

Jera

JERA GROUP CORPORATE COMMUNICATION BOOK 2022

(Integrated Report)

From Japan to the world

JAPAN'S ENERGY FOR A NEW ERA





Mission

To provide cutting-edge solutions to the world's energy issues

Through our global operations we bring the world's leading energy solutions to Japan, helping to solve the energy issues facing the country. We seek to establish new energy supply models for Japan while also offering energy supply models established in Japan to other countries that face similar energy issues, helping to solve the world's energy issues.

Vision

To scale up its clean energy platform of renewables and low greenhouse gas thermal power, sparking sustainable development in Asia and around the world

To achieve decarbonization over the middle and long term while securing a stable electricity supply, JERA will, in addition to strengthening operations of the thermal power generation business it has cultivated over the years, establish a clean energy supply platform that utilizes digital technology to combine renewable energy and low greenhouse gas thermal power. By providing Asia and the world with a platform that achieves both supply stability and decarbonization, JERA aims to contribute to the sound growth and development of the world and maximize its corporate value.

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Cover image of the Ichthys LNG Project kindly provided by INPEX Corporation

Editorial Policy

About this Report

The JERA Group Corporate Communication Book was first published in FY2020 to promote communication with stakeholders. In FY2021, this integrated report comprised financial and non-financial information, including our specific initiatives toward achieving JERA Zero CO₂ Emissions 2050. Now, in FY2022, we are expanding on the non-financial information, including our zero-emission thermal power and domestic thermal power plant initiatives, messages from outside directors, and a review of JERA's material issues. We have tried to convey how departments and employees at JERA collaborate and work together to solve social issues and enhance corporate value, touching on both financial and non-financial perspectives in a way that is easy to understand. This report has been confirmed by our Sustainability Promotion Committee, which is chaired by the president and reports directly to the Board of Directors. It is meant to spark dialogue with our stakeholders, and your feedback is greatly appreciated.

Notes on Predictions

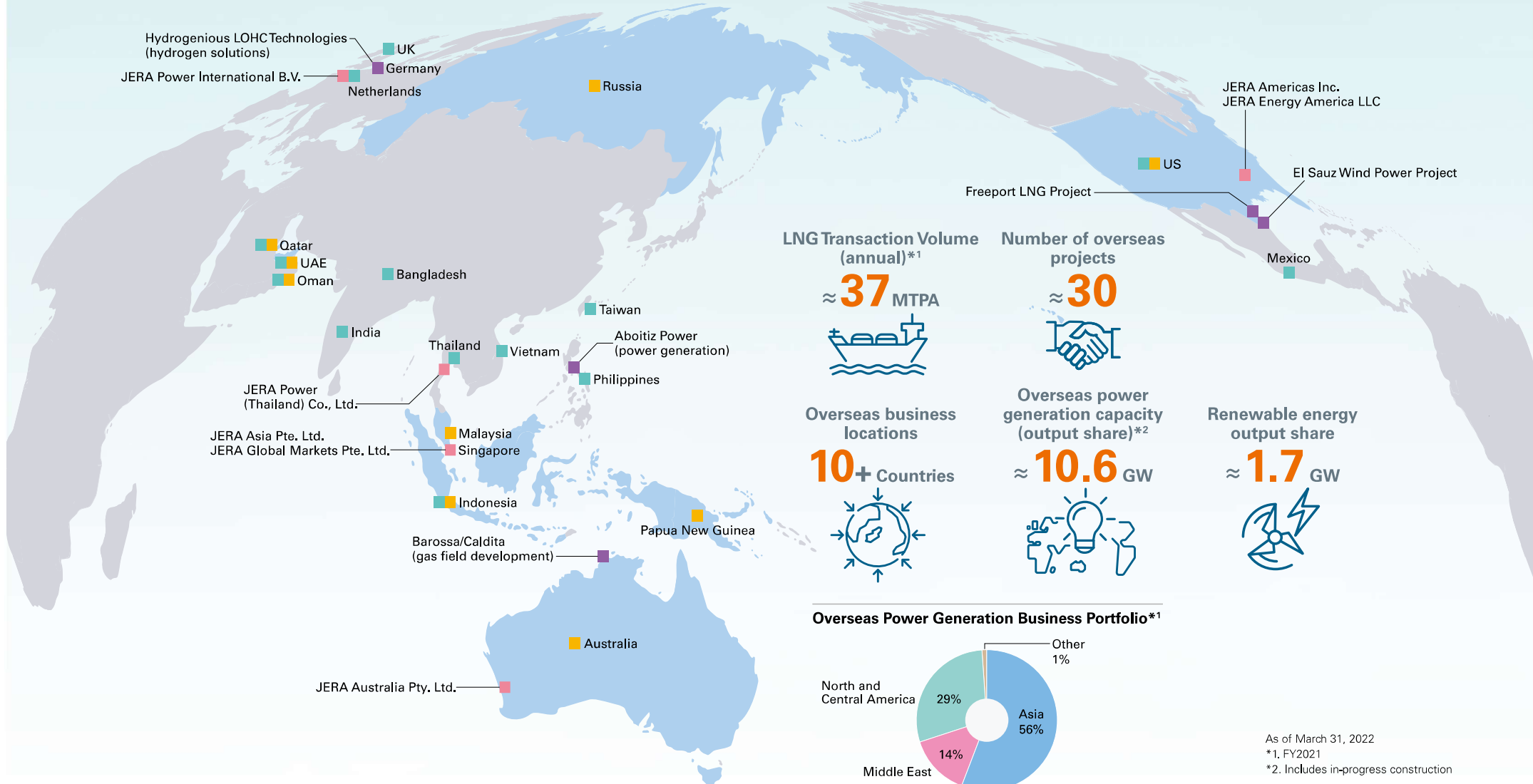
This report includes statements regarding the JERA Group's plans, strategies, and performance forecasts that are based on currently available information and subject to risks, uncertainties, and other factors beyond our control. Please note that actual future business performance, the business environment, and more may differ from the content in this report.

Scope of this Report	JERA Co., Inc., and JERA Group Companies (All mentions of “the company,” “we,” and “our” in this report refer to JERA Co., Inc. unless otherwise noted.)
Reporting Period	FY2021 (April 1, 2021–March 31, 2022) Some sections may include activities after FY2021.
Date of Publication	December 2022 (FY2023 report scheduled for November 2023)
Reference Guidelines	• International Integrated Reporting Framework, International Integrated Reporting Council • Guidance for Integrated Corporate Disclosure and Company-Investor Dialogue for Collaborative Value Creation, Ministry of Economy, Trade and Industry (METI) • Sustainability Reporting Standards 2016/2018, Global Reporting Initiative • Environmental Reporting Guidelines 2018, Ministry of the Environment • ISO 26000 • Recommendations of the Task Force on Climate-related Financial Disclosures (Final Report), Task Force on Climate-related Financial Disclosures (TCFD)
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JERA and the World

JERA was founded on April 30, 2015, as a joint venture and comprehensive alliance between what was then known as the Tokyo Electric Power Company, Inc., and Chubu Electric Power Co., Inc., bringing together the entire supply chain from fuel upstream operations and procurement to power generation and sales. We consolidated all of our existing thermal power generation enterprises in April 2019, becoming an energy company that leads Japan in power generation capacity and ranks among the highest in the world in fuel transaction volume. As a global company capable of solving the world's energy problems, JERA is committed to leading the way in creating a zero-carbon society.

■ Major Global Engagements
 ■ LNG Suppliers
 ■ Major Global Subsidiaries
 ■ Major FY2021 Projects and Future Key Engagements

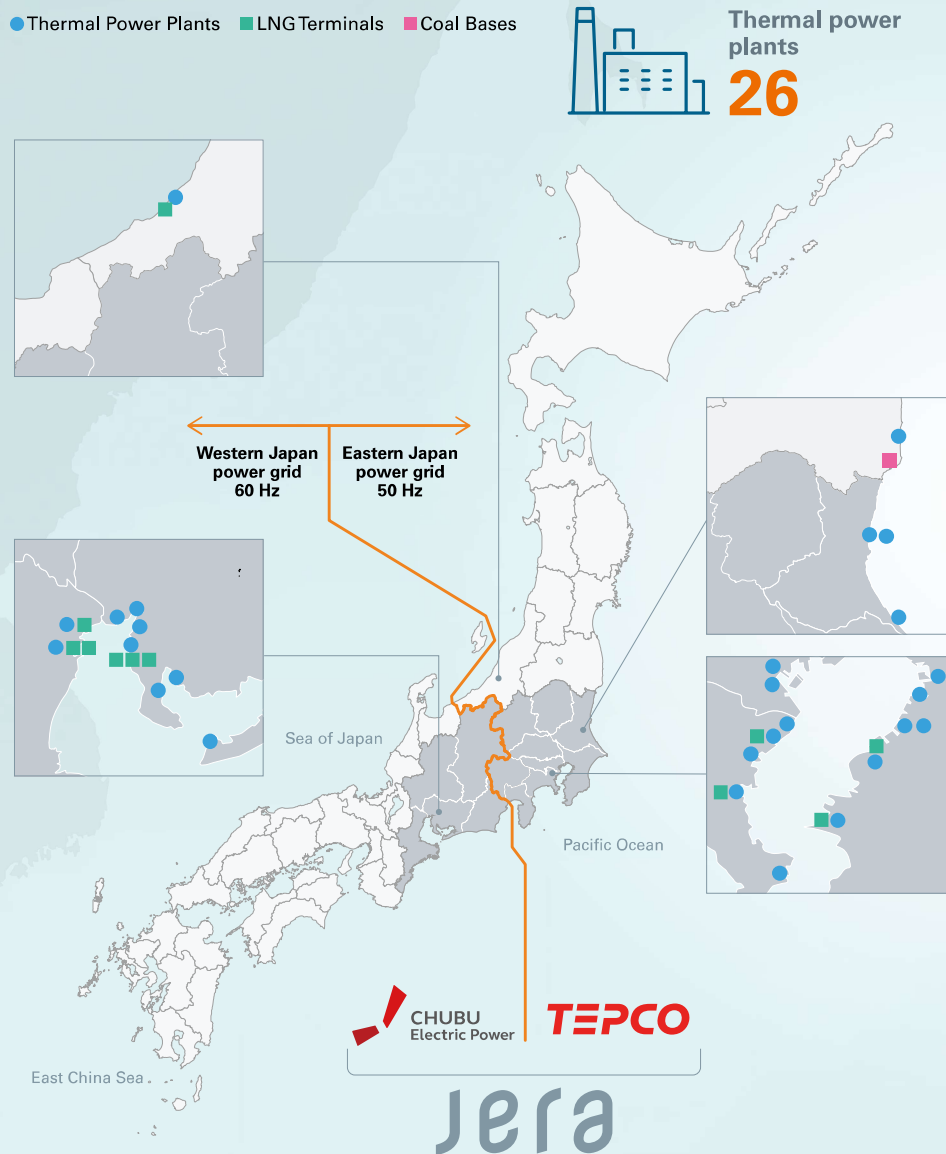


As of March 31, 2022

*1. FY2021

*2. Includes in-progress construction

JERA and Japan



Net sales*¹
4.4 trillion yen



Total assets*¹
8.7 trillion yen



Number of employees (consolidated)
5,062



Power generation capacity*²
≈ 66 GW



#1 in Japan

Power generation output*^{1,2}
247.3 TWh



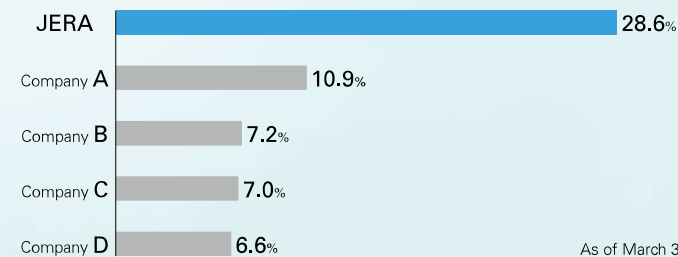
≈30% of country total

LNG storage tank capacity*³
6.65 million kL



≈30% of country total

Japan's Largest Power-Generating Companies by Domestic Share*¹



As of March 31, 2022

*1. FY2021

*2. Includes in-progress construction. Domestic figures exclude joint thermal power holdings.

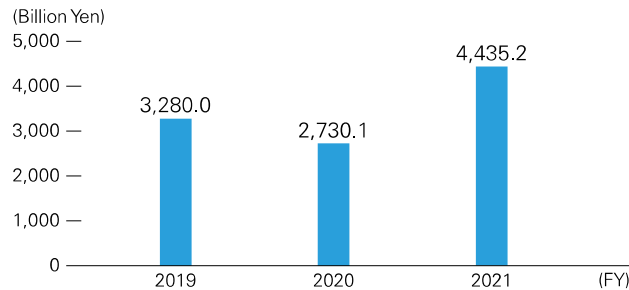
*3. Includes joint projects with other companies in Chita and Yokkaichi

Financial and Non-Financial Highlights

As announced in April 2019, JERA is targeting a consolidated net income of 200 billion yen by FY2025. We are pursuing a number of initiatives toward this goal, and in May of this year, the company formulated and announced its financial strategy and operation targets. We aim to achieve controlled growth and maximize corporate value by achieving medium- to long-term decarbonization while ensuring a stable supply, thanks to active participation from a diverse and inclusive workforce and pertinent corporate governance, among other measures.

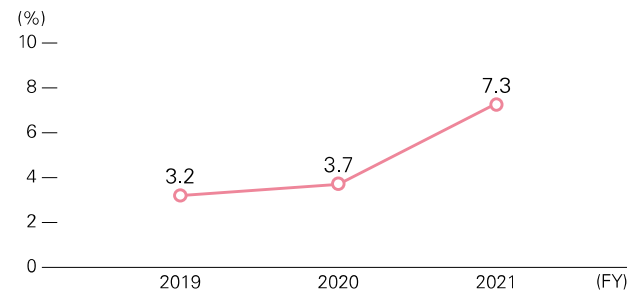
Financial Information

Net sales



Net sales had been hovering ≈ 3 trillion yen, but in FY2021, sales reached 4.4 trillion yen due to increases in the trading business and the volume of electricity sold. By segment, domestic thermal power and gas businesses account for the majority, followed by the fuel and overseas power generation businesses.

ROIC



Although ROIC improved in FY2021 due to a significant increase in profits in the trading business as a result of soaring and fluctuating resource prices, we will continue our efforts to improve capital efficiency to reach our target of ≈ 4.5% by FY2025.

ROIC = (Net profit*1 + Interest expense × (1 – Effective tax rate*2)) ÷ (Interest-bearing liabilities + Net worth*3)*4

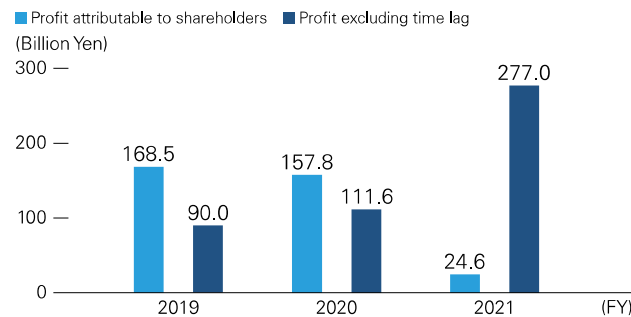
*1. Excluding time lag

*2. Using the company's effective tax rate (figures listed in the Financial Statement)

*3. Total net assets – Non-controlling interests

*4. Average at the beginning and end of the period

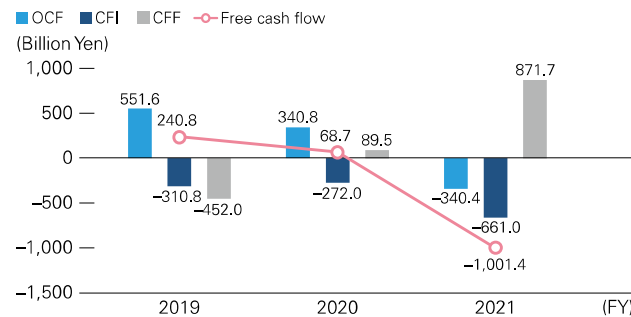
Period profit attributable to shareholders (including/excluding time lag*)



Although large net losses were incurred in FY2021 with the impact of soaring fuel prices and costs carried over due to the depreciation of the Japanese yen, net profit (excluding time lag) increased significantly due to trends such as increased profits in the trading business that seized on resource price fluctuation and recovery from the impact of COVID-19 on the previous fiscal year.

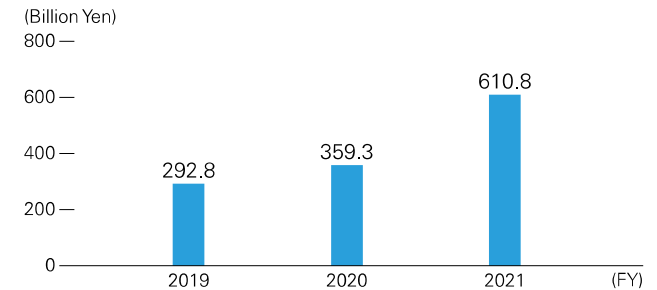
*Profits or losses attributable to delays between fuel price fluctuations and when they are eventually reflected in sales prices

Cash flows from operating, investing, and financing activities (CF)/free cash flow



In FY2021, in addition to negative operating cash flow due to factors such as time lag and margin reserve increases at trading subsidiaries, there was negative free cash flow of ≈ 1 trillion yen due to an increase in cash flow from investing activities (CFI) stemming from the overlap of large-scale investments.

EBITDA

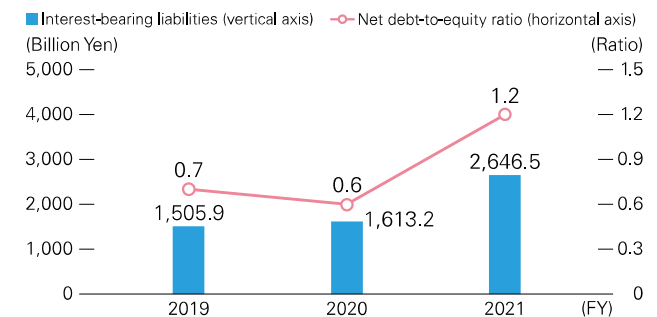


EBITDA also increased in FY2021 due to the stable earnings from our thermal power and gas business in Japan and a significant increase in earnings from the trading business due to the surge in resource prices.

EBITDA = Earnings before interest and taxes* + Depreciation and amortization + Interest expenses

*Excluding time lag

Interest-bearing liabilities / Net debt-to-equity ratio



Although interest-bearing liabilities increased significantly in FY2021 due to short- and long-term fund procurement to deal with time lag and large overseas investment projects, we are managing our balance sheet to achieve a net debt-to-equity ratio of 1.0 or less by FY2025.

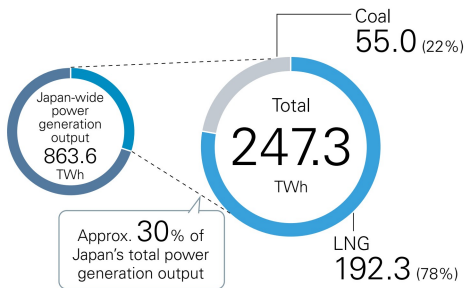
Net debt-to-equity ratio = (Interest-bearing liabilities – Cash and deposits) ÷ Net worth*

*Total net assets – Non-controlling interests

Financial and Non-Financial Highlights

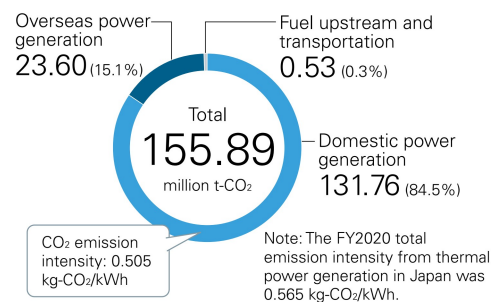
Non-Financial

FY2021 domestic power generation output (by fuel type)



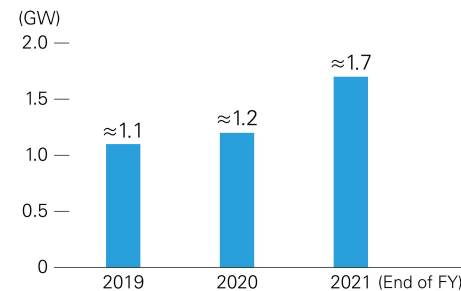
We are responsible for approximately 30% of the power generated by domestic electric utilities. A large portion of this comes from LNG, which has low CO₂ emissions.

FY2021 Scope 1 CO₂ emissions / CO₂ emission intensity (Japan)



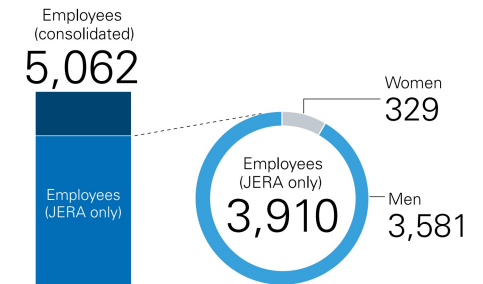
As part of JERA Environmental Target 2035, we aim to reduce domestic CO₂ emissions relative to FY2013 by 60% by FY2035.

Renewable energy output share



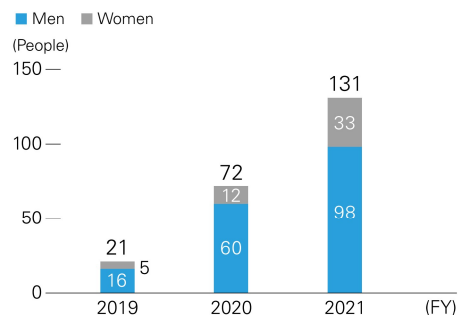
We will expand our wind and solar power generation business in Japan and overseas by promoting large-scale renewable energy development that leverages our strengths.

Employee figures (consolidated for FY2021)



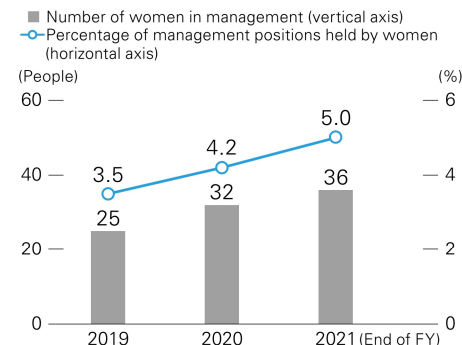
We respect each employee's diversity and individuality and work to foster an open and fair corporate culture and a work environment where everyone feels comfortable.

Number of mid-career hires (by gender)



We are actively hiring people with diverse backgrounds and advanced expertise not yet represented at JERA so that we can enter new business arenas in the future.

Number of women in management / Percentage of managerial positions held by women



Based on the principle of taking full advantage of diverse values and ensuring fairness, we believe in actively providing opportunities for female employees and work to demonstrate their abilities.

Number of outside directors in FY2021

As of March 31, 2022



In addition to JERA-employed executive directors and directors who have come from our shareholders, we hire outside directors in order to ensure a diversity of knowledge, experience, and other qualities among the Board of Directors.

FY2021 Board of Directors

As of March 31, 2022



We believe that a diverse Board of Directors leads to better business decision-making and have made efforts to appoint women and foreign nationals to the board.

Message from the Chair



Toshihiro Sano

Chair, Representative Director

We are committed to sustainable development around the world by ensuring a stable power supply and promoting decarbonization amid a challenging business environment.

JERA's Origin Story

JERA was established in 2015 to function as a comprehensive alliance throughout the supply chains of the Tokyo Electric Power Company (TEPCO) and the Chubu Electric Power Company (Chubu), from fuel upstream and procurement to power generation. Since then, we have integrated our businesses in stages, culminating in the 2019 integration of our existing thermal power generation business to complete our full value chain. The story behind our establishment begins with the Great East Japan Earthquake of 2011, a disaster that marked a significant shift in Japan's energy policy. The increasing role of thermal power generation in ensuring a stable power supply has forced the country to rely more and more on other countries to compensate for its lack of resources. The most pressing issue was finding ways to deliver a stable power supply to Japan, even as competition for resources intensified around the world. At the time, the executives of TEPCO and Chubu were convinced that like-minded companies were better off working together to resolve the issue, and their determination fueled discussions about forming an alliance. The result was "Japan's Energy for a New Era," or JERA, as we're commonly known. Our company was established with relentless drive and resolution to provide Japan with a stable energy supply by becoming a major global player in the highly competitive worldwide energy market.

We fully recognize the gravity of the current business environment. Economic sanctions following Russia's invasion of Ukraine have caused energy resource prices to surge, and demand for electricity in Japan is threatening to outstrip supply. In response, we have spared no effort to ensure a stable electricity supply throughout the country by gradually restarting power plants after long-term planned shutdowns, replacing obsolete plants, and securing fuel as needed from our affiliated energy trading partners.

It is precisely in times like these that we must return to our founding principles. My leadership as chair is based on JERA's guiding philosophy of providing Japan with a stable power supply amid fierce competition around the globe. As I tackle a host of management issues, I continue to consider where we come from to know where we need to go.

Message from the Chair

A New Vision to Adapt to the Rapidly Changing Business Environment

In May 2022, we established a new vision for the year 2035 that clarifies our new long-term goals, factoring in the steady progress we made in our first three years of full-scale operations, as well as global decarbonization efforts and sweeping changes in energy security. The new vision sets out specific initiatives for achieving decarbonization over the longer term while continuously ensuring a stable energy supply. Furthermore, it encapsulates our intent to contribute to sustainable development by providing a clean energy platform in Asia and other parts of the world to pursue decarbonization and enjoy a stable supply of energy to fuel their growth.

Mission

To provide cutting-edge solutions to the world's energy issues

Vision

To scale up our clean energy platform of renewables and low greenhouse gas thermal power, sparking sustainable development in Asia and around the world

A Roadmap Proving JERA's Ability to Lead the Way to Decarbonization

Just two years after unveiling JERA Zero CO₂ Emissions 2050, we have already begun specific efforts to achieve net zero CO₂ emissions from our operations in Japan and abroad by 2050. As a company with global operations centered on thermal power generation, it was a huge decision for us to steer toward decarbonization. Discussions by the Board of Directors lasted the better part of a year. Some were reluctant to design, let alone announce, such a detailed roadmap with so many technical and economic issues to overcome. However, after a lengthy debate, the whole board realized the need to show the world our proactive commitment to zero emissions and reached a unanimous decision to publish the roadmap. Our aim to usher in a new era of energy makes us uniquely capable of such bold decisions. That said, we cannot achieve this challenging and lofty goal alone. To achieve zero CO₂ emissions, we must work with many different stakeholders to introduce innovative technologies and establish supply chains. Our roadmap for our business in



Japan presents a clear path forward. It guides our current initiatives and has increased the potential for collaboration and cooperation with a broader range of stakeholders.

A Highly Effective, World-Class Approach to Corporate Governance

We have always claimed to be a company that competes on the world stage. Consequently, we aim to meet international standards of corporate governance, the foundation of any global player. Our Board of Directors, Leadership Panel, and auditors continually push each other to perform, but I believe we are only halfway there. We must aim for a more robust system of governance by separating management and executive functions. One way to do this, for example, is to increase the number of outside directors on the Board of Directors.

When directors from different backgrounds serve on the board, discussions become more varied and more effective. We are working to further improve the board's effectiveness by proactively providing information on matters including domestic media coverage and trends in the global LNG market to spark discussions around the situation in Russia and Ukraine, supply shortages in Japan, and other events and changes in the business environment that impact our enterprise. We also supplement the functions of the board through Directors' Discussions on important topics as well as through conversations by committees that include outside experts on

Message from the Chair

environmental, social, and corporate governance (ESG), digital transformation (DX), trading, technological strategies, and other areas.

Diversity in the Workforce

Since my appointment as chair, I have maintained that ensuring diversity is vitally important. Having a diverse workforce is essential for making sure the right people are where we need them to be given the global spread of our operations, which includes everything from upstream fuel development and procurement to transport and power generation. In these circumstances, our need for more opportunities for women compared to other global companies is a major shortcoming. In response, we are creating more opportunities for women to become engaged and supporting programs for talent development. In April 2022, we appointed our first female executive officer to manage our promotion of diversity and inclusion. As we accelerate this trend, we will continue to promote women to department heads and other managerial positions to create an environment where women can thrive.

In addition to diversity in leadership, we have codified our succession plan and launched



operations in an effort to ensure sustainability. Looking ahead, we intend to probe deeper into training the next generation of management, assisting employees in their career paths, and more.

Further, to channel the strengths of our diverse talent, everyone must develop an awareness of where their work falls under JERA's mission and vision. Toward that end, we intend to boost our employees' sense of satisfaction with their work by developing clearer job descriptions for all and demonstrating how the actions of departments and JERA Group members interrelate.

Companies Exist to Contribute to Society

I believe that companies exist to contribute to society, but right now, people are asking what that really means. These contributions are not made in an attempt to seek external validation. I ask how we can contribute to Japan as well as to other countries and regions around the world. In my view, the ideal contributions to society are the answers companies and business leaders find when they grapple with this question in earnest. Our origin and mission are perfectly aligned with this approach.

The energy landscape has changed dramatically in the recent past, making it more difficult than ever to provide Japan with a stable supply of affordable energy. As such, we are committed to contributing to society by providing a consistent supply of energy. That, I believe, is our role as a company serious about resolving societal issues. We will also extend our contributions beyond Japan into Asia and the rest of the world. I am convinced that continuing such efforts is one way we can earn the respect of society and enhance our corporate value.

We ask for the continued support of all our stakeholders as we move forward with steady determination and accountability in this challenging business environment.



LNG facility at Futtsu Thermal Power Station (award-winning photo in power plant's contest)

Message from the President



Satoshi Onoda
President

We are trailblazing a path to decarbonization and ensuring a stable energy supply amid trying times.

Background of Our New Vision and JERA Environmental Target 2035

Since establishing the JERA mission and vision in 2019, we have promoted a number of initiatives both domestically and internationally with the medium-term goal of becoming a global leader in large-scale renewable energy and LNG value chain businesses by 2025. Meanwhile, the energy business faces major changes, including stricter regulations on fossil fuels around the world as the world grapples with climate change.

Against this backdrop, JERA—Japan's largest power generation company—has announced JERA Zero CO₂ Emissions 2050, a commitment to achieve net zero CO₂ emissions by 2050 through zero-emission thermal power generation using renewable energy and fuels that do not emit CO₂. This long-term endeavor to realize our mission and vision doubles as an affirmation of action that informs the world of our intent to become a global leader.

In May 2022, we established a new vision based on our steady progress on our ammonia co-firing plan and other initiatives to achieve zero CO₂ emissions. This vision also considers the volatile energy situation attributable to developments such as the Russia-Ukraine conflict. The new vision has three components: stable supply, decarbonization, and growth. We generate roughly 30% of Japan's electricity and thus have a responsibility to provide a stable supply. At the same time, we aim to leverage digital technology and optimization and combine renewables with low greenhouse gas thermal power to build a clean energy platform that provides a stable, affordable energy supply that is not reliant on natural conditions. Additionally, we plan to expand these initiatives overseas to contribute to sustainable growth and development in Asia and other parts of the world. While demand for electricity is expected to continue to grow alongside national economies in Southeast Asia and the rest of the continent, the international community is rapidly moving toward decarbonization. Ideally, our clean energy platform will ensure a stable power supply—the foundation of economic growth—while pursuing decarbonization over the longer term. We believe this platform will allow us to meet the needs of Southeast Asian countries seeking to expand their economies and reduce CO₂ emissions.

Message from the President

To realize our new vision, we have added depth to our existing environmental targets for 2030 in addition to creating JERA Environmental Target 2035, a new goal to reduce CO₂ emissions from operations in Japan by at least 60% from FY2013 levels by FY2035. We set this total CO₂ emission reduction target to demonstrate JERA's commitment to leading the way to a low-carbon society.

Ammonia Co-Firing: Updates on Testing and Foreseeable Challenges

From October 2021 to July 2022, we conducted tests of low-volume ammonia co-firing at Hekinan Thermal Power Station Unit 5. We burned ammonia in an active power plant to study its effects on burner materials and gain other insights. We plan to increase the volume of ammonia and conduct demonstration tests at Hekinan Thermal Power Station Unit 4 starting in FY2023 to study the combustion conditions in the boilers and the impact of the ammonium combustion on all power generation facilities. We have also begun developing a burner capable of handling a mix of fuels comprising at least 50% ammonia.

One of the challenges in introducing ammonia is to establish a supply chain for stable procurement. To use a mix of 20% ammonia at a 1GW coal-fired power plant, for example, would require roughly 0.5 million tons of ammonia per year—half the amount currently consumed in Japan. As we aim to launch full-scale operations at a co-firing rate of 20% by the late 2020s and at least 50% by the 2030s, we will need an unprecedented amount of ammonia. To build a new



Co-firing tests with a fuel mix containing 20% ammonia are scheduled to begin in FY2023 at Hekinan Thermal Power Station, Japan's largest coal-fired plant, located in the city of Hekinan in Aichi Prefecture



supply chain on such a large scale, we will need to form alliances that stretch beyond the energy industry. We recognize the need to swiftly establish a next-level supply chain for fuel ammonia rather than attempting to adapt the existing means of distributing ammonia for industrial use and fertilizers. Accordingly, we are already looking into collaborating with ammonia manufacturers and other companies in Japan and abroad to secure a reliable supply.

Impact of the Russia-Ukraine Conflict and Power Shortages

The situation surrounding energy has become increasingly complex in the past several years. In Europe, conditions were relatively favorable for making renewable energy stable and affordable, exemplified by the westerly winds that blew year-round and a robust international power grid. Fittingly, renewables accounted for a sizable percentage of the electricity mix. However, in the summer of 2021, wind speeds were unusually low, hobbling offshore wind power generation and forcing providers to turn to thermal power generation to compensate. This increased demand for natural gas and triggered a persistent rise in gas prices. Russia's February 2022 invasion of Ukraine made matters worse, driving national governments to reduce their reliance on Russian energy and further exacerbating an already fiercely competitive energy market. A global energy

Message from the President

shortage and sharp rise in resource prices ensued. The situation surrounding procurement remains unpredictable, and we will continue to monitor trends closely.

Additionally, with electricity deregulation ramping up competition and a substantial supply of renewables coming online, power companies throughout Japan are progressively shutting down uncompetitive, obsolete resources because they are increasingly difficult to maintain. Furthermore, uncertainty in fuel procurement and other developments have prompted concern over a nationwide power supply crunch in the winter of 2022. We will do everything in our power to help improve the balance between supply and demand. Specifically, we will make every possible effort to respond to tenders for additional supply capacity by general electricity transmission and distribution utilities. We will also launch a series of state-of-the-art thermal

Further Initiatives to Provide a Stable Power Supply

Restarting idle thermal power plants

- Ended long-term planned shutdown of Sodegaura Thermal Power Station Unit 1 and completed preparations for operation on April 17
- Contributed to a stable power supply by restarting Anegasaki Thermal Power Station Unit 5 and Chita Thermal Power Station Unit 5, consistent with supply-demand balancing measures for the peak summer period announced in June 2022
- Selected as the winner of a tender for additional capacity by transmission system operators (excluding Hokkaido and Okinawa) as a balancing measure for the winter of FY2022, and began preparing to restart units experiencing long-term planned shutdowns (Anegasaki Unit 5, Chita Unit 5, Chita Daini Unit 1, Yokkaichi Group 4 Units 4 & 5)

Replacing thermal power plants

- Contributed to a stable power supply through the steady replacement of thermal power generation facilities totaling roughly 6,660 MW

Power plant	Unit	Output	Start of operation
Anegasaki	1 (new)	650 MW	February 2023
	2 (new)	650 MW	April 2023
	3 (new)	650 MW	August 2023
Goi	1	780 MW	August 2024
	2	780 MW	November 2024
	3	780 MW	March 2025
Yokosuka	1	650 MW	June 2023
	2	650 MW	February 2024
Taketoyo	5	1,070 MW	August 5, 2022

Securing fuel for a stable power supply

- Contributed to stable power supply by procuring a record 4.5 million tons of additional LNG in FY2021 to counter fluctuation during peak periods
- Scheduled to continue cooperating with stakeholders in FY2022 to help secure a stable supply of fuel to meet domestic demand for electricity

power plants totaling 6,660 MW between FY2022 and FY2024 with the aim of maintaining long-term supply capacity and conserving the environment.

New Ways of Working for Employees and Their Families

In 2019, the vast majority of our employees were seconded from TEPCO and Chubu; by 2021, roughly 90% of them had decided to transfer to JERA. We have introduced a unique human resources system while recruiting new graduates and mid-career professionals for a wealth of talent from diverse backgrounds, mainly experts from the business and corporate sectors. Our HR and recruitment system is job-based, with straightforward job descriptions to secure diverse talent and improve retention rates, even in an increasingly fluid labor market.

We also assign some employees involved in power generation operations to other power plants to gain experience, create opportunities for engineers to interact with each other, and take additional steps to stimulate exchange across disciplines, departments, and companies. Although we initially feared this initiative would cause friction when different corporate cultures clashed, everyone was ready to improve their technical skills through friendly competition, generating synergy in the form of mutual respect for each other's cultures and proactive incorporation of the best of both worlds.

The company must be an appealing workplace for employees as well as their families. The quest to create workplaces where employees can work in ways that bring happiness to themselves and their families is the essence of our vision to design new ways of working. Therefore, we have created an environment where most work can be done in the cloud from anywhere. This should make it easier for employees to balance work with parenting, home care, and other responsibilities. We intend to continue improving these working environments to relieve employee stress as they fulfill their role as parents or caregivers.

Our Vision for Digital Transformation

Our digital strategy is to become a data-driven company that captures relevant real-time data, which we use to make and act on swift management decisions. We have already succeeded in becoming the first Japanese energy company to move the entirety of its core systems to the cloud. This digital transformation (DX) is spearheaded by Senior Managing Executive Officer Sami

Message from the President

Ben Jamaa, who draws upon a wealth of experience with IT transformations in global companies and under whose guidance our ICT departments have become reform-minded organizations comprising people from both the TEPCO and Chubu groups as well as mid-career professionals from Japan and around a dozen other countries.

Beyond DX, we have a concept known as the Digital Power Plant Project, in which we seek to transform power plant operations with digital technology. We aim to improve our power generation facilities' competitiveness and market responsiveness by packaging power plant facilities and operations—combining the latest digital technology with our unique homegrown capacity for continuous improvement and technology—and establishing advanced data- and AI-based power plant operations. These efforts will also allow us to replace and digitize the practical expertise of our seasoned professionals, which we expect will facilitate our propagation and reproduction of technology as we expand outside Japan.



Additionally, in July 2022, we launched JERA Digital Academy (JEDI), a DX human resources development program for all group company employees, and are expanding the program to include sites overseas. Digital technology is an essential tool for energy companies to achieve decarbonization, and we will lay the groundwork for all employees to use it for their own purposes.

Closing Words for Stakeholders

Contributing to society is in the DNA of our company, which generates power to support the development of local communities. To us, nothing is more important than providing a safe, affordable, stable power supply to underpin industry and daily life. We have also crafted a vision to build a clean energy platform to combat climate change and expand our business into Southeast Asia and other parts of the world. However, we also recognize the need to contribute to the sustainable development of Southeast Asia, not by simply generating profits but by creating industries, providing job opportunities, and taking other steps to enrich the lives of the people who live there. When conveying these ideas to JERA employees, I often refer to the story of Japanese engineer Yoichi Hatta. He contributed so much to the development of Taiwan under Japanese rule through the construction of the Wushantou Dam that a bronze statue was erected in honor of him. Still today, he remains one of the most revered Japanese people in Taiwan. I hope that our employees—especially the younger ones—will aim to contribute to society through their work and earn respect wherever we operate, much as Hatta did.

We will continue to expend every effort to create working environments where employees can devote themselves to their work with peace of mind and contribute more to our stakeholders than ever before. We ask that you continue to support us in our endeavors.

The World Around JERA

The Impact of Global Trends on JERA—Challenges and Opportunities



Joseph M. Naylor

Outside Director, JERA Co., Inc.

He previously served as Corporate Vice President of Chevron, covering Policy, Government and Public Affairs. He joined JERA in April 2021 as a member of the Board of Directors.

Resolute in Our Mission of Providing a Stable Energy Supply and Leading in the Energy Transition

JERA is facing a number of longer-term and nearer-term global trends that could impact its business. While it is impossible to predict exactly how these trends will play out, JERA is well positioned to fulfill its role of providing cleaner, affordable, and reliable energy for today while investing in the energy of the future.

Global Trends: Ever-Changing Supply and Demand in the Electricity Market

Over the next few decades, world-wide total primary energy demand is expected to increase as the global population approaches 10 billion people. Much of this population growth is in developing areas of the world where people aspire to improve their lifestyle through the acquisition of energy consuming devices like cook stoves, air conditioners, motor scooters and automobiles. The demand for electricity is forecast to increase in all sectors (e.g. residential, commercial, industrial, and transportation) and to outpace population growth.

While fossil fuels are expected to continue to supply the largest share of total primary energy, renewables are forecast to grow at a faster annual rate than all other sources of energy to the point where their share of the energy mix nearly matches that of fossil fuels in 30 years time. The growth of renewables has historically been driven by government policies but it is increasingly being driven by economics as the costs of wind and solar power generation in particular continue to decline.

The demand and supply of energy, and electricity in particular, will also be impacted by technological advances. While demand is primarily driven by population growth and lifestyle choices, newer forms of energy consumption could impact the pace of this growth (e.g. faster electrification of the transport and space-heating sectors). Technological advancements in large-scale, low-cost energy storage could enable intermittent renewables to be less dependent upon more conventional forms of energy such as thermal power generation, creating the opportunity for renewables to play an even larger role in the overall energy mix. The digitization of the grid and power generation facilities could enable more efficient use of power generation and transmission resources.

The Challenge of Balancing Decarbonization and Stable Supply While Facing an Uncertain Future

One of the largest trends that will impact the energy business is the push to decarbonize all aspects of society to address the concerns of climate change. This is expected to be enacted primarily through direct and indirect government policies (e.g., carbon prices, emission caps, building standards, etc.). While the overall direction towards a less-carbon intensive society is clear, the pace at which various jurisdictions enact the necessary policies is quite difficult to predict. During this time, there could be tension between the push to decarbonize and the need to ensure a stable supply of energy (as witnessed recently during the Russian/Ukraine crisis).

In addition to the longer-term trends outlined above, there are nearer-term trends that are also

The Impact of Global Trends on JERA

impacting the energy sector. The Russian/Ukraine crisis has disrupted the traditional energy flows, increased commodity prices, and caused governments to rethink their dependence on certain sources of non-domestic energy. While some of these effects – such as the commodity price spikes – may be transitory others may have a longer lasting impact. Also, after over a decade of strong economic growth, many developed countries around the world are seeing significantly higher levels of inflation, higher interest rates, and a greater likelihood of entering into an economic recession.

Finally, a nearer-term trend with both short- and long-term implications is the growing importance of Environmental, Social, and Governance (ESG) matters for companies. Investors, customers, employees, and civil society have growing expectations of a company's role in society. This includes not only specific actions companies should take on issues such as: climate change; water usage; diversity, equity, and inclusion; human rights; and corporate governance; but also how much they should publicly disclose about these actions.

JERA's Contribution to Decarbonization: An Unparalleled Position with Unrivaled Strengths

The global trends and uncertainties create opportunities for companies that have robust and diverse portfolios, a strong balance sheet, and the ability to invest in a variety of options for the future; JERA is such a company.

JERA recognizes that it has a critical role in society to continue to provide cleaner, affordable, and reliable energy to its customers. It does this through its enviable portfolio of assets in Japan and overseas, including power generation facilities, upstream and midstream assets, and an organization with a long legacy of operation and optimization experience.

The existing portfolio provides the funds and expertise to make additional investments for the future. JERA will continue to invest wisely in current facilities to maintain their safe and reliable operation. In addition, there are many new and attractive opportunities in the energy transition that JERA is evaluating and in which it is investing. These include onshore and offshore wind facilities, ammonia and hydrogen value chain assets, and upstream and midstream natural gas assets.

JERA also has opportunities to use and monetize the operating know-how it has developed over the past many years while developing new processes to operate even better. It can provide energy management solutions to customers to help them operate and maintain their power generation facilities more efficiently and assist with their own decarbonization plans. JERA is

continuing to refine its own operations including digitizing many of its facilities. This will become another offering of energy management solutions provided to customers of the future. JERA will also continue to share its expertise with host governments of the countries in which it operates to help them as they develop policies that facilitate their own energy transition.

Finally, all these future uncertainties also have the potential to create volatility in the energy market. JERA has a strong and growing global trading organization that is able to ensure a secure supply of energy to customers while generating value and mitigating risks.

JERA Plays a Vital Role in Helping Japan Write a Realistic Roadmap to Decarbonization

Despite being one of the world's largest energy consumers, Japan is not blessed with domestic resources and is dependent on imports from overseas for almost all of its energy needs.

The geography of Japan also makes it more difficult than in other countries to develop renewable energy sources such as solar and wind on a large scale. Also, unlike the European Union, for example, Japan and its neighboring countries cannot share an energy distribution network on the scale they could if sharing a landmass.

In this context, JERA must accomplish incremental and mid- and long-term decarbonization of its Japanese assets while providing a stable energy supply to realize the government's goal for Japan to reach carbon neutrality by 2050.

As Japan's largest power generation company, JERA can leverage strategies to achieve zero CO₂ emissions by 2050 and lead the way to a low-carbon society. These strategies include complementing "zero-emission thermal power" with the introduction of renewable energy and green fuels, as well as adopting measures at the decision stage that combine the most innovative and reliable technologies available (i.e., "smart transition").

Conclusion: The Energy Transition Creates Opportunities for JERA

While there are always a number of uncertainties about the future that companies face, the uncertainties that are forecast presently – particularly those associated with decarbonization and the energy transition – are more numerous and potentially more impactful than normal. These uncertainties also create opportunities for companies that are well-positioned. JERA plans to play its role in the energy transition, making investments in the energy of the future while meeting the needs of customers today.

Value Creation Process

Contributing to Sustainable Corporate Value Growth and a Sustainable Society

The World Around JERA

- Rapid changes in power supply and demand
- Increased future uncertainty
→ Leading to difficulties in providing a stable power supply and promoting decarbonization

Business Capital Supporting JERA's Growth (Input)

Human Capital

Number of employees (consolidated) 5,062

Intellectual Capital

Investment in professional development (including digital and administrative initiatives)

Natural Capital

Total energy consumption 50.80 million kl (crude oil equivalent)

Financial Capital

Shareholders' equity 1,688.1 billion yen

Manufacturing Capital

26 power plants in Japan
≈ 30 overseas projects in more than 10 countries

Social/Relational Capital

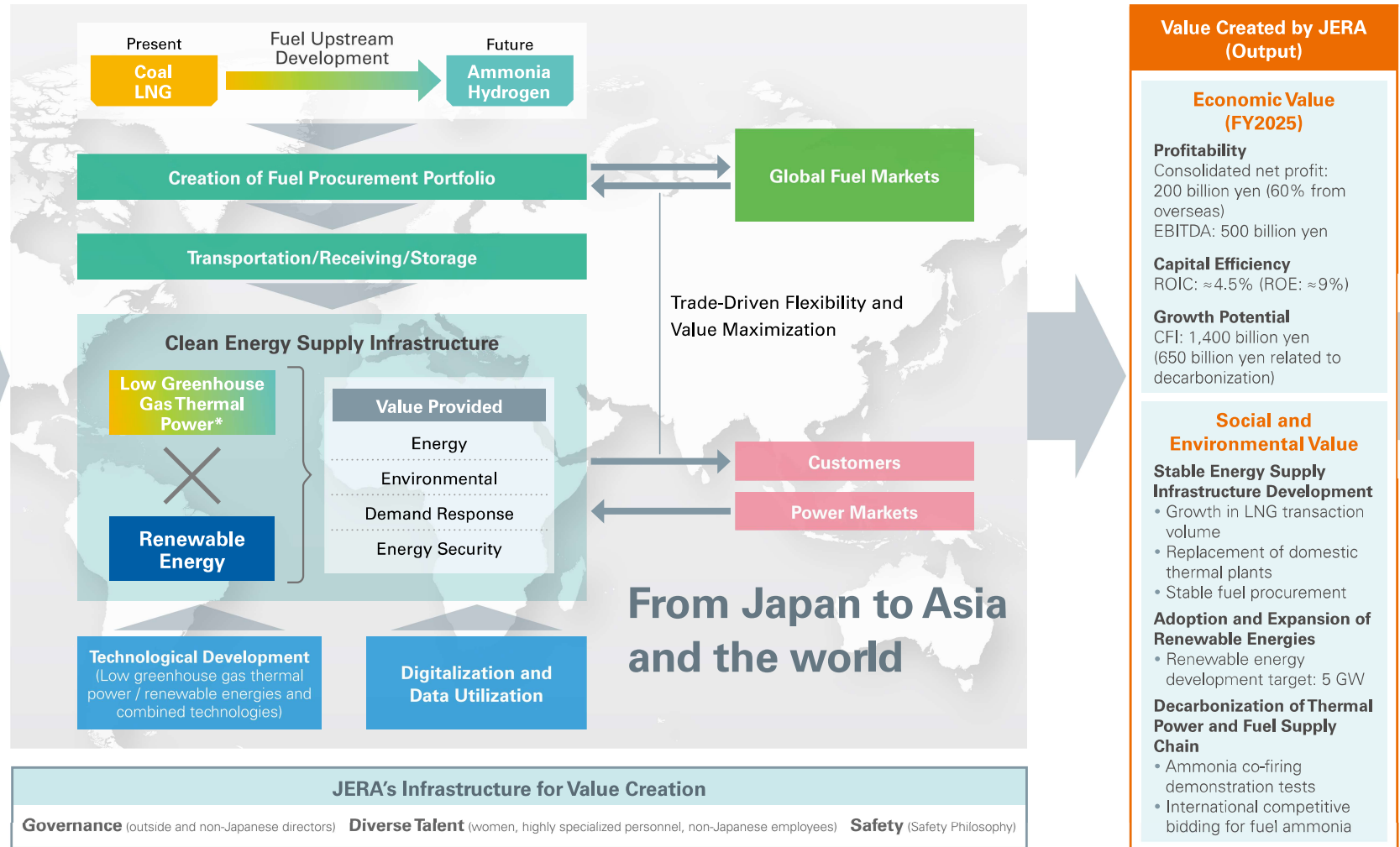
World leader in LNG trade volume
Dominant presence in domestic power generation

Mission

To provide cutting-edge solutions to the world's energy issues

Vision for 2035

To scale up our clean energy platform of renewables and low greenhouse gas thermal power, sparking sustainable development in Asia and around the world



* Thermal power generation facilities designed for co-firing with zero-emission fuels such as hydrogen and ammonia

Value Creation Process

JERA's Goals (Outcome)

Sustainable Corporate Value Growth

- A business portfolio that enables a stable and sustainable energy supply
- Maximizing the value proposition of energy

Contributing to a Sustainable Society

- Forming viable decarbonization processes
- Solutions for energy challenges facing Japan and the world

Our value creation process aims to build a business model that provides a clean energy supply infrastructure combining low greenhouse gas thermal power and renewable energy sources. This model will allow us to achieve sustained corporate value growth and contribute to a sustainable society with zero emissions by 2050. Furthermore, by expanding this business model to Asia and the world, we will participate in healthy growth and development on a global scale.

Specifically, we will support the introduction of renewable energy via thermal power solutions able to generate power in any environment, along with zero-emission thermal power green options that use ammonia and hydrogen. This marriage of renewable energy and zero-emission thermal power will enable us to achieve decarbonization and secure a stable power supply.

We must pursue the best solutions in order to attain a carbon-free future. The types of energy and power grid options available vary by country and region, so it is necessary to formulate roadmaps suited to each situation. We already have initiatives underway overseas, including research and support toward developing a decarbonization roadmap for Indonesia's power sector (FY2021) and collaboration with Summit Power International on developing a decarbonization roadmap for Bangladesh (FY2022).

We will drive the adoption and expansion of green fuel by building a value chain in the same way we have for LNG, from fuel upstream operations and procurement to transportation, receiving, storage, power generation, and sales. Power generation efforts, for example, include ammonia commercialization demonstration tests at Hekinan Thermal Power Station and projects exploring co-firing rates of more than 50%.

In offshore wind power, we are acquiring know-how through participation in several overseas projects and establishing a base of operations in Akita Prefecture to prepare for developing the business in Japan. In addition, we are developing solar power solutions in Japan as we progressively accelerate our renewable energy initiatives.

We will also use the trading market to maximize the value we generate through various power sources, namely our energy and environmental value.

Through these efforts, we continue to define the optimal business model for our entire value chain and business portfolio, one that is responsive to both time and place. The many kinds of capital that comprise the JERA Group are what underpin the realization of our mission and vision.



Hisahide Okuda

Corporate Vice President, Managing Executive Officer,
Director, Corporate Strategy

JERA Zero CO₂ Emissions 2050: Committed to Achieving Zero CO₂ Emissions across Domestic and Overseas Operations

JERA Zero CO₂ Emissions 2050

- > JERA's mission is to provide cutting-edge solutions to the world's energy issues.
- > JERA is rising to the challenge of achieving net-zero CO₂ emissions from its domestic and overseas operations in hopes of creating a more sustainable society for us all.

* JERA Zero CO₂ Emissions 2050 is premised on steady advances in decarbonization technology, economic viability, and consistency with government policy. JERA is developing its own decarbonization technologies and taking the initiative to ensure economic viability.

The Three Approaches of JERA Zero CO₂ Emissions 2050

1

Combining Complementary Renewable Energy with Zero-Emission Thermal Power

JERA will achieve net-zero emissions by adopting an approach that supplements renewable energy with zero-emission thermal power generation, which is capable of generating electricity regardless of natural conditions. JERA will promote the adoption of greener fuels and pursue thermal power that does not emit CO₂ during power generation.

2

Establishing Country and Region-Specific Roadmaps

JERA will achieve zero CO₂ emissions by establishing roadmaps that chart optimal solutions for each country and region. Since the energy situation varies by country and region, with different solutions available based on the feasibility of renewable energy options and the presence of pipelines and transmission lines, JERA will work with stakeholders to establish country and region-specific roadmaps. We have already developed a roadmap for our business in Japan, which we will extend to other countries and regions.

3

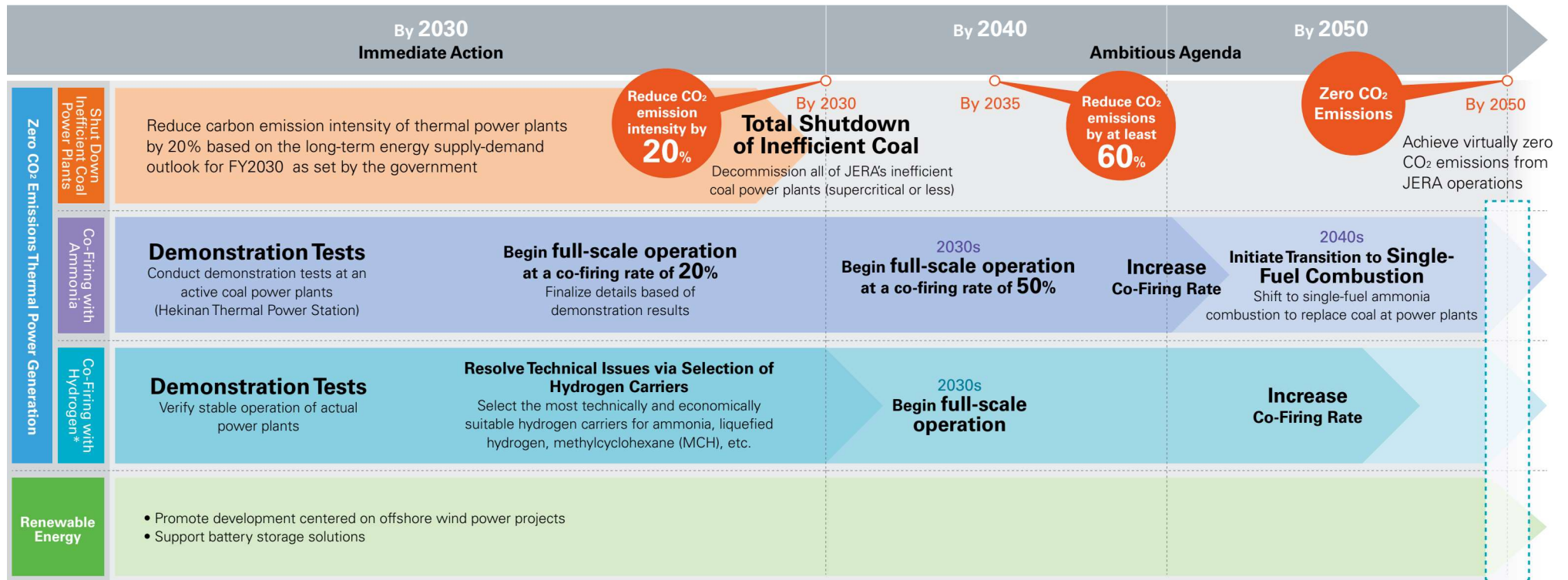
Ensuring a Smart Transition

JERA will achieve zero CO₂ emissions through our "smart transition" strategy, which combines innovative and viable technologies available when adoption decisions are made. This approach will lower technical risk and facilitate a transition to a green society.

TV/Web Ad: "Changing the Way We Think About Energy"



JERA Zero CO₂ Emissions 2050 Roadmap for its Business in Japan



Reference



By 2050, CO₂ emissions from power plants still using fossil fuels will be offset using technologies like CO₂-free LNG

This roadmap will evolve incrementally, adapt to changes in government policy and other relevant conditions, and be revised as needed.

* We are also considering the use of CO₂-free LNG.

JERA Environmental Target 2030

JERA is actively working to reduce CO₂ emissions. For domestic operations, we will achieve the following by FY2030:

- Decommission all inefficient coal power plants (supercritical or less) and conduct demonstration tests of mixed combustion with ammonia at high-efficiency (ultra-supercritical) coal power plants
- Promote the development of renewable energy centered on offshore wind power projects and work to further improve the efficiency of LNG thermal power generation
- Reduce carbon emission intensity of thermal power plants by 20% based on the long-term energy supply-demand outlook for FY2030 as set by the government

JERA Environmental Target 2035

JERA aims to reduce CO₂ emissions from domestic operations relative to FY2013 by at least 60% by FY2035 through the following initiatives:

- Strive to develop and adopt renewable energy in Japan given expanded adoption under the national government's 2050 carbon neutral policy
- Commit to reducing carbon emission intensity from thermal power generation by promoting hydrogen and ammonia co-firing

"JERA Zero CO₂ Emissions 2050 for Its Business in Japan" and the JERA Environmental Targets are premised on steady advances in decarbonization technology, economic rationality, policy consistency, and the business climate under which these goals will be realized.

Zero-Emissions Thermal Power

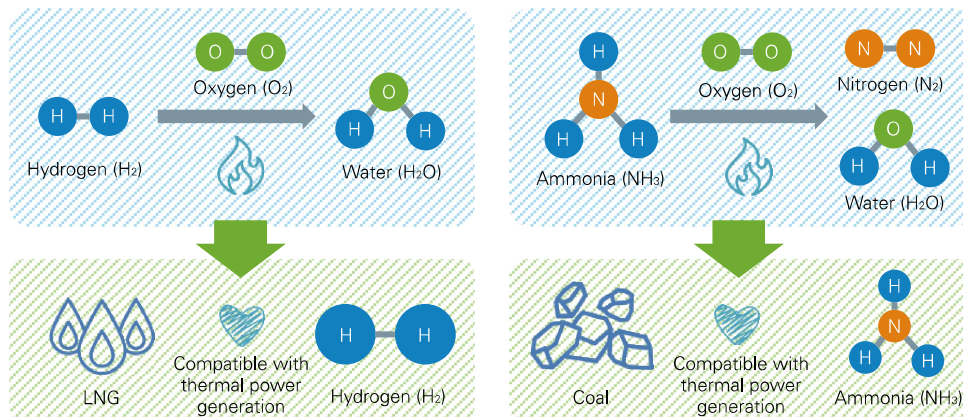
As stated in JERA Zero CO₂ Emissions 2050, we will rise to the challenge of achieving decarbonization by combining renewables with zero-emissions thermal power.

Generating power with solar, wind, and other renewables involves no greenhouse gas emissions, and the energy sources are available in perpetuity. Thus, they should be adopted whenever and wherever possible to prevent global warming and use energy most effectively. However, output from these natural energy sources fluctuates widely due to season, weather, and other natural factors, making it difficult to ensure a stable power supply when and where it is needed. To mitigate this problem, we leverage one of the defining characteristics of thermal power generation: adjustable output.

Toward that end, we will introduce zero-emissions thermal power by replacing conventional fuels like coal and LNG with ammonia and hydrogen, which emit no CO₂ when combusted. Our aims with this shift are to complement renewables with thermal power and vice versa and to achieve carbon neutrality by 2050.

Utilizing Ammonia and Hydrogen

Hydrogen is often called the ultimate clean energy, garnering attention worldwide for its complete lack of carbon emissions.



Ammonia, a hydrogen-based form of energy, is an energy carrier that efficiently transports and stores hydrogen energy. Ammonia is an apt fuel for clean thermal power generation because it emits no CO₂ when combusted, meaning we can use it in its normal state. Accordingly, it should become commercially viable as a fuel for thermal power generation in short order.

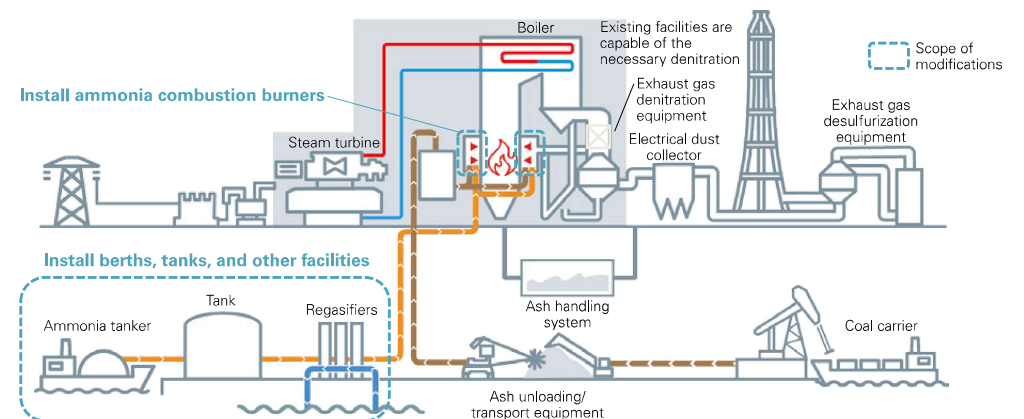
Using Existing Facilities to Reduce Costs and Expedite Installation

We believe that gradually replacing the fuels used in thermal power generation facilities with ammonia and hydrogen is an effective option for reducing costs and deploying zero-emissions thermal power rapidly while maintaining a stable power supply.

Thanks to their compatibility in terms of combustion speed and quantity of heat, we plan to use both ammonia and hydrogen in our power generation. Ammonia is compatible with the boiler-type systems used in coal-fired thermal power, while hydrogen is compatible with the gas turbine-type systems used in LNG-fired thermal power.

Notably, the Japanese government's Sixth Strategic Energy Plan also calls for the promotion of co-firing with non-carbon fuels and other thermal power generation efforts by 2030 while ensuring facility capacity is sufficient for a stable supply. And for the first time, the plan includes hydrogen and ammonia in its composition of power sources.

Ammonia Co-Firing in Boiler-Type Thermal Power (Coal-Fired) Generation

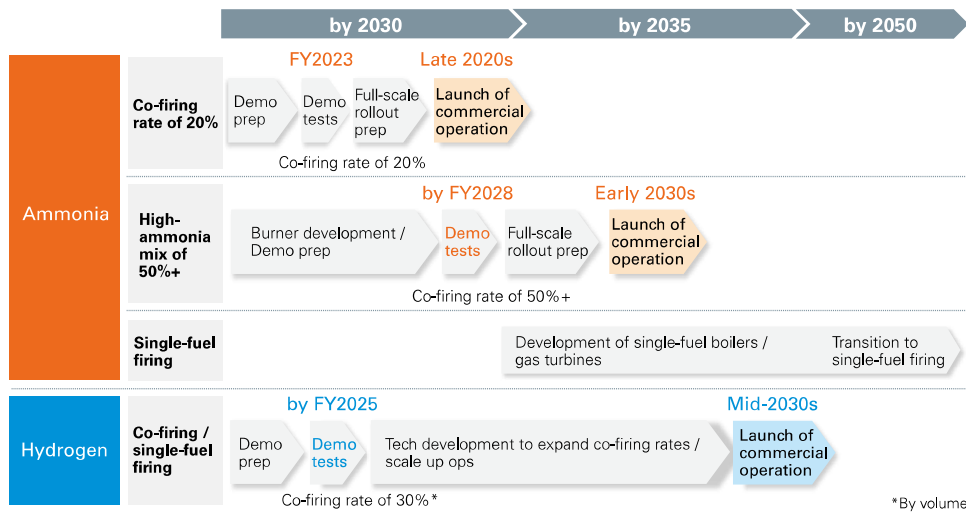


Zero-Emissions Thermal Power

Ammonia and Hydrogen Introduction Plan

In FY2023, we plan to start demonstration tests in which we replace 20% of the existing fuel mix with ammonia at Hekinan Thermal Power Station Unit 4. We will increase the ammonia component to at least 50% by FY2028 and conduct more demonstration tests with the aim of making high-ammonia mixes (50%+) commercially viable in the early 2030s.

We also plan to conduct demonstration tests with a co-firing rate (by volume) of 30% hydrogen at our gas turbine-type LNG-fired thermal power plants by FY2025 to make hydrogen mixes commercially viable in the mid-2030s.



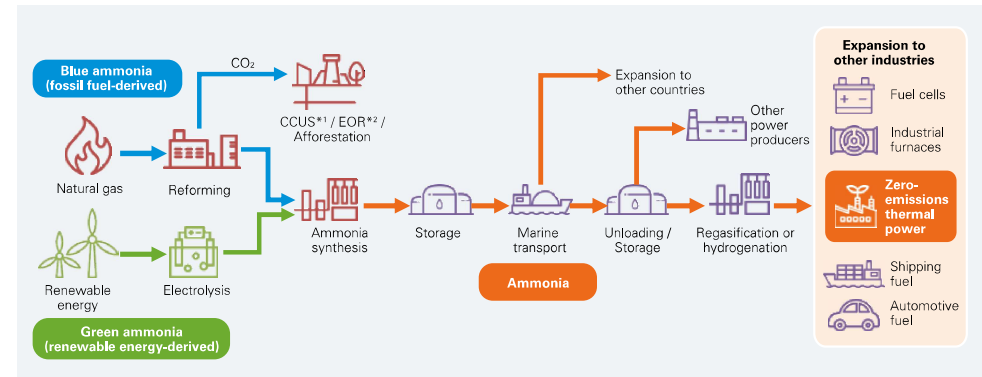
Building a Supply Chain

If we replace 20% of the fuel at a 1 GW thermal power plant with ammonia, we would need roughly 0.5 million tons of ammonia each year, equivalent to half the current annual consumption in Japan, which is mainly for industrial use and fertilizers.

Therefore, it is essential to establish a new supply chain for fuel ammonia to ensure a reliable supply for thermal power generation. We will also consider expanding our business domain beyond power generation to include the development of clean fuels for other industries.

The process of producing ammonia and hydrogen will be one of the keys to unlocking a decarbonized society. We are exploring a wide range of possibilities, including green ammonia and hydrogen produced via electrolysis of water with electricity derived from renewables, as well as blue ammonia and hydrogen, which store CO₂ separated and captured in fossil fuel-powered manufacturing processes.

Ammonia Supply Chain



*1 CCUS: Carbon dioxide capture, utilization, and storage

*2 EOR: Enhanced oil recovery

Expansion into Asia

We believe that zero-emission thermal power with ammonia and hydrogen is a realistic approach to achieving both a stable power supply and decarbonization. By offering this approach as one of our solutions to people in burgeoning economies in Asia and the rest of the world, we hope to contribute to the power supply and pursuit of decarbonization that underpins economic growth in those countries and regions.

Zero-Emissions Thermal Power

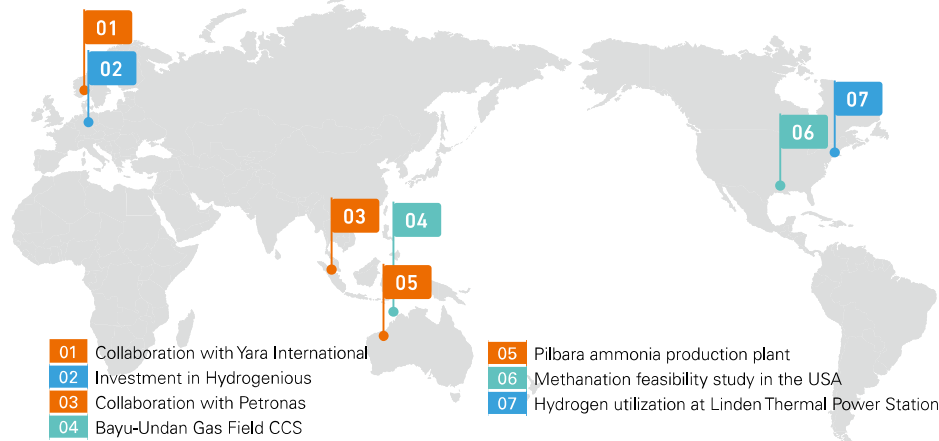
Promoting and Expanding Green Fuels by Leveraging the Strengths of the Entire Value Chain

Together with many partners, JERA has established a full value chain—from power generation to gas field development, liquefaction, and fuel transport and storage—to realize stable and economical procurement of LNG. We will apply this concept of full value chain utilization to hydrogen and ammonia to drive the promotion and expansion of green fuels.

Initiatives to Achieve a Full Value Chain

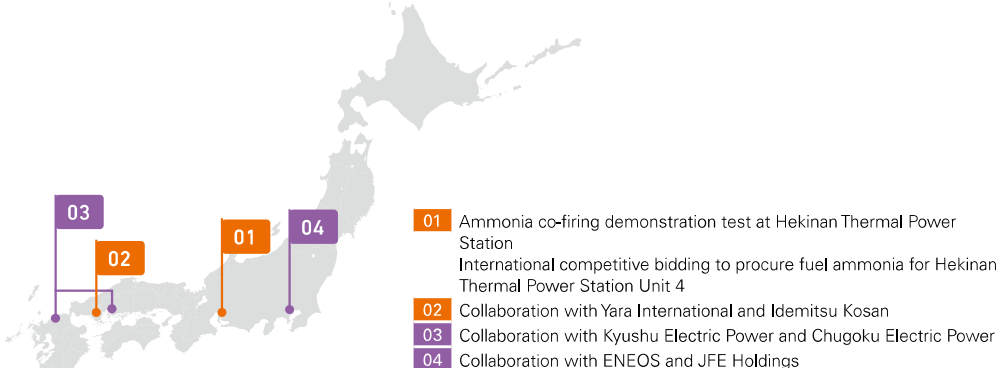
Worldwide (excluding Japan)

Ammonia Hydrogen CCS and others



Japan

Ammonia Ammonia + Hydrogen



SPOTLIGHT

Investment in Hydrogenious

In September 2021, JERA entered into an investment agreement and a shareholders' agreement with Hydrogenious LOHC Technologies GmbH, a developer of hydrogen storage and transport technology headquartered in Erlangen, Germany. Hydrogenious has proprietary technology for liquid organic hydrogen carriers (LOHC), a type of hydrogen carrier.

Hydrogen is widely considered to be a next-generation replacement for fossil fuels at thermal power plants because it emits no CO₂ when it is combusted. However, large-scale marine transport of hydrogen involves challenges, and technological development for hydrogen carriers is ongoing. JERA intends to assist in resolving technical issues and select cost-competitive carriers.

The company's LOHCs stand apart because their carrier medium choice of benzyltoluene—to which hydrogen is added through a chemical reaction—results in a liquid that can be transported and stored at ambient temperature and pressure and is easy to handle because it is flame resistant and non-explosive. Hydrogenious is constructing the world's largest LOHC plant in Dormagen, Germany, and plans to bring the facility online in 2023.

By investing in Hydrogenious, JERA intends to acquire insight into LOHC technology—a potential game-changer for hydrogen energy carriers—and assist in the development of LOHC plants in Europe, North America, and Asia to help establish a global hydrogen supply chain.



JERA ZERO CO₂ Emissions 2050 Website
<https://www.jera.co.jp/english/corporate/zeroemission/>

JERA Zero CO₂ Emissions 2050

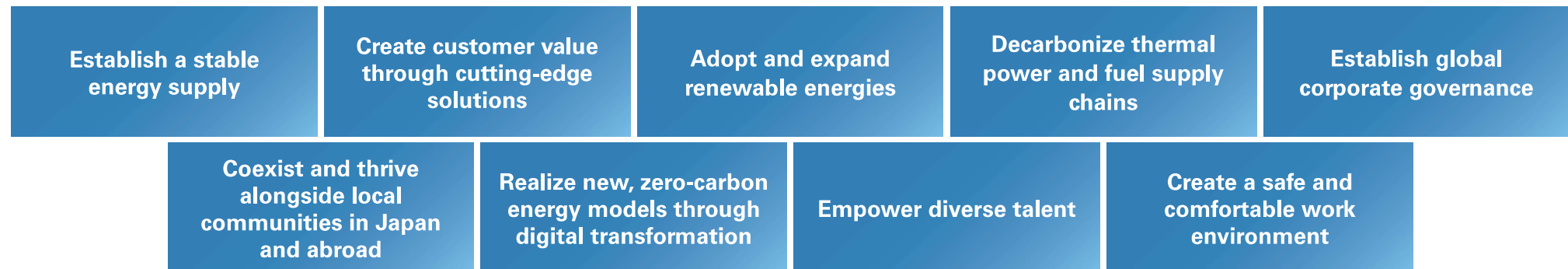
Material Issues

JERA identified and published our material issues starting in 2020 based on the goals set forth in our April 2019 business plan. We review our material issues every year in response to changes in the internal and external environment, and this year we pinpointed nine issues guided by the new corporate vision and JERA Environmental Target 2035, which were both announced in May 2022. In addition, we map out the issues, follow the Plan-Do-Check-Act (PDCA) cycle toward realizing our mission and vision, and implement materiality-conscious management processes.

How We Identify Material Issues

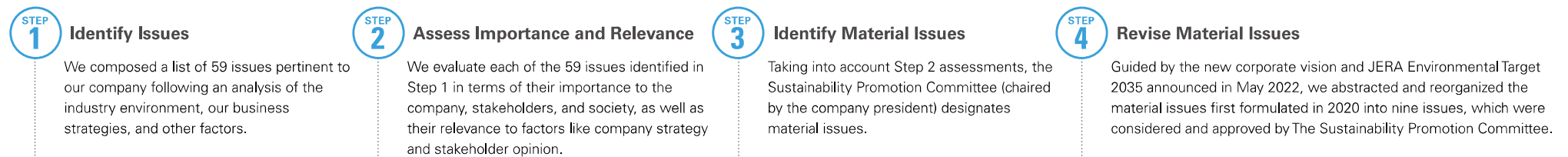


New Material Issues



How We Set Our Material Issues

We address material issues accordingly as they evolve by reassessing the issues and adjusting KPIs, among other efforts.



Material Issues

Material Issues	Major Initiatives	Related Pages	Related SDGs
1 Establish a stable energy supply	● Stabilize supply and demand management ○ Replace domestic facilities representing 7–9 GW of energy (at 5–7 sites) ● Optimize security measures and monitoring systems in line with global standards ● Enhance JERA's business continuity plan (BCP) and business continuity management (BCM) ● Improve disaster preparedness through systematic education and training ● Build a disaster prevention infrastructure by maintaining reserves	Business Development (p.31) Optimization (p.33) O&M Engineering (p.35) Initiatives at Thermal Power Plants in Japan (p.37) Response to TCFD Recommendations (p.45) Risk Management (p.72) Information Security (p.75)	
2 Create customer value through cutting-edge solutions	● Develop new technologies that can spearhead a sustainable society ● Further innovate by combining new technologies with power generation technology ● Strategically acquire intellectual property in Japan and abroad and apply it to new business ● Develop and deliver solution selling that ties in with company business	JERA Zero CO ₂ Emissions 2050 (p.19) Zero CO ₂ Emissions Thermal Power (p.21) Business Development (p.31)	
3 Adopt and expand renewable energies	○ Target renewable energy development representing 5 GW of energy by 2025 ● Acquire essential know-how about offshore wind power	JERA Zero CO ₂ Emissions 2050 (p.19) Zero CO ₂ Emissions Thermal Power (p.21) Business Development (p.31) O&M Engineering (p.35) Response to TCFD Recommendations (p.45) Environment (p.53)	
4 Decarbonize thermal power and fuel supply chains	● Establish hydrogen and ammonia supply chains ○ Utilize ammonia effectively, with demonstration tests of co-firing rates of 20% at Hekinan Thermal Power Station Unit 4 planned for FY2023, commercial operation of co-firing rates of 20% targeted for the late 2020s, and commercial operation of co-firing rates of 50% intended to begin in the early 2030s ○ Utilize hydrogen effectively, with commercial operation planned for the 2030s ● Pursue carbon capture and storage (CCS) know-how and project opportunities	JERA Zero CO ₂ Emissions 2050 (p.19) Zero CO ₂ Emissions Thermal Power (p.21) Business Development (p.31) O&M Engineering (p.35) Response to TCFD Recommendations (p.45) Environment (p.53)	
5 Establish global corporate governance	● Improve board effectiveness ● Instill and put into practice a compliance culture and strengthen the JERA Group compliance system ● Make improvements to reporting of financial and non-financial information ● Initiate phased and joint decarbonization efforts with regional business partners, especially in Asia, that emphasize our power plant O&M and engineering technologies	O&M Engineering (p.35) ESG Management (p.51) Stakeholder Engagement (p.68) Corporate Governance (p.69) The Strong Board of Directors Behind JERA's Autonomous Management System (p.71) Compliance (p.76)	
6 Coexist and thrive alongside local communities in Japan and abroad	● Take action to coexist with the environment, educate the next generation, and resolve issues in local communities based on our Social Contribution Activity Policy ● Build good relationships with stakeholders through cooperative efforts with the community ● Strengthen systems for the prompt and proper reaction in response to domestic and international crises ● Practice global corporate social responsibility (CSR) founded on the needs of overseas sites	Environment (p.53) Coexisting with Local Communities (p.64) Safety and Health (p.66) Stakeholder Engagement (p.68) Risk Management (p.72)	
7 Realize new, zero-carbon energy models through digital transformation	● Acquire cutting-edge IT technologies through upgrading the R&D environment and building relationships with leading technology companies, among other efforts ● Set up data infrastructure and promote data governance ● Introduce apps featuring data protection and privacy (DPP) ● Offer digital education to all employees	Information Technology (IT) / Digital Transformation (DX) (p.27) O&M Engineering (p.35)	
8 Empower diverse talent	● Develop and implement human resource strategies linked to business strategies and goals ● Evolve and expand mechanisms to attract diverse talent (e.g., broaden the pool of new graduate and mid-career candidates and strengthen partnerships with educational institutions) ● Establish systems that promote self-driven career development (e.g., create structures for skill advancement and career paths, provide consultation services, and expand internal promotion efforts) ● Build an attractive workplace (e.g., better define employee jobs and expectations, introduce new remote work options) ● Realize borderless human resources (e.g., unify policies across all JERA Group companies and increase global mobility irrespective of hiring location) ● Emphasize diversity and inclusion (e.g., foster activities that empower women, employ persons with disabilities, and promote LGBTQ+ understanding) ○ Increase the percentage of women in leadership positions, targeting 15% in officer positions and manager representation equivalent to the overall employee gender ratio ● Improve global engagement across group companies, establishing and spreading an employee value proposition (EVP) that resonates within and beyond the company	Talent Development (p.56) Diversity and Inclusion (p.57) JERA Work Design (p.62) Human Rights (p.63)	
9 Create a safe and comfortable work environment	● Improve safety levels and work toward zero accidents ● Boost safety awareness among all employees ● Build a robust safety infrastructure that promotes safety at JERA Group companies in Japan and abroad and reinforces collaboration with stakeholders ● Implement the measures needed for a safe workspace (e.g., augment safety information available online, construct a database of safety incidents, and design effective procedures targeting a zero-accident environment) ● Establish contingency plans for overseas operations ● Formulate safety management system standards for normal operations ● Promote work-life balance ○ Maintain stress check levels for employees in Japan below the 100-point national average ● Strive to reduce the number of abnormal test results during periodic employee health checkups	Communication with Employees (p.61) JERA Work Design (p.62) Safety and Health (p.66) Stakeholder Engagement (p.68) Risk Management (p.72)	



Information Technology (IT) / Digital Transformation (DX)

Accelerating JERA Group's DX to Achieve a Zero-Carbon Society

JERA aims to become a Japan-based global energy company through the promotion of operational efficiency, work sophistication, and creation of new business value by utilizing cutting-edge technologies and data in order to realize a carbon-free society.

Over the past several years, we have focused on developing common global infrastructure, including the first attempt at full cloud migration in Japan's energy sector, consolidating legacy systems inherited from shareholder companies, developing systems needed to respond to key business issues, and improving operational efficiency.

Going forward, we will continue to drive digital transformation within the JERA Group by building platforms capable of launching new business models conducive to realizing a carbon-free society and acquiring cutting-edge technologies through partnerships and investments.

Digital talent is essential to realize these goals. We will work as "One Team" to strengthen the recruitment and development of digital talent not only for ICT division but for the entire group.



Sami Ben Jamaa

Senior Managing Executive Officer
Global CISO (Chief Information and Digital Officer)
ICT

Key Initiatives and Topics

Digital Transformation (DX)

Initiatives that contribute to the creation of new business value



Establish service infrastructure for developing renewable energy (PV, offshore wind, battery storage, etc.)



Invest in cutting-edge technology companies



Obtain DX certificate authorized by the Ministry of Economy, Trade and Industry (METI) of Japan

*DX certification verifies that the company is ready to transform its business digitally (DX Ready)



Digital Transformation Certification

Digital Integration (DI)

Initiatives that contribute to the advancement of existing businesses



Consolidate and modernize legacy systems inherited from shareholder companies



Visualize the entire value chain for supply-demand optimization and energy stability



Promote digital power plant project to advance power plant operations



Visualize entire investment-related business portfolio

IT System Infrastructure

Initiatives that contribute to the operational efficiency and work style reforms across the entire group



Full cloud computing (cloud-first)
Strengthen cybersecurity



Build corporate management infrastructure
Redesign payroll system
Introduce electronic contract

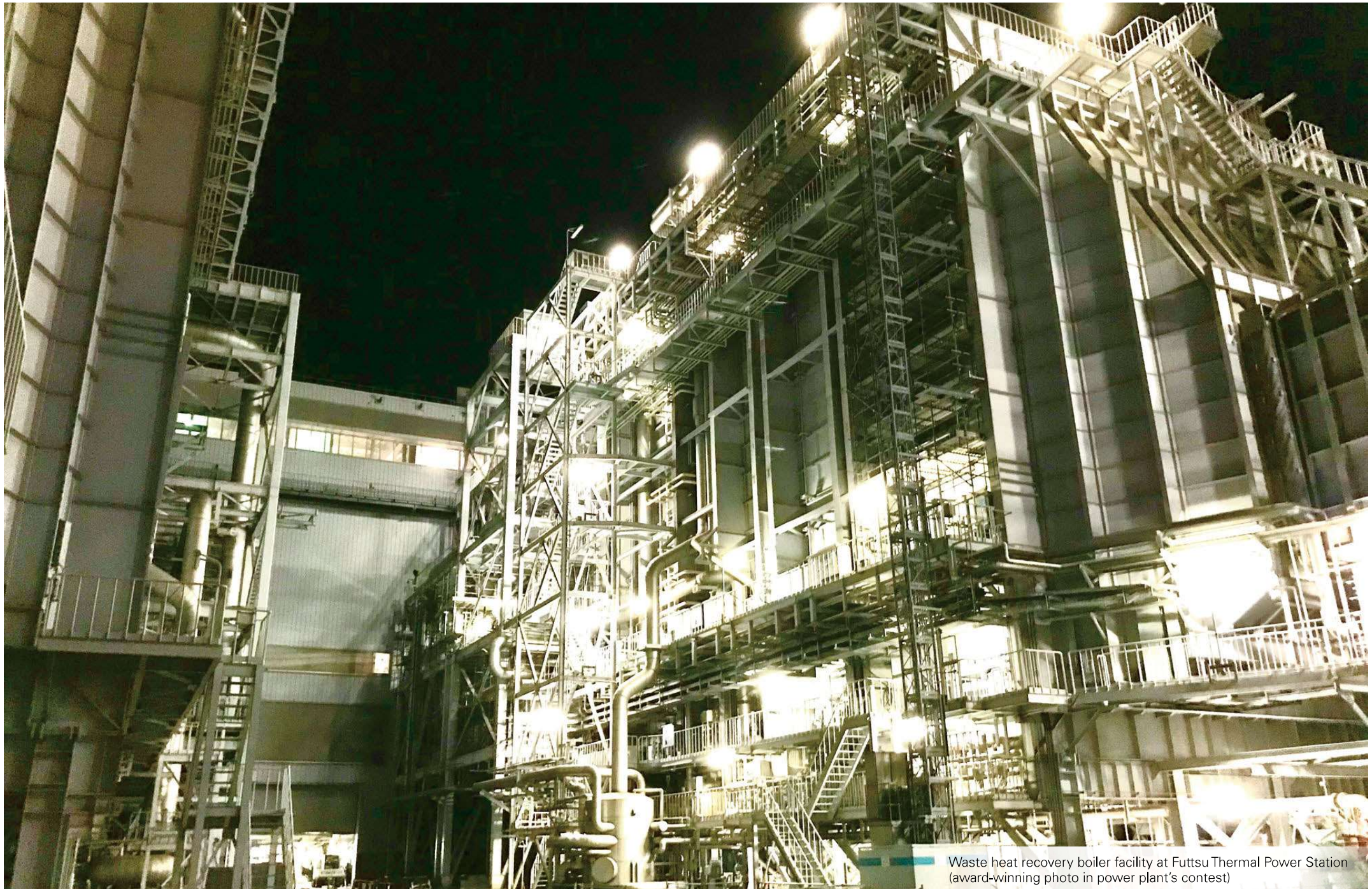


Build data platforms and system-to-system data linkage

Talent Development

Establish DX talent education program targeting all employees of more than 5,000 employees including JERA Group company employees





Waste heat recovery boiler facility at Futtsu Thermal Power Station
(award-winning photo in power plant's contest)

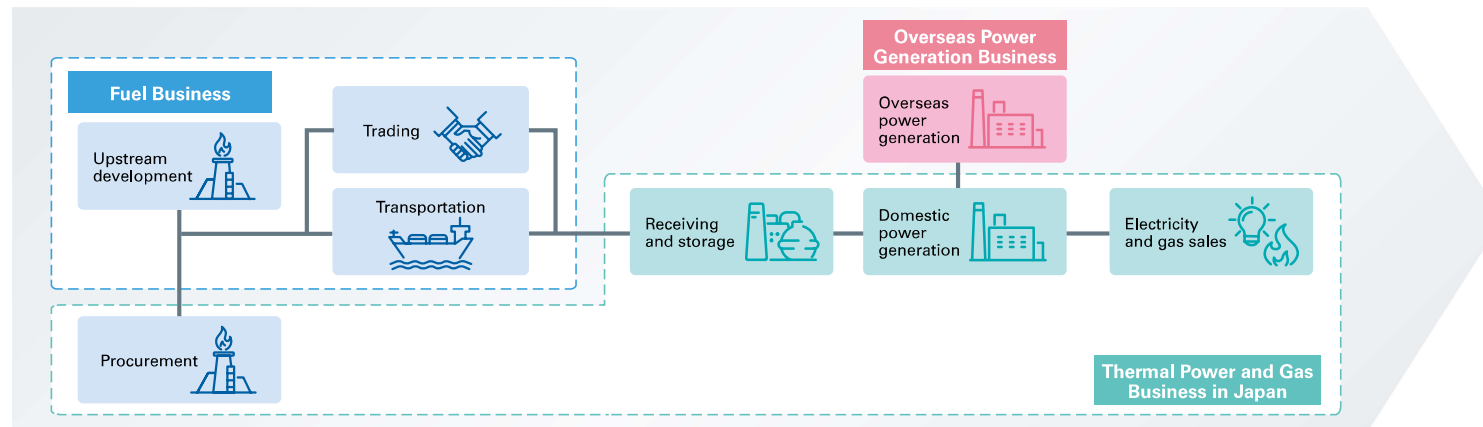
Strategies

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The Management Capital Behind Our Value Chain and Growth

There are three areas of the company that manage JERA's value chain framework: Business Development, which devises and operates several projects on a global scale; Optimization, which is responsible for establishing the best possible energy operations throughout the value chain; and the pairing of O&M (operation and maintenance) and Engineering (development and construction), which is located in Japan's Kanto and Chubu regions to provide a stable power supply to the country.

The relationships between these three business areas and our three business segments—fuel, overseas power generation, and domestic thermal power and gas—are as follows:



			Fuel Business	Overseas Power Generation Business	Thermal Power and Gas Business in Japan			
The Management Capital Behind Growth			LNG transaction volume*1 ≈37 MTPA	Overseas power generation capacity*4 ≈10.6 GW	Overseas business locations 10+ Countries	Number of LNG terminals*3 11	Power generation capacity*4 ≈66 GW	Power generation output*1,*4 247.3 TWh
Human Capital	Intellectual Capital	Natural Capital	Countries involved in LNG procurement*1,*2 16	LNG Cargo Fleet 19 carriers	Number of overseas projects ≈30	Renewable energy output share ≈1.7 GW	Thermal power plants*4 26	LNG storage tank capacity*3 6.65 million kl
Financial Capital	Manufacturing Capital	Social Capital	Number of employees*5 390	Net sales*6 2,995.5 billion yen	Number of employees*5 287	Net sales*6 4.1 billion yen	Number of employees*5 3,969	Net sales*6 3,119.4 billion yen
Business Development (p.31)	We are building an optimal asset portfolio and increasing earnings by expanding the scale and scope of the value chain through new business development and restructuring existing assets.		Fuel upstream / LNG procurement / transportation		Development of overseas power generation, value chains, and renewable energy		Domestic power generation	
Optimization (p.33)	We aim to achieve efficient, optimal operation by consolidating and controlling the entire energy value chain, from fuel procurement and transportation to power generation and electricity and gas sales.		Short-term fuel procurement / trading				Electricity and gas sales	
O&M Engineering (p.35)	We ensure the safe, affordable, and flexible operation of our fuel-receiving and storage terminals and thermal power plants.						O&M Engineering Technical and third-party sales	

As of March 31, 2022

*1. As of FY 2021 *2. Represents the number of countries that exported LNG to our terminals *3. Includes joint projects with other companies in Chita and Yokkaichi *4. Includes in-progress construction. Domestic figures exclude joint thermal power holdings.

*5. Does not include corporate employees *6. Total net sales when reconciled: −1,683.8 billion yen

Business Strategies

Business Development

Our Business Mission

We are a group of project development and asset management professionals who are globally expanding our renewable energy business, as well as our LNG value chain business, from fuel upstream operations to power generation. We are also up and running with initiatives in the hydrogen and ammonia business focused on achieving a decarbonized society. We are already working on various projects in Japan, Asia, North America, Australia, Europe, and the Middle East. The business environment surrounding energy is rapidly changing in terms of policies, supply and demand structures, and business models in each region, and there have also been remarkable advances in decarbonization-related technologies. In this business environment, it is important to have a customer-driven perspective that captures the circumstances and needs in each country, as well as to find solutions and areas for improvement by having diverse talent from around the world bring their ideas and know-how to the table to engage in frank discussions.

Going forward, we will provide cutting-edge solutions in Japan and other countries by leveraging cross-regional collaboration and the knowledge and expertise we have gained from our projects. At the same time, we will work with like-minded partners in Asia, where growth is particularly rapid, to contribute to the stable supply and decarbonization of energy.



Yukio Kani
Corporate Vice President and Managing
Executive Officer, Director
Business Development

Opportunities	Risks	Strengths
• Global trend toward decarbonization • Growing energy demand, especially in Asia • Expansion of development opportunities for renewable energy and low/carbon-free thermal power • Technological advances toward zero-emission thermal power	• Increased uncertainty in global energy policies and supply-demand structures • Increased geopolitical risk • Delays in establishing an environment for realizing zero-emission thermal power	• One of the world's largest LNG transaction volumes • Extensive value chain, from fuel upstream activities to power generation and sales • Credibility from having been selected by partners from around the world seeking a company engaged in large-scale business development

Measures Related to Our Business Strategy

Building a decarbonized fuel supply chain

We are engaged in collaborative work to build and expand supply chains for hydrogen and ammonia, which are decarbonized fuels. We are also engaged in international bidding to procure ammonia and carbon capture and storage (CCS) efforts.

Developing renewable energy

We are promoting large-scale renewable energy by setting the goal to develop 5 GW of capacity by FY2025 and participating in offshore wind and solar power generation in Japan and abroad.

Establishing roadmaps for decarbonization in Asia

We are conducting research, providing support, and collaborating with partners to establish decarbonization roadmaps tailored to the different environments in each country.

Providing a stable supply of electric power in Japan

We are contributing to a stable power supply by replacing older thermal power plants with high-efficiency ones and restarting idle thermal power plants when the supply-demand balance is tight. We are also developing our fuel upstream business and concluding long-term contracts to ensure a stable LNG supply.

FY2021 Milestones

- Collaboration and investment to build and expand our hydrogen and ammonia supply chain (Japan, Australia, the US, and other countries)
- Environmental impact assessment procedures for offshore wind power in Japan (Akita and Yamagata prefectures)
- Basic agreement on business alliance with West Holdings Corporation for domestic solar energy development
- Research and support toward developing a decarbonization roadmap for Indonesia's power sector
- Restarting idle thermal power plants to ensure supply capacity (Anegasaki Thermal Power Station Unit 5 and Sodegaura Thermal Power Station Unit 1)
- Development of fuel upstream business (acquisition of a stake in Australia's Barossa gas field and investment in Freeport LNG in the US)

Domestic Power Generation

In an effort to both enhance our domestic competitiveness and reduce environmental impact, we are taking initiatives that include taking the infrastructure of our existing thermal power generation facilities and rebuilding maximum-efficiency models, adopting cutting-edge exhaust gas treatment equipment, and spearheading the introduction of carbon-zero hydrogen and ammonia fuels. We are also working to deliver a portfolio of power solutions consistent with energy and environmental policies and achieve a balance between the stability and sustainability of our energy supply.



Renewable Energy

We aim to become the number one company in Asia for offshore wind power, which is expected to grow significantly in the future. Currently, we have several projects at different stages in Taiwan, and in the future, we will strengthen our efforts to win contracts for projects in Japan, expand our business to other countries, and work on the new technology of floating offshore wind. In addition to offshore wind power, we will actively pursue our solar power generation business in Japan and expand our solar and onshore wind power generation businesses in North America, India, and other countries. At the same time, we will also work on battery storage solutions in each country, which will contribute to stabilizing the supply-demand balance.



Overseas Power Generation and Gas-to-Power

We have approximately 30 projects in more than 10 countries around the world, and we are utilizing the experience we have gained from each of them to engage in business development. Our aim is to expand development through strategies tailored to the needs of each market in North America, Asia, and the Middle East. In addition, we believe the key to our future growth will be seeking out gas-to-power projects, which integrate everything from fuel procurement to power generation.



LNG and Next-Generation Fuel Value Chain

The LNG business has a transaction volume of ≈ 37 million tons per year. We participate in the entire value chain from upstream development to transportation, trading, and power generation, and we strive to secure a stable and competitive LNG supply. By leveraging our expertise in LNG and the world's largest off-take capacity, we aim to build a supply chain for hydrogen and ammonia to achieve zero-emission thermal power generation, supply it to other industries, and expand our business globally.



Main Business Indicators

Domestic replacement and development
Steady progress toward development of
 ≈ 7 GW of capacity at 5 sites

Renewable energy output share
1.7 GW

LNG procured by upstream business
12 MTPA

Featured

Strengthening Our Offshore Wind Power Generation Business

We are investing in overseas projects in various stages of operation, construction, and development to simultaneously acquire the know-how necessary for the development of our offshore wind power business. We are also hiring professional talent that includes managers of offshore wind power development companies from Europe, a leading market for such projects.



Business Strategies Optimization

Our Business Mission

In order for us to properly conduct our business and continue to meet the expectations of our stakeholders, it is essential that we engage in smooth value chain management from fuel procurement to transportation, receiving, power generation, and sales. We will enhance our execution capabilities in each of the business areas that make up the value chain while, at the same time, creating new services and providing solutions to our customers, and we will take a bird's eye view of the entire value chain to manage risk appropriately within the ever-changing business environment.

Backed by one of the largest fuel transaction volumes in Japan, we have built a strong and extensive network in the global market. The business environment is undergoing significant changes, including fuel market volatility resulting from shifting international conditions and increasingly complex power operations due to the introduction of diverse power sources. However, we will help realize a society that can grow sustainably by solving challenges and continuing to provide a stable energy supply through flexible responses throughout the value chain.



Sunao Nakamura
Senior Managing Executive Officer
Optimization

Opportunities	Risks	Strengths
• Expansion of competition in electricity and gas sales • Market creation and new system introductions • Fluctuations in resource prices • Fluctuations in domestic electricity demand	• Lack of coordination with the expansion of renewable energy • Negative impact of geopolitical risks on fuel procurement • Tight domestic electricity supply and demand	• Competitive and flexible procurement portfolio • Extensive market intelligence centered on JERAGM • Expertise in electricity and gas market transactions • Flexibility in LNG terminal and power plant operations and fuel receiving • One of the world's largest LNG transaction volumes

Measures Related to Our Business Strategy

Taking action to ensure stable supply

We are working to optimize the entire value chain in order to minimize the impact of growing power demand fluctuations caused by recent uncertainties. Our efforts include maximizing thermal power generation and fuel operations and utilizing trading networks by means of JERAGM. In preparation for times of peak power demand, we will continue to strengthen our response systems and participate in national efforts to prevent supply issues. Our efforts include coordinated capacity adjustments, participation in public auctions to secure extra power capacity, cooperation in national fuel monitoring plans to better verify the risk of power shortage, new entry into adjustment markets, and better utilization of the existing power market.

Strengthening supply stability and securing profitability through fuel trading

We are enhancing our optimization through JERAGM. By engaging in trade that connects the Pacific and Atlantic markets, we are able to flexibly address Japan's massive and fluctuating demand for LNG and coal while also efficiently seizing profit-earning opportunities in the market by leveraging our commercial flow. In this way, we are able to achieve both enhanced fuel supply stability and profitability.

FY2021 Milestones

Optimal power generation and fuel operations

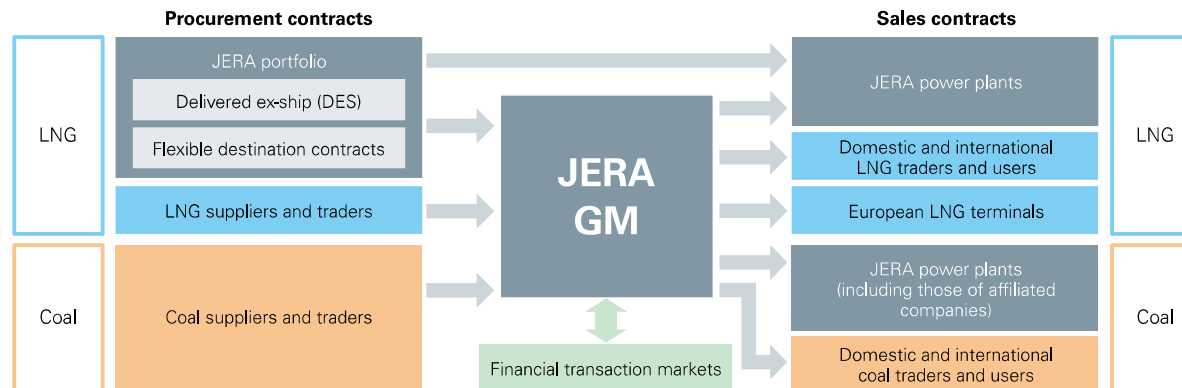
- Actual fuel transaction volume in FY2021: 37 million tons of LNG and 43 million tons of coal
- In FY2021, we procured a record-high additional 4.5 million tons of LNG through JERAGM and took various measures, including securing and maintaining a large LNG inventory.
- During times of peak demand in Japan, we operated multiple power plants at increased output in accordance with instructions from power transmission and distribution companies.

Entry into new markets

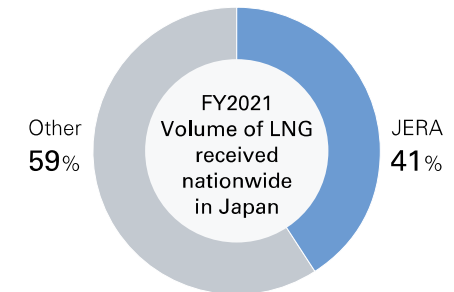
- We placed bids in new adjustment markets and offered power through the markets.
- We used the futures market as a risk-hedging instrument and executed futures contracts.

JERAGM's Role in Fuel Trading

We pursue arbitrage profit by leveraging contract flexibility and market intelligence while meeting our volume fluctuation needs.



Main Business Indicators



Short-Term Fuel Procurement

We have built a fuel portfolio with excellent short-term price competitiveness that also responds well to volume and price fluctuation risks by leveraging our world-class procurement capabilities. ("Short-term" in terms of LNG means four years or fewer.) Competitive fuel procurement allows us to contribute to the supply of inexpensive electricity and gas in Japan, and we are working on expanding our fuel trading business based on the flexibility we have gained.



Fuel Trading

JERAGM is headquartered in Singapore and has locations in London, Amsterdam, Tokyo, and Baltimore. Via this joint venture and its ≈ 300-strong team, we engage in trading operations in the LNG, coal, and freight markets. We also look to optimize the entire value chain through asset-backed trading supported by the breadth of world-class fuel procurement covered by JERA and our French colleagues at EDF.



Electricity and Gas Sales

We are able to meet the diverse needs of our customers and provide a stable supply of electricity and gas by manifesting supply capabilities backed by our track record and experience in large-scale fuel contracts and operations. We also contribute to a stable domestic power market by supplying as much electricity as possible to the wholesale market. Furthermore, we play a role in the future of the domestic power market through participation in new markets, such as the capacity and adjustment markets.



Business Strategies

O&M Engineering

Our Business Mission

O&M Engineering is a unit of ≈ 3,000 engineers who have been delivering electric power for years through power plant and fuel terminal operation and maintenance (O&M). We coexist with local communities and will continue to support manufacturing and provide a comfortable way of life in our communities.

We have developed the “JERA O&M Way,” which achieves both cost competitiveness and market responsiveness by combining our digital strengths with the kaizen and technological strengths we have cultivated through our experience providing a stable power supply. By continuing to refine this approach, we aim to achieve plant O&M services that are overwhelmingly superior to our competitors in Japan and overseas. Furthermore, we work to transform our operations through digital power plants and to achieve zero-emission thermal power toward a decarbonized society, and we pursue these initiatives and others with safety always as our highest priority.

By deploying these efforts as part of the JERA O&M Way, we aim to become a world-class O&M player able to offer our customers enhanced value.



Tetsuya Watabe
Senior Managing Executive Officer
O&M Engineering

Business Strategy Assumptions

Opportunities	Risks	Strengths
• Electric power market competition • Expansion of digitization • Expansion of renewable energy • Support for zero-emission thermal power	• Risk of natural disasters such as major earthquakes • Disruption of operations caused by equipment problems or accidents	• A group of engineers with the experience and expertise to meet complex challenges • Opportunities and experience operating an abundant power supply portfolio

Measures Related to Our Business Strategy

Safety Initiatives

As the world's first company to take on the challenge of fuel ammonia, we will leverage our experience with Japan's largest existing thermal power operations to establish world-class safety practices and provide an infrastructure for supplying clean energy to Asia and the world.

Zero-Emission Thermal Power Initiatives

We will accelerate our efforts to launch fuel ammonia tests at Hekinan Thermal Power Station Unit 4 at a co-firing rate of 20% during FY2023. This will be a world first for a large commercial unit and help progress toward a decarbonized society by demonstrating our technical capabilities throughout the zero-carbon fuel value chain.



Digital Power Plant Promotion

We will promote the implementation of digital power plants, which provide higher lifecycle value by using the power of the cloud to gather information on the plants and their employees, analyze real-time data on variables like facilities status and market trends, and deliver quick and agile operational responses based on AI forecasts.



Supply Security Initiatives

In our position as Japan's largest power producer, we look to ensure a stable power supply through measures that include steady operation of our active power plants, restarting idle thermal power plants during peak demand, and adaptive responses to regular inspections.

We will also contribute to maintaining the stability of the power system by operating an optimal portfolio to cope with supply-demand fluctuations associated with the expansion of renewable energy sources.

FY2021 Milestones

Safety Initiatives

Based on our safety strategies for going global, we promoted zero-accident principles, assigned dedicated safety personnel to all construction sites and power plants, utilized digital tools to communicate, and began publishing the frequency of accidents to visualize the level of safety.

Zero-Emission Thermal Power Initiatives

We launched small-scale fuel ammonia tests at Hekinan Thermal Power Station Unit 5 in preparation for the planning and design of large-scale co-firing demonstration tests at Hekinan Thermal Power Station Unit 4.

Digital Power Plant Promotion

To make our digital power plants a reality, we developed apps in-house, from verification and validation to the collection of big data. We applied AI-based boiler operations optimization recommendations to actual power plant equipment to reduce fuel consumption and CO₂ emissions.

Supply Security Initiatives

In addition to conducting priority inspections before times of peak demand, we resumed operation of Anegasaki Thermal Power Station Unit 5, which had been under a long-term planned shutdown, and adjusted regular inspections to ensure additional winter supply capacity ahead of the tightening supply-demand situation.



Our Facilities in Japan

Number of power plants

26

Number of LNG terminals

8 (excluding jointly operated terminals)

Power generation capacity

66 GW

Experience and Talent Are the Keys to JERA's Business

Engineering

Through the expertise gained from designing a wide variety of large-scale power plants, we seek to optimize our plant design in line with JERA best practices and achieve enduring facility reliability and reduced construction costs.



Operations

We feature flexible and agile operation at our power plants, LNG terminals, and other facilities thanks to our experience providing a stable power supply. For instance, we have improved equipment reliability by reducing and preventing equipment failure and expanding our fuel offerings. In addition, we are exploring the use of the Internet of Things (IoT) for remote supervision and predictive management possibilities.



Procurement

We are working to reduce costs in all manner of equipment and material procurement through several efforts, including the pursuit of global best practices via market research and cost analysis, innovation in ordering methods, new supplier outreach, and the utilization of third-party products and services. We are also promoting responsible procurement that is ESG-conscious.



Maintenance

We are able to both reduce costs and maintain facility reliability even beyond their design life by applying O&M Engineering capabilities cultivated through many years of experience maintaining power plants and LNG terminals. We will also improve market responsiveness and reduce operating costs by shortening the time needed for regular inspections through on-site kaizen.



Initiatives at Thermal Power Plants in Japan

Kawasaki Thermal Power Station



Kawasaki Thermal Power Station is a state-of-the-art power plant that uses environmentally friendly liquefied natural gas (LNG) and achieves the highest standards of performance due to its combined cycle power generation system with gas and steam turbines. Group 2 Units 2-2 and 2-3 (MACC II) achieved a combustion gas temperature of 1,600°C and further improved performance, reducing both fuel consumption and CO₂ emissions by around 30%.

	Power generation equipment	Output (MW)	Fuel	Start of operation	Type of power generated
Group 1	Unit 1-1	500	LNG	February 2009	Combined cycle
	Unit 1-2	500		June 2008	
	Unit 1-3	500		June 2007	
Group 2	Unit 2-1	500		February 2013	
	Unit 2-2	710		January 2016	
	Unit 2-3	710		June 2016	

Coexisting with Local Communities



Steam supply pipe

Supplying Heat to Neighboring Factories

A portion of the steam used to generate power is supplied to neighboring companies through pipes laid in the area. The effective use of this steam helps save energy and reduce CO₂ emissions throughout the entire region when compared to each company producing steam independently.



Power plant tour

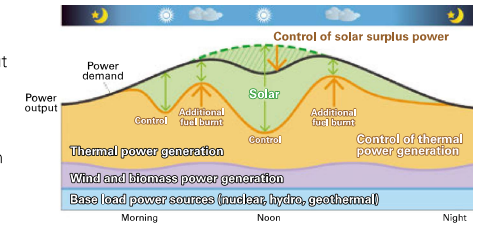
Power Plant Tours

In addition to in-person tours, Kawasaki Thermal Power Station has offered online tours since 2020 as a measure to prevent the spread of COVID-19. The online tours have allowed people to participate remotely from their homes and have been well-received. In FY2021, 382 people joined the in-person tours, and 1,213 people participated in online tours.

Contributing to Stable Supply

Combined cycle power generation fueled by LNG is highly adaptive to load changes in electricity demand compared to other forms of thermal power generation. This means that output can be adjusted significantly in a short period of time; for example, output can be raised from 50% to full capacity in as little as 10 minutes.

Currently, Kawasaki Thermal Power Station also plays a role in adjusting output according to fluctuations in power generation from renewable energy sources, which are affected by weather and other factors, thereby contributing to a stable supply of electricity on a daily basis.



Source: "10 questions for understanding the current energy situation in FY 2021 version," available on the Agency for Natural Resources and Energy website



Equipment inspection

Kawasaki Thermal Power Station was the first power plant in eastern Japan to implement the Toyota-style kaizen system for inspection and maintenance operations to improve power generation facility performance. The plant has achieved a significant reduction in maintenance time through three basic pillars for optimizing regular inspections: (1) off-line setup, (2) simultaneous operation, and (3) refinement.

This system enables us to promote the operating rate of the highly efficient Kawasaki Thermal Power Station and reduce operations at inefficient thermal power plants, thereby achieving overall optimization of operations at our thermal power generation facilities and contributing to the reduction of fuel costs and CO₂ emissions. JERA was the first power generation company to adopt this kaizen approach internally, and now, after further study, we have developed our own "JERA-style kaizen" to further improve on this approach.

On-Site Impressions



Hiroki Takeuchi
O&M Meter Unit
Kawasaki Thermal
Power Station

My primary responsibilities include maintenance of instrumentation controls systems, which is essential for the safe operation of Kawasaki Thermal Power Station, a leading digital power plant (DPP) running on thermal power. I also handle the disconnection and reconnection of equipment required for performing maintenance. I play a key role in exploring ways to work with and integrate digital technology within the power plant. I find it very exciting and rewarding to work together with other key players from different departments on unprecedented tasks, such as improving inspection apps and establishing operational workflows.

I am very proud to work as part of "Team Kawasaki" at Kawasaki Thermal Power Station. We really come together as a team when problems arise and put every effort into resolving them quickly. I'll continue to bring a sense of endeavor and a commitment to stable power supply to my work every day.



Initiatives at Thermal Power Plants in Japan

Taketoyo Thermal Power Station



Steam turbine and generator

The Taketoyo Thermal Power Station is located in a temperate natural environment at the center of the Chita Peninsula in Aichi Prefecture, at the mouth of Kinuura Bay, northwest of Mikawa Bay.

Unit 1 started commercial operation in 1966, with Units 2 through 4 following in 1972, and they each played a major role in providing a stable supply of electric power to the Chubu region. The plant has since been converted into a high-efficiency coal-fired power plant. Beginning in August 2022, it incorporated co-firing of woody biomass fuel to offer a stable long-term supply of electric power, reduce the cost of power generation, and improve environmental performance with the introduction of state-of-the-art equipment.

Power generation equipment	Output (MW)	Fuel	Start of operation	Type of power generated
Unit 5	1,070	Coal Woody biomass	August 2022	Steam power

Environmental Initiatives



Above: Enclosed conveyor belt
Top right: Indoor coal storage area



Noise barrier

Measures for Dust Control

We are striving to control dust through measures such as adopting an indoor coal storage area designed with the smallest possible openings and using an enclosed structure for our discharge conveyors and fuel-receiving operations.

Measures for Noise Control

We have implemented measures for noise control to protect the surrounding area, including installing noise barriers around boilers, employing low-noise equipment, and installing sound-deadening devices.

Reuse of Coal Ash and Gypsum

We effectively use the coal ash (cinders and particulate matter) generated from burning coal and the gypsum produced by exhaust gas desulfurization equipment as fuel for cement production, material to make building boards, soil improvement additives, and more.

Introduction of Woody Biomass Facilities: Achieving Both a Stable Supply and Reduced Environmental Impact



Wood pellet mill

Wood pellet burner

Taketoyo Thermal Power Station uses highly efficient ultra-supercritical (USC) pressure power generation equipment, the best technology available for coal-fired power generation, and has a capacity of 1,070 MW, one of the largest single-unit outputs in Japan.

We are also working to improve environmental performance by co-firing woody biomass fuel. From the mill pulverizing the fuel into fine powder to the burner serving as combustion equipment, the facilities exclusively use woody biomass, ensuring a high co-combustion ratio (co-firing rate of 17%) and further reducing CO₂ emissions (≈ 0.9 million tons per year).

What is woody biomass?

Woody biomass is an environmentally friendly, carbon-neutral fuel made from pellets of waste wood generated during sawmilling (wood that cannot be used for construction, furniture, or other such applications). The indoor coal storage area can hold ≈ 0.07 million tons of woody biomass fuel.



Wood pellets



Indoor coal storage area

Message from the Plant Manager



Masato Ishimura
General Manager, Head
of Taketoyo Thermal
Power Station*

* as of March 31, 2022

For more than half a century since Unit 1 started operation in 1966, our plant has fulfilled its role of contributing to society through stable, inexpensive power supply while maintaining safety as our top priority. To continue to fulfill that role in the long term, the plant underwent renovations to adopt state-of-the-art technology in August 2022.

Given the plant's location next to a residential area, various environmentally friendly measures were taken to prioritize the safety of local residents and ensure that replacement work could continue with their understanding. Despite major delays in equipment and material delivery and restrictions on the entry of instructors from abroad due to the COVID-19 pandemic, we applied our kaizen approach to complete the project successfully with our construction affiliates in the spirit of "One Team JERA."

Going forward, we are dedicated to maintaining safety in the operation of thermal power generation equipment while maintaining high efficiency and low environmental impact through woody biomass co-firing. In doing so, we hope to contribute to a stable power supply and cherish the goodwill shown by the local community.

Message from the CFO on Financial Strategy



Review of Our Business Plans Announced in April 2019

Consolidated net income

In JERA's business plan unveiled in April 2019, we set a target of 200 billion yen in consolidated net profit by FY2025 (excluding time lag*). Although we booked losses attributable to temporary factors such as selling excess LNG and the impacts of the pandemic during the three-year period through FY2021, consolidated net profit for the period was essentially at the level set out in the business plan. The figure for FY2021 was 277 billion yen, well above our target of 110 billion yen. This was due to the ability of JERA Global Markets (JERAGM), a subsidiary in Singapore engaged in trading, to increase profits by capturing the volatility of resource prices while enhancing supply stability.

*Profits or losses attributable to delays between fuel price fluctuations and when they are eventually reflected in sales prices

Synergies

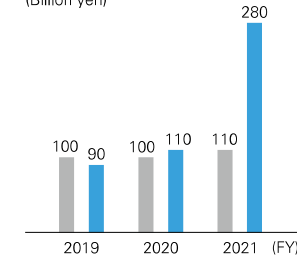
In our previous business plan, we set out the goal to create synergies worth of at least 100 billion yen per year within five years of integrating our existing thermal power generation and other businesses; in FY2021, we created synergies worth of 85 billion yen.

We will continue to pursue this goal by proactively increasing the cost competitiveness of thermal power in Japan and creating new sources of revenue.

Consolidated net profit

■ Projected ■ Actual

(Billion yen)

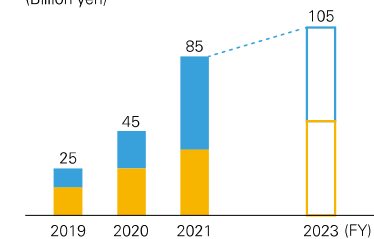


*Excluding time lag after fuel cost adjustments

Synergies

■ Increase the cost competitiveness of thermal power in Japan
■ Create new sources of revenue

(Billion yen)



Balance Sheet

Total assets increased substantially in FY2021 (compared to the previous two fiscal years) due to higher resource prices in the market value of outstanding fuel and financial transactions, which are recorded by JERAGM as “derivative receivables and payables” in accordance with Singapore accounting standards. Continued monitoring is warranted because subsequent changes in resource prices may cause the amount to fluctuate widely.

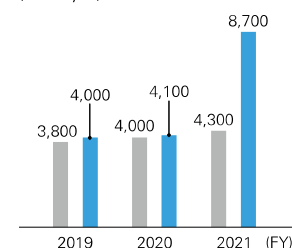
Interest-bearing liabilities also increased compared to the business plan because we secured financing in FY2021 for: (1) short-term working capital in response to increasing losses attributable to the lag after recent hikes in resource prices; (2) procuring additional fuel at spot prices to stabilize our supply; and (3) investing in growth in North America and Asia.

On the whole, our total net assets align with the original plans.

Total assets

■ Projected ■ Actual

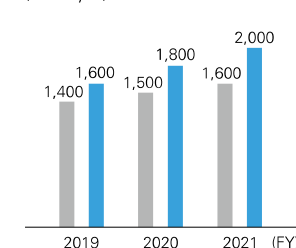
(Billion yen)



Total net assets

■ Projected ■ Actual

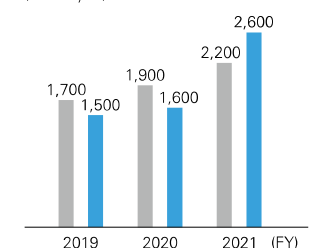
(Billion yen)



Interest-bearing liabilities

■ Projected ■ Actual

(Billion yen)



Message from the CFO on Financial Strategy

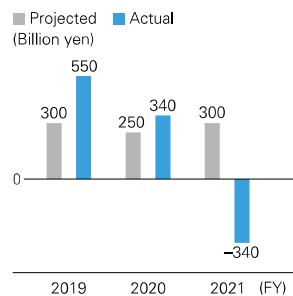
Cash Flow

Through FY2020, we were cash flow positive—operating cash flow exceeded our projections while cash flow from investing trailed behind. However, in FY2021, our free cash flow was $\approx -1,000$ billion yen, mainly because operating cash flow was ≈ -340 billion yen due to temporary factors such as losses attributable to lags and JERAGM increasing their reserve for deposits. Additionally, cash flow from investing increased to ≈ 660 billion yen due to major investments occurring during the period, namely in Freeport LNG (US) and Aboitiz Power (Philippines).

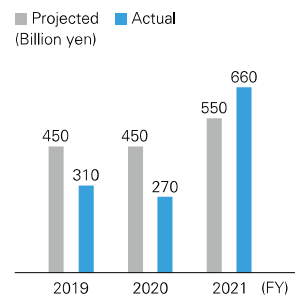
In response, we are striving to stabilize our finances by securing financing through various means. We have borrowed from financial institutions and issued commercial paper (CP) in addition to issuing straight bonds totaling 150 billion yen on six occasions through FY2021.

We are also seeking to further diversify our sources of funding to ensure consistent capital for expenditures that help us stabilize our supply of electricity, invest in growth, and decarbonize. Specifically, we have increased our allotment for CP, concluded foreign currency loans, and issued corporate bonds and transition bonds in US dollars since the fiscal year began. We are also securing transition-linked financing and taking other steps to secure consistent, fit-for-purpose funding.

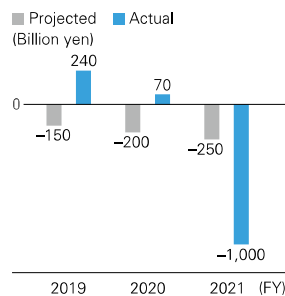
Operating cash flow



Cash flow from investing activities



Free cash flow



CFO Sakairi in discussion with members of the Financial Strategy and Planning Group

Formulating New Management Targets and Financial Strategy for FY2025

This past May, we formulated and announced new management targets for FY2025 with the aim of growing sustainably and enhancing our corporate value by (1) promoting JERA Zero CO₂ Emissions 2050 and (2) expanding global business while contributing to the consistent supply of electricity, even amid substantial changes to the circumstances surrounding the energy industry of late.

Corporate value must be enhanced sustainably, and we view disciplined growth as essential toward that end. Accordingly, we expounded the discipline we seek in the new management targets, which we announced as the financial strategy to lead us to FY2025.

We believe these management targets and financial strategy will serve as key indicators for demonstrating our vision to our stakeholders.

New Management Targets

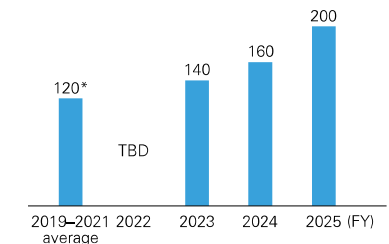
Profit and Expenditures

The target remains the same as the original business plan: 200 billion yen by FY2025.

However, we now present profit targets for each fiscal year through FY2025, something we had not indicated previously. Notably, we have yet to set exact targets for FY2022 because the situation in Russia / Ukraine and other developments have cast uncertainty

Consolidated net profit

(Billion yen)



* Excluding time lag after fuel cost adjustments

Message from the CFO on Financial Strategy

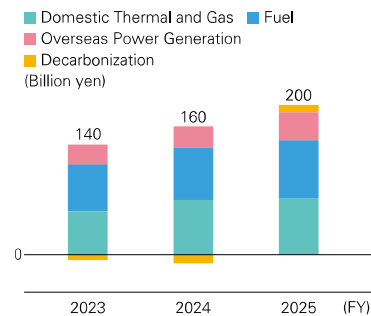
on the future of resource prices and electricity sales, making it impossible to properly calculate our results at this time.

Profit and Expenditures by Segment

To better visualize how consolidated net profit will increase, we also present our projections of profit and expenditures by segment. In addition to increasing revenues from each segment, we strive to maximize synergies between segments by managing our asset portfolio, optimizing our value chain, and improving our trading performance.

Notably, we expect $\approx 80\%$ of the FY2025 net profit target of 200 billion yen to come from projects in which we have already invested. Therefore, we believe we have already reached a level at which the target is attainable.

Consolidated net profit by segment



Indicators for Profitability, Capital Efficiency, Growth Potential, and Financial Health

We formulated the new management targets for FY2025 in terms of profitability, capital efficiency, growth potential, and financial health.

For the profitability indicator, we added a target EBITDA of 500 billion yen to the consolidated net profit target of 200 billion yen. We set this target to assess and manage the cash creation capacity of cash flow businesses, namely JERAGM's capacity for fuel volume adjustment.

For the capital efficiency indicator, we set targets for ROIC, which shows the earning capacity of our asset businesses, and WACC, which represents our cost of capital. The following are two points we want all stakeholders to understand about capital efficiency.

The first is that we intend to expand the spread between our ROIC and WACC. Specifically, we aim to increase the spread to 1% by FY2025, double the average spread of $\approx 0.5\%$ from FY2019 to FY2021. We hope to achieve this to increase our EVA and enhance our corporate value.

The second point is that we are aware that expansion in our business domains and geographic areas will increase the cost of capital (WACC) that underpins our enterprise.

We expect our fuel and overseas power generation businesses to comprise a greater proportion of our income from now through FY2025, and thus anticipate a higher WACC as the

structure of our business changes. We believe it is necessary to improve our earning capacity to enhance our corporate value even as we project a higher WACC.

For the growth potential indicator, we have set out what we consider to be an eminently achievable target of 1,400 billion yen, the total capital expenditure planned from FY2022 to FY2025.

We set this target to maintain our focus on achieving sustained growth and to avoid falling into a temporary state of balanced contraction, a disadvantage of using ROIC wherein investments in longer-term growth are withheld in anticipation of short-term gains.

For the financial health indicator, we set targets for net debt-to-equity and net debt-to-EBITDA ratios to demonstrate our intent to operate under financial discipline. We will explain this point further in the "Financial Strategy" section below.

Achieving these well-balanced financial indicators—and ensuring that they stay well-balanced—will allow us to enhance our corporate values sustainably.

New Management Targets

	Performance indicators	FY2019–FY2021 average	FY2025 target
Profitability	Net profit*	120 billion yen	200 billion yen
	EBITDA*	350 billion yen	500 billion yen
Capital efficiency	ROIC*	$\approx 3.5\%$	$\approx 4.5\%$
	WACC	$\approx 3.0\%$	$\approx 3.5\%$
Growth potential	CFI	FY2019–FY2021 total	FY2022–FY2025 total
		$\approx 1,200$ billion yen	$\approx 1,400$ billion yen
Financial health	Net debt-to-equity ratio	$\approx 1.0\times$	1.0x or lower
	Net debt-to-EBITDA ratio*	≈ 4.0 years	4.5 years or less
Information for reference	Investments in decarbonization	FY2019–FY2021 total ≈ 80 billion yen	FY2022–FY2025 total ≈ 650 billion yen
	Co-firing with ammonia	—	20% of demonstration tests completed
	Co-firing with hydrogen	—	30% of demonstration tests completed
	ROE*	$\approx 7.0\%$	$\approx 9.0\%$

* Excluding time lag after fuel cost adjustments. Excluding a one-time gain of ≈ 120 billion yen from trading

Financial Strategy

Our financial strategy comprises balance sheet management and capital allocation. To stabilize our supply of electricity in Japan, decarbonize, and achieve global growth centered on Asia, we must expand our renewable energy and domestic power generation businesses (including zero CO₂ emissions thermal power generation) in addition to scaling up our business in Asia. We must also

Message from the CFO on Financial Strategy

become involved in fuel upstream and transport business across a broader area, including North America, Australia, and the Middle East.

Accordingly, we require strict financial discipline to properly manage our long, cross-border value chain, our trading business that fully leverages the optionality of our value chain, and assets in excess of 10,000 billion yen that underpin our trading business.

To practice financial discipline on this level, we use balance sheet management to maintain and manage our financial health.

Additionally, we turn to capital allocation to indicate our growth-oriented cash flow discipline as well as the distribution of funds and course toward the sustainable growth we seek.

Financial Strategy

		Now		FY2025
Optimal capital structure	Safety	—	▶	Net debt-to-equity ratio 1.0x or lower
	Debt servicing capacity	—	▶	Net debt-to-EBITDA ratio 4.5 years or less
Balance sheet management	Credit ratings	A rating	▶	A rating
	Risk capital	—	▶	Amount in excess of total risk exposure
Capital allocation	Distribution of funds	—	▶	Promoting investments for sustainable growth
	Discipline	Ensuring sufficient operating cash flow		

Balance Sheet Management

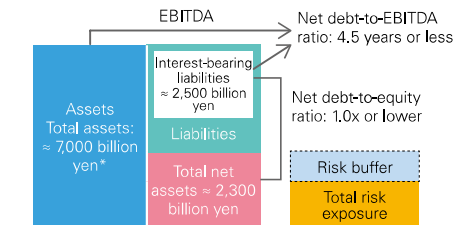
We will implement balance sheet management with the goal of maintaining our current financial strength rating of A through FY2025.

Our specific targets are 1.0x or lower for net debt-to-equity ratio, a measure of safety, and 4.5 years or less for net debt-to-EBITDA ratio, an indicator of debt servicing capacity.

These targets allow us to maximize financial leverage without compromising our focus on the discipline to maintain our A rating. We also drew upon our optimal capital structure to calculate these targets.

Financial Strategy: Balance Sheet Management

FY2025 (projected)



* Including cash and cash equivalents of 300 billion yen

Capital Allocation

We expect to create an operating cash flow of 1,580 billion yen over the four-year period from FY2022 to FY2025 and will direct it toward proper balance sheet management without relying excessively on debt.

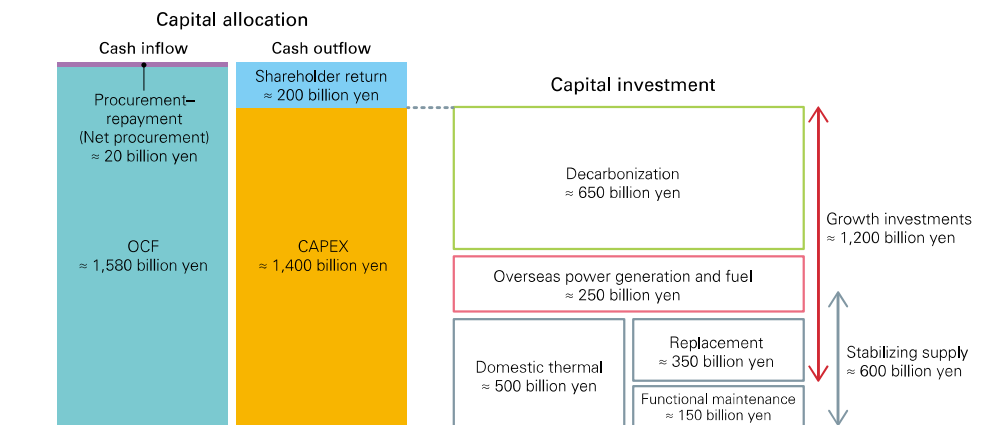
Next, let me explain our allocation of funds, which indicates the course toward the sustainable growth we seek. We plan to make an aggressive allocation to capital expenditures (CAPEX)—1,400 billion yen of our expected cash flow of 1,600 billion yen, mainly from operating cash flow. By allocating the majority of our cash flow to CAPEX, we aim to promote growth and enhance our corporate value, thereby benefiting our stakeholders.

The section on “Capital investment” below provides a breakdown of CAPEX.

First, we plan to allocate 1,200 billion yen to growth sectors through FY2025. We will allocate just over half this amount—650 billion yen—to renewable energy, hydrogen, ammonia, and other decarbonization-related fields to drive efforts toward carbon neutrality while pursuing growth.

We also intend to allocate 600 billion yen to areas that help us stabilize our supply of electricity in Japan. Although some of these areas overlap with growth sectors, these allocations will allow us to maintain our momentum in fulfilling our responsibilities as the largest power generation company in Japan.

Financial Strategy: Capital Allocation



Message from the CFO on Financial Strategy

Mechanisms for Ensuring the Effectiveness of Corporate Value Creation

Mechanisms are required to ensure the effectiveness of efforts to enhance our corporate value while striving to achieve our new management targets and financial strategy. We employ three methods—business management, an investment evaluation process, and integrated risk management—to solidify our efforts to enhance our corporate value.

(For more information about the investment evaluation process and integrated risk management, see the subsection titled “Highly Effective Risk Management” in the Risk Management section of the report on p.73.)

• Business Management

To ensure the effectiveness of corporate value creation, we created a KPI tree for each management target to guide our business management. Each tree features KPIs for the entire company as well as the relevant business departments, segments, and regions.

Before the start of each fiscal year, we set targets and formulate action plans for achieving them for the entire company and across each department, segment, and region.

Then, each quarter, we check the KPIs to see how management is progressing toward achieving the targets and elicit specific points for improvement for the immediate future, which we use to

undertake subsequent actions, namely management resource allocation and portfolio management.

Initiatives for Enhancing Our Corporate Value

In light of the worldwide push toward decarbonization and other aspects of the global situation, the business environment continues to change with unprecedented speed. The future remains difficult to predict amid the recent surge in resource prices and burgeoning geopolitical risks. Our Finance and Accounting Department, which I oversee as CFO, formulates and announces our financial strategy and management targets for sustaining our creation of corporate value while adapting to these changes. We are proceeding with targeted initiatives to ensure the effectiveness of our efforts to enhance our corporate value, namely advancing our business management and financial and accounting systems, which will become a reliable compass for management to plot their course swiftly and in an agile manner.

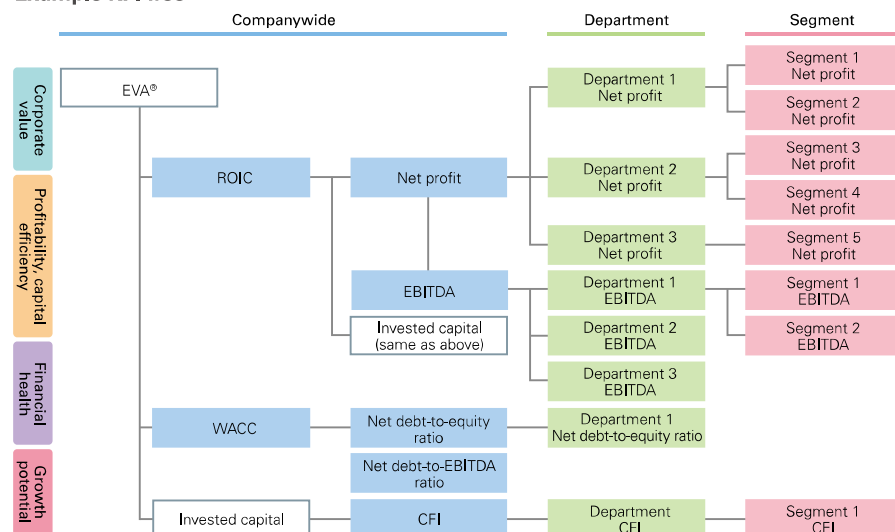
Consistent with our belief in the importance of close coordination between our locations inside and outside Japan, the department also holds regular meetings for the CFOs of our overseas locations as well as global meetings for finance and accounting departments with the aim of maintaining close connections and open information sharing.

Additionally, the Finance and Accounting Department forms various teams that function organically. For example, we have a team that manages and studies tax risks, ensuring the rigor of our tax compliance and the appropriateness of our tax payments. Our global finance team positions us to respond to a sudden demand for funds, and our global IR team exists to strengthen our engagement with investors. Our internal financial advisory team provides support for our investments as well as M&As.

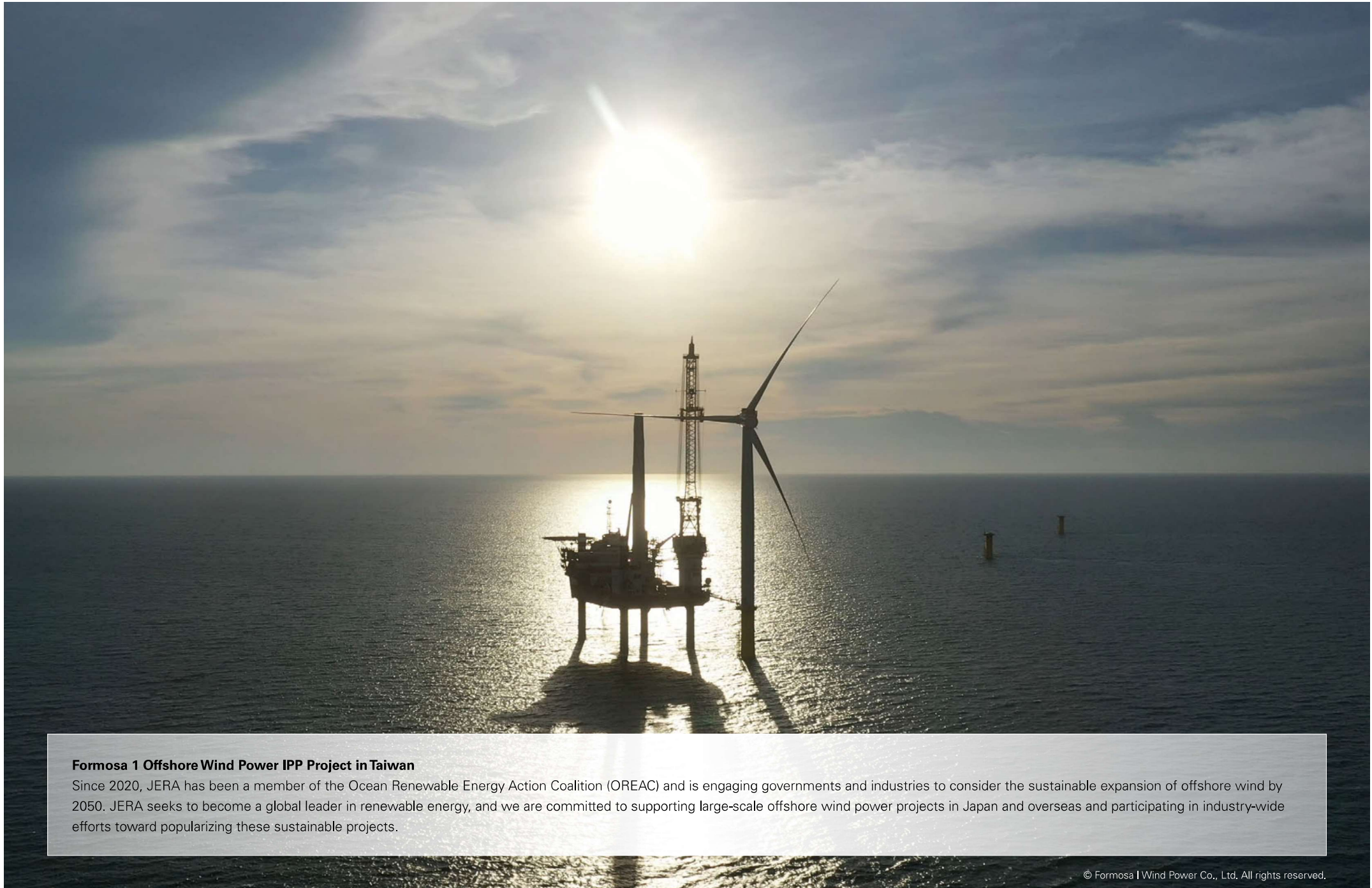
Furthermore, we are trying to acquire a diverse range of talent who can thrive in the current business environment. Toward that end, we are accepting transfers from the TEPCO and Chubu groups in addition to empowering women and hiring experts and professionals. As a result of our efforts, the Finance and Accounting Department is leading the way in our diversity and inclusion initiatives, with more than half of our 135 members already highly skilled at the time of employment.

At the Finance and Accounting Department, we aim to implement measures like these in support of JERA's efforts to enhance its corporate value and, in doing so, become a team of professionals that is highly valued by internal and external stakeholders alike.

Example KPI Tree



* This tree is provided as an example of how we set and track KPIs tailored to the characteristics of each department and segment.



Formosa 1 Offshore Wind Power IPP Project in Taiwan

Since 2020, JERA has been a member of the Ocean Renewable Energy Action Coalition (OREAC) and is engaging governments and industries to consider the sustainable expansion of offshore wind by 2050. JERA seeks to become a global leader in renewable energy, and we are committed to supporting large-scale offshore wind power projects in Japan and overseas and participating in industry-wide efforts toward popularizing these sustainable projects.

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Response to TCFD Recommendations



Fundamental Approach

As a global enterprise committed to solving energy problems in Japan and around the world, we consider measures to combat climate change to be a priority issue and have identified the relevant material issues.

In September 2021, we endorsed the TCFD^{*1} recommendations and joined the TCFD Consortium.^{*2} To properly evaluate climate change-related risks and opportunities and sustainably enhance our corporate value, we have identified four elements—governance, risk management, strategy, and metrics and targets—in line with the TCFD Recommendations that summarize our climate change-related systems, our business in general, and the initiatives typified by the Three Approaches of JERA Zero CO₂ Emissions 2050.

We will continue to disclose information in line with the TCFD recommendations and further enhance communication with investors and other stakeholders.

^{*1} The Task Force on Climate-related Financial Disclosures (TCFD) is the task force established by the Financial Stability Board (FSB) at the request of the finance ministers and central bank governors of G20 countries to stabilize the financial system in the face of factors attributable to climate change. The task force has published a framework and recommendations to guide companies' disclosures pertaining to the risks and opportunities posed by climate change.



^{*2} The TCFD Consortium is a forum established for companies and financial institutions that endorse the TCFD Recommendations to hold discussions and work together to ensure effective disclosures by companies and facilitate sound investment decisions by the financial institutions to whom the disclosures are made. To further enhance disclosures in line with the TCFD Recommendations and promote constructive dialogue between investors and companies, the consortium actively publishes guidance on various matters and also hosts TCFD Summits to give companies and financial institutions from around the world opportunities to gather in one place.



Governance and Risk Management

Governance

Decisions about important policies, new and updated targets, and other matters pertaining to measures to combat climate change are made by the Board of Directors or the Leadership Panel based on our corporate governance system. We have also established a Sustainability Promotion Committee for the purpose of enhancing environmental, social, and corporate governance (ESG) management. This cross-divisional committee is chaired by the president and reports directly to the Board of Directors. Its Environmental Subcommittee reports on the plans and results of measures to combat climate change and other environment-related initiatives for each fiscal year.

Directors hold active discussions with outside experts and specialist organizations to keep pace with the latest information and findings, which they share with the Leadership Panel and other internal groups. We also host ESG seminars for our employees in addition to providing opportunities for them to have discussions with the directors. We are proactively working to further improve our ESG activities by continuing to expand our directors' and employees' understanding of information and trends in climate change and other aspects of ESG management.

Corporate Governance: p.69

Sustainability Management Structure: p.52

Risk Management

We have established a risk management system headed by the president to understand and mitigate risks associated with corporate activities. The system conducts integrated risk management, categorized into operational, market, and credit risks. We identify climate change-related risks in recognition of their potential to impact the different types of risk. Risks to be managed by directors are identified as "significant risks to be managed by management." The Risk Management Committee (chaired by the president) monitors and reviews the management status and plans for responding to these risks and then reports them to the Board of Directors at scheduled intervals or as needed.

Risk Management: p.72

Response to TCFD Recommendations

Strategy

Defining the Scope of Analysis

We conduct scenario analysis to identify and analyze risks and opportunities throughout our business value chain. Our analysis covers not only the short term (through 2025), but also the medium term (through 2030) and long term (through 2050).

Scenario Configuration

The following two scenarios have been established with reference to the information published by the International Energy Agency and the Intergovernmental Panel on Climate Change.

Under 2°C scenario

Bold policies and technological innovations are implemented to achieve sustainable development, and they successfully limit the increase in average global temperature by the end of this century to 1.5°C–2.0°C from pre-industrial levels.

Reference scenario IEA: Sustainable Development Scenario (SDS)
IPCC Sixth Assessment Report, Working Group 1: SSP 1-1.9, SSP 1-2.6

Over 4°C scenario

Although intended nationally determined contributions under the Paris Agreement and other new national policies are implemented, the average global temperature by the end of this century is at least 4°C higher than pre-industrial levels.

Reference scenario IEA: Stated Policies Scenario (STEPS)
IPCC Sixth Assessment Report, Working Group 1: SSP 3-7.0, SSP 5-8.5

Changes in the global energy supply*¹

	2050	Now	2050
Power generation output	57,950 TWh (including 48,436 TWh of renewable energy)	26,762 TWh (including 7,593 TWh of renewable energy)	46,703 TWh (including 27,883 TWh of renewable energy)
Electrification rate	40%	20%	26%
Demand for hydrogen and ammonia	21 EJ	0 EJ	2 EJ
Demand for natural gas	2,029 bcm (including 880 bcm in Asia)	3,401 bcm (including 839 bcm in Asia)	4,362 bcm (including 1,442 bcm in Asia)

Changes in global climate and sea level**²

	2100	Now	2100
Increase in average temperature	+1.5°C–2.0°C	+1.1°C	At least +4°C
Extreme heat events* ³	Frequency: 4.1x Temperature increase: +1.9°C	Frequency: 2.8x Temperature increase: +1.2°C	Frequency: 9.4x Temperature increase: +5.1°C
Extreme precipitation events* ³	Frequency: 1.5x Rainfall increase: +10.5%	Frequency: 1.3x Rainfall increase: +6.7%	Frequency: 2.7x Rainfall increase: +30.2%
Sea level rise	+0.4–0.7 m	+0.2 m	+0.8–1.2 m

*¹ Prepared based on SDS and STEPS from IEA World Energy Outlook 2021

*² Prepared based on IPCC Sixth Assessment Report, Working Group 1. All figures compared to presumed pre-industrial levels

*³ "Extreme" refers to weather events with a probability of occurring once in 10 years.

Response to TCFD Recommendations

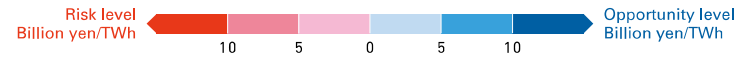
Assessment of Impact on our Business

We listed and analyzed climate change-related risks and opportunities for our business based on the scenarios on the previous page.

We will work to reduce the risks and seize the opportunities through JERA Zero CO₂ Emissions 2050 as well as other efforts and measures.

Category		Projected Changes in Business Circumstances	Impact on JERA
Under 2°C scenario	Policy and legal 	Stricter regulation of fossil fuel use • Introduction of carbon pricing • Stricter energy conservation regulations	• Increased operating costs due to carbon pricing • Greater need for better energy transport and consumption efficiency
	Technology 	Changes in energy supply structure through the development and introduction of non-fossil energy technologies • Development and cost reduction of green fuel technology • Reduced cost of renewable energy and battery storage technology • Grid diversification	• Reduced utilization rate of JERA power sources • Expanded opportunities to develop and introduce hydrogen and ammonia fuels • Expanded business opportunities provided by renewable energy and battery storage
	Market and services 	Electricity market expansion, diversification of the value of electricity • Increased demand for electricity driven by economic growth and electrification • Increased consumer need for green products and services	• Expanded opportunities to supply power • Increased need for natural gas as a bridge fuel • Expanded business opportunities provided by green electricity and fuels
	Market and services / Reputation 	Growing global awareness of climate change • Divestment and engagement by investors • Efforts to combat global warming accelerated and more directly connected to the public's impressions of companies	• Financial constraints rooted in limited investment in / divestment from the fossil fuel business • Reputations compromised due to slow or delayed efforts to combat global warming • Expansion of opportunities to leverage transition / green financing • Reputations boosted by setting and achieving ambitious goals to combat global warming
Over 4°C scenario	Acute/Chronic 	Increased acute risk • More frequent/severe natural disasters Increased chronic risk • Sea level rise, increased tsunami height • Changes in climate patterns (e.g., sustained high temperatures) • Changes in drought risk	• Increased cost of disaster response • Increased operating costs associated with facility shutdowns and output constraints

Response to TCFD Recommendations



* Each risk and opportunity factor is shown here with the method of assessment, the financial factors it impacts, and the financial impact per unit of power generated over the short term (through 2025), medium term (through 2030), and long term (through 2050) expressed as financial impact sensitivity. Financial impact sensitivity for each risk and opportunity is color-coded in three levels (0–5 billion yen/TWh, 5–10 billion yen/TWh, and over 10 billion yen/TWh) as shown in the legend. (1 TWh = 10⁹ kWh)

		Financial Impact Sensitivity*			JERA's Response to Changes
Method of Assessment	Impacted Financial Factors	Through 2025	Through 2030	Through 2050	
Sensitivity to increases in the cost of coal for thermal power generation, assuming the price of CO ₂ in the reference scenario	Costs				Actively investing in growth sectors, namely decarbonization business As shown on p.42, in the four-year period from FY2022 to FY2025, we allocated a total of 1,200 billion yen—including 650 billion yen for decarbonization—to investments in growth sectors. Steadily promoting JERA Zero CO₂ Emissions 2050 We will continue to promote the following measures based on the vision included on pages 1 and 17 to achieve our new vision for 2035 and net zero CO ₂ emissions from all JERA businesses (Japan and worldwide) by 2050 (p.20). • Ceasing/discontinuing coal thermal power generation, streamlining LNG thermal power generation • Promoting hydrogen-ammonia co-firing, expanding co-firing rates/transitioning to single-fuel firing • Expanding renewable energy, using battery storage to support the adoption of renewable energy
Sensitivity to decreases in operating costs for each point of improvement of thermal power generation efficiency	Costs				
Sensitivity to decreases in sales due to reduced volume of electricity sold	Sales				
Sensitivity to the avoided cost of coal for thermal power generation, assuming the price of CO ₂ in the reference scenario	Costs				
Sensitivity to increases in sales due to reduced volume of electricity sold	Sales				
Sensitivity to increases in operating costs for each point of increase in capital costs	Costs				Actively disseminating information to stakeholders We will disseminate information about our efforts to achieve zero emissions to electricity users, investors, and other stakeholders in an effort to expand green electricity and diversify our sources of funding.
Sensitivity to decreases in operating costs for each point of decrease in capital costs	Costs				
Sensitivity to increases in operating costs from switching power sources due to facility shutdowns and output constraints	Costs				Improving disaster resilience Our efforts to prepare for both acute and chronic natural disaster risks include developing rules and manuals for responding to emergencies and disasters, conducting disaster drills on a regular basis, and upgrading the JERA version of the business continuity plan (BCP) and business continuity management (BCM). We will also diversify our suppliers and methods of sourcing power and fuel to enhance our disaster resilience.

Response to TCFD Recommendations

Assessment of Impact on Our Business: A Deep Dive into the under 2°C Scenario

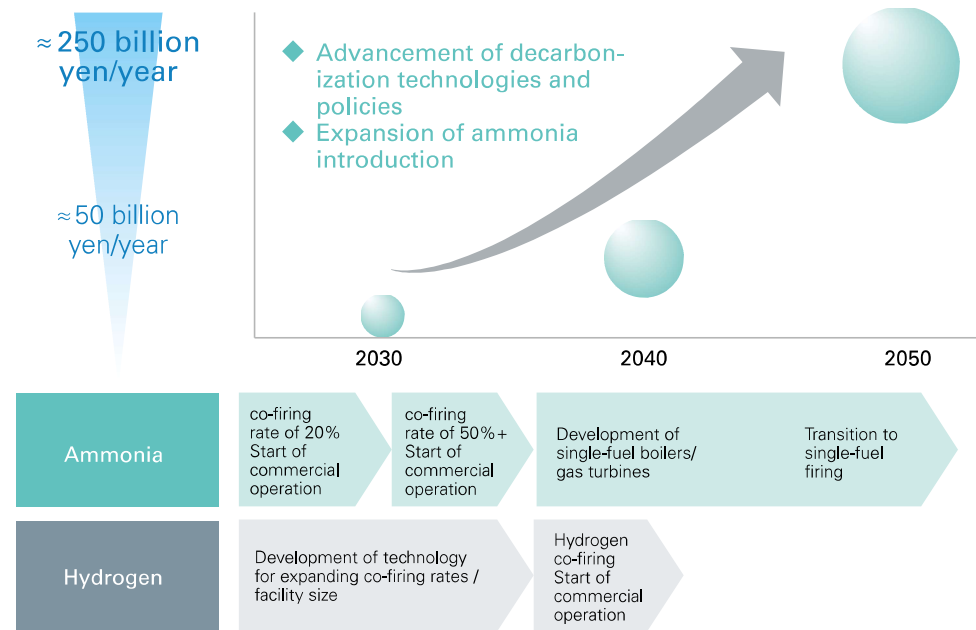
In light of the steady progress we have made in our business toward achieving JERA Zero CO₂ Emissions 2050 since announcing it in October 2020, and due to changes in business circumstances, we formulated a new long-term vision for 2035 and unveiled JERA Environmental Commitment 2035, a set of new environmental targets for achieving the new vision. We updated the JERA Zero CO₂ Emissions 2050 Roadmap for JERA Business in Japan based on the new targets, and our updated plan for introducing hydrogen and ammonia co-firing in Japan is as shown on p.22.

On this deep dive into scenario analysis in line with the TCFD Recommendations, we analyzed the financial impact on JERA of introducing ammonia to our power generation business, which is driven by technological development, assuming the under 2°C scenario and the aforementioned plan for introducing ammonia in Japan.

Our analysis revealed potential cost advantages on the order of 50 billion yen per year by 2040 and 250 billion yen per year by 2050 compared to the scenario in which we continue using coal.

We will continue to proactively develop large-scale fuel ammonia co-firing technology and other decarbonization technologies in addition to devoting energy to ensuring the economic viability of the technologies so that they can help the world move away from carbon as a source of energy.

Assessment of Cost Advantages of Introducing Ammonia*



* All figures calculated based on assumed parameters (e.g., reference scenario). Actual cost effectiveness may differ as business circumstances change. The sizes of the circles on the graph illustrate ammonia amounts. Hydrogen is not included in the scope of this impact assessment. The plan for introducing hydrogen is provided here for reference.

Metrics and Targets

We view JERA Zero CO₂ Emissions 2050 as a long-term goal and have developed a roadmap for achieving it as well as interim targets for CO₂ emissions in 2030 and 2035. Additionally, we continue to calculate and assess actual results each year to manage our progress.

Targets: JERA Zero CO₂ Emissions 2050 Roadmap for its Business in Japan (p.20)

Actual results: Non-Financial Data Environmental Data (p.81)