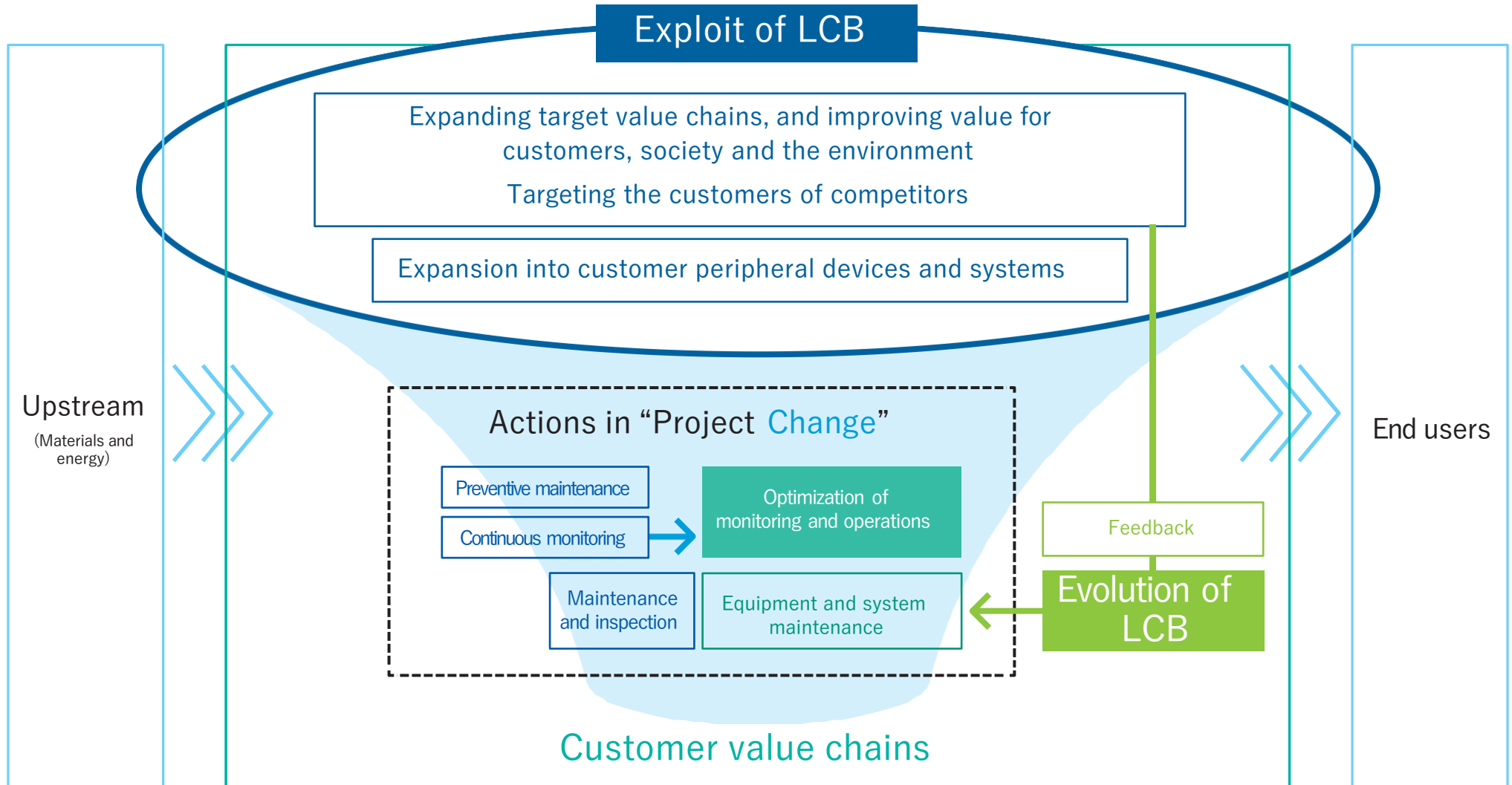


Amid rising energy prices, interest in the use of fuel ammonia is growing faster worldwide.

- We will accelerate the creation of a network for fuel ammonia utilization with partners in Japan, the United States, Europe, and Asia.
- We will help to realize this kind of value chain by promoting discussions with European and US companies involved in ammonia handling as well as with companies in regions where renewable energy is produced. These discussions will cover production of fuel ammonia and the development of necessary transportation and storage networks.



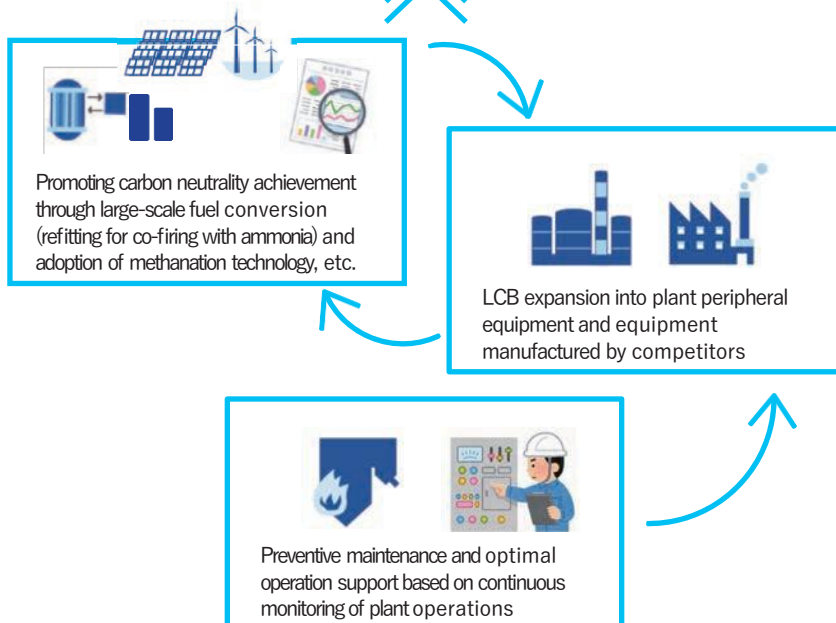
Expanding and improving the customer's value chain, by going beyond just equipment and system sales and maintenance  
 Positive-spiral initiatives for  
 < carbon neutrality, labor saving, and resilience enhancement >



# Core Businesses : Exploit and evolution of Lifecycle Businesses (LCB) –Examples **IHI**

Exploit and Evolution of LCB by operation optimization of entire plants and clean energy

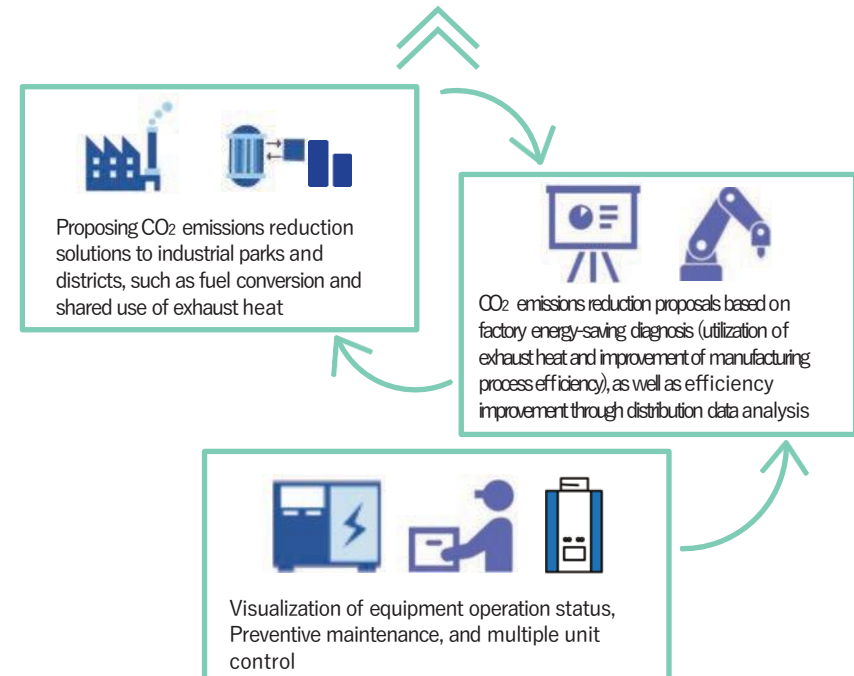
Promoting efficient operations and carbon-neutrality achievement measures for **customers in the power generation sector**



Realizing operation optimization for entire plants based on data analysis, and promoting carbon neutrality achievement in the customer value chain by using clean energy

Exploit and Evolution of LCB through CO<sub>2</sub> emissions reduction, automation and labor saving in factories and industrial parks

Improving value for multiple **industrial customers** by making optimization proposals tailored to the region and industry concerned



By visualizing equipment operation data, the aim is to achieve efficient energy use, automation, and labor savings. Realize carbon neutrality and solve labor shortages by proposing fuel conversion and shared use of exhaust heat to industrial parks and regions.

# Core Businesses: Thorough Business Structure Reform

- Focusing on **strengthening the cash generation capabilities** by growth strategy based on Exploit and Evolution of LCB, and Structural reforms
- By emphasizing these efforts, we will free up management resources to invest in Growth and Development-focus Businesses.

Enhancing business strength to enable quick response to disruptive environmental changes



Operational process reformation and Advancement of digital infra to improve business efficiency and reducing fixed and variable costs

Improving the cash conversion cycle and generating operating cash flow

Strengthening risk management

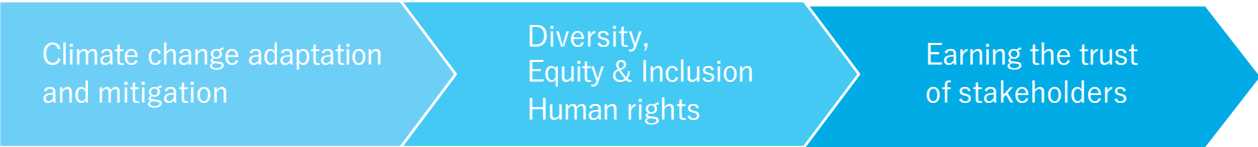
Business portfolio optimization



Business restructuring to secure profitability and efficiency

# Capability of Realizing Transformation

Management centered on ESG values



Developing and recruiting **Innovative human resources** that achieving business and corporate structure transformation



**Directions** Focus on Agile and Continuous self-transformation of the management and personnel and to make it part of the corporate culture



(1) Acquiring global-level expertise and management skills and making it part of the corporate culture

(2) Implementing measures to improve engagement and well-being

- Providing re-skilling opportunities for all employees

- Support for self career development

**Advancement of digital infrastructure** that essential for business transformation



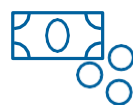
**Directions** Aiming to improve customer value while maximizing business value



(1) Digital infrastructure for creating a new business model with global competitiveness

(2) Digital infrastructure for dramatic production and business process reforms

## Resource allocation

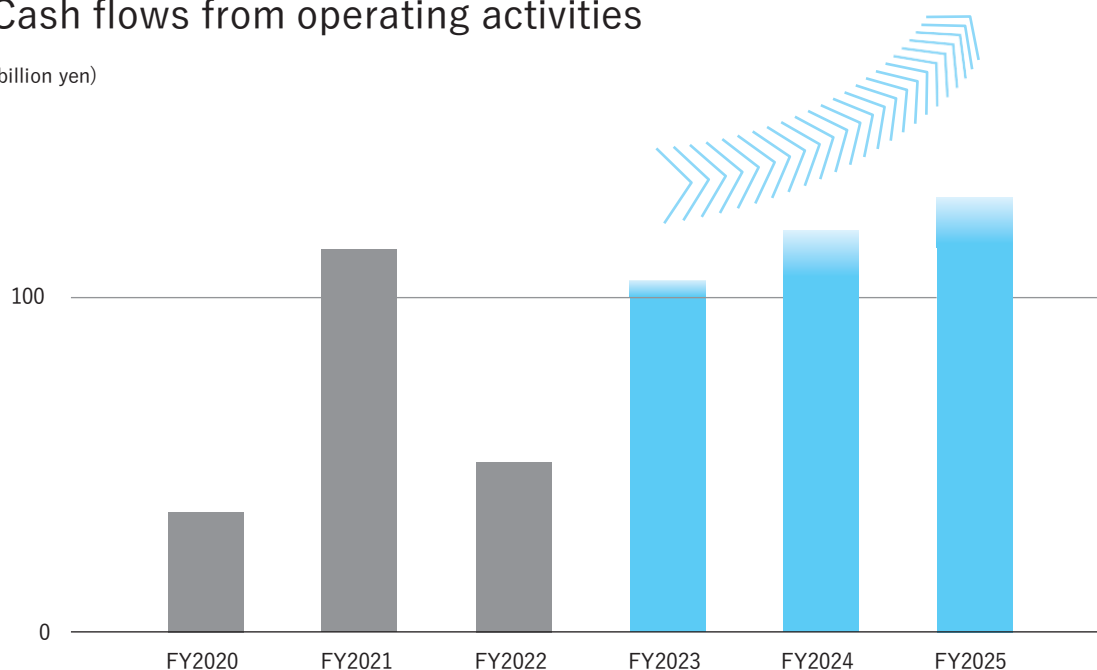


Aiming to generate ongoing operating cash flow of 100 billion yen or more

About half of the total investment budget of 500 billion yen will be invested in Growth and Development-focus Businesses

## Cash flows from operating activities

(billion yen)



## Management targets



	FY2025
Operating profit margin	7.5%
ROIC	8% or higher
Cash Conversion Cycle	100 days
(Reference) Revenue	1.7 trillion yen

## Shareholder returns



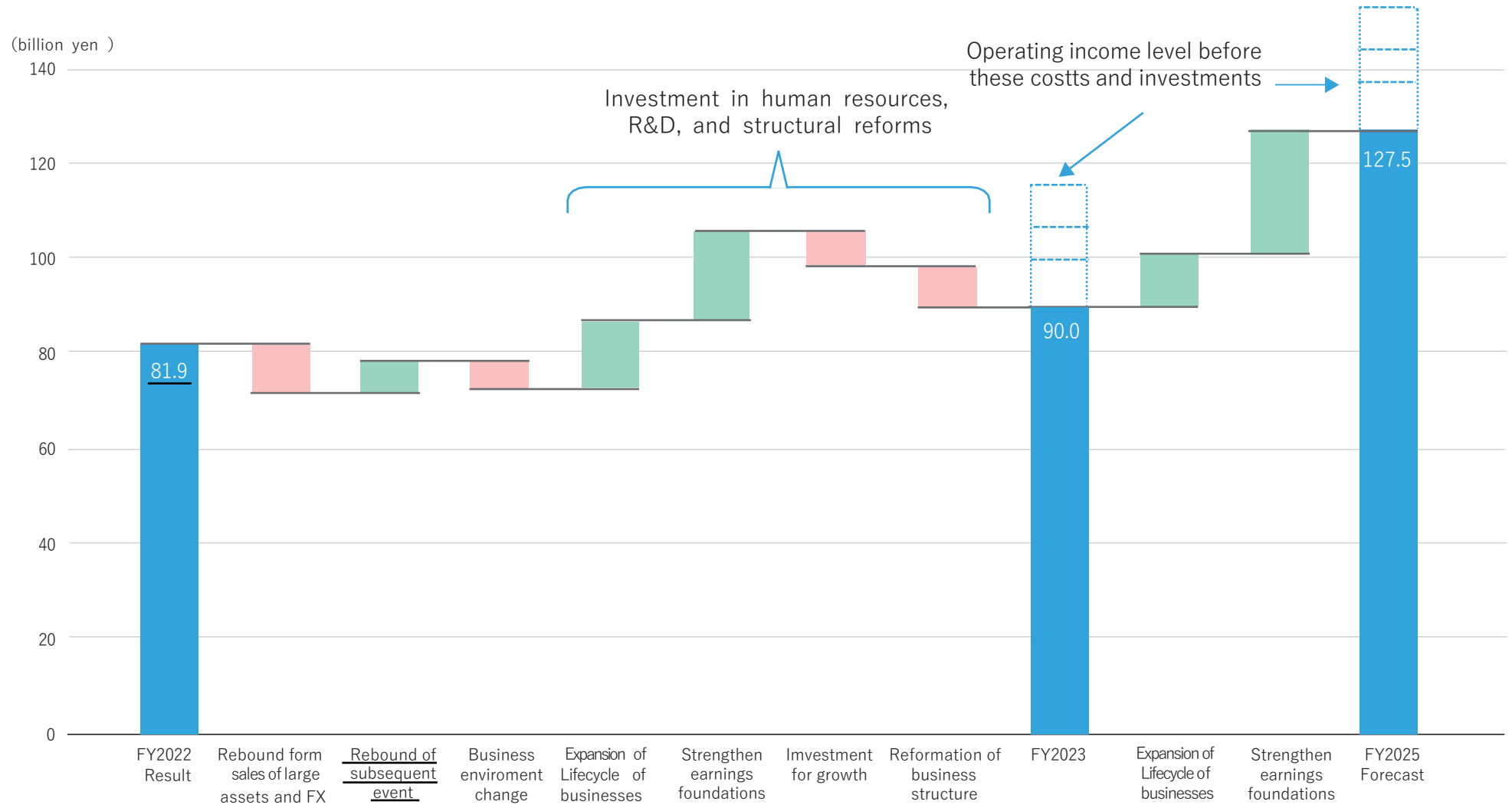
Aiming for a consolidated dividend

payout ratio of **30%** based on a basic policy of stable dividends

ROIC (after tax) : (Operating profit + Interest and dividend income) after tax / (Equity attributable to owners of parent + Interest-bearing liabilities)  
 Cash Conversion cycle: Working capital / Revenue × 365 days

# Resource Allocation and Management Targets

Factors in operating profit changes (FY2022~FY2025)



# Resource Allocation and Management Targets

## Forecast of Operating Profit Margin by Business Domain

(Billion yen)

	Operating profit / Operating profit margin			Revenue		
	FY2022 (Results)	FY2023 (Forecast)	FY2025 (Targets)	FY2022 (Results)	FY2023 (Forecast)	FY2025 (Targets)
Resources, Energy & Environment	26.2 / 7.1%	26.0 / 6.8%	31.0 / 7.2%	371.3	380.0	430.0
Social Infrastructure	17.0 / 9.9%	13.0 / 6.8%	18.0 / 8.6%	171.0	190.0	210.0
Industrial Systems & General-Purpose Machinery	18.0 / 4.1%	24.0 / 5.2%	40.0 / 7.5%	436.5	460.0	530.0
Aero Engine, Space & Defense	<del>36.1</del> / <u>9.9%</u>	51.0 / 11.9%	60.0 / 11.5%	364.1	430.0	520.0
Other	1.3	3.0	3.0	54.2	50.0	50.0
Adjustments	-16.8	-27.0	-24.5	-44.4	-60.0	-40.0
<b>Total</b>	<u>81.9</u> / <u>6.1%</u>	90.0 / 6.2%	127.5 / 7.5%	1,352.9	1,450.0	1,700.0

FX rates | 134.32 JPY/USD | 130.00 JPY/USD | 130.00 JPY/USD | 134.32 JPY/USD | 130.00 JPY/USD | 130.00 JPY/USD |



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**Realize your dreams**