

JERA's Value Creation Story

Mission – Why do we exist?

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

What are the world's energy issues?

- ▶ The crux of the energy dilemma revolves around simultaneously achieving three things: sustainability (realizing a decarbonized society), affordability (providing electricity at affordable prices), and stability (ensuring a stable supply).
- ▶ Each country and region has its unique environment, so the weight placed on these three objectives and how they will be achieved will differ.

How do we provide cutting-edge solutions?

- ▶ 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.

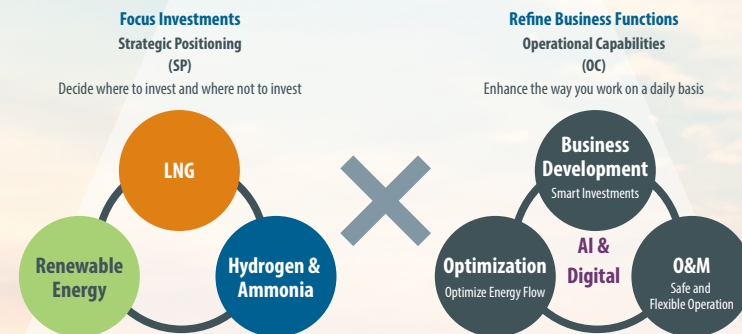
Vision Describe JERA in 2035

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

*Thermal power generation facilities assuming the use of zero-emission fuels such as hydrogen & ammonia

Medium and Long-Term Strategy P.13

JERA Growth Strategy to Realize the 2035 Vision



Target Scale by FY2035

LNG Transaction Volume: More than 35 MT
Renewable Energy Cumulative Development Capacity: 20 GW
Amount of Hydrogen & Ammonia Handled: Approx. 7 MT

The Platform Behind Our Strategies P.43

- Coexist and thrive alongside local communities in Japan and abroad
- Ensure the safety of all people and local communities involved in our business
- Establish strong governance
- Ensure compliance
- Create innovation with diverse human resources
- Ensure the well-being of both our employees and their families

At a Glance

JERA is an energy company that spans the entire value chain, from fuel upstream business and procurement to power generation and wholesaling of electricity and gas.

As a global company with the largest power generation capacity in Japan and capable of handling some of the largest fuel volumes in the world, we are committed to solving the world's energy problems and leading the way in creating a decarbonized society.



Business Overview

Fuel Business

Investment in fuel upstream and other businesses, fuel transportation, and fuel trading

Major Projects ■ Major Group Companies ◆

Domestic Thermal Power Generation and Gas Business

Thermal power generation in Japan, fuel procurement, O&M engineering, sale of electricity and gas in Japan, and others

Major Projects ■ Major Group Companies ◆

Overseas Power Generation and Renewable Energy Business

Investment in overseas power generation projects, Development and operation of renewable energy in Japan and overseas

Major Projects ■ Major Group Companies ◆

Consolidated Subsidiaries: 106 companies
Equity Method Affiliates: 49 companies

Number of Employees
(Consolidated)

5,838

Revenue¹

Approx. **3.7** trillion yen

Total assets

Approx. **8.5** trillion yen

LNG Transaction Volume
(Annual)¹

One of the World's Largest
Approx. **36** MTPA

LNG Suppliers

14 countries

Number of Upstream Investments

6 projects

Thermal Power Plants in Japan

26 stations

Power Generation
Capacity in Japan^{*2}

The largest in Japan
Approx. **59** GW

Power Generation
Output in Japan^{*1,2}

Approx. 30% of country total
Approx. **231** TWh

Number of Overseas Power Projects

Approx. **30** projects

Overseas Business Locations

10+ countries

Overseas Power Generation
Capacity (Equity output)²

Approx. **13** GW

As of March 31, 2024

^{*1} FY2023

^{*2} Includes facilities under construction. Domestic figures exclude joint thermal power holdings.

History of JERA

Driving the Push Toward a Decarbonized Society as a Clean Energy Company

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

Ten Years of Progress: Paving the Way to Becoming a Global Energy Leader

JERA announces Growth Strategy
to Realize 2035 Vision

We are here

2015

2019

2023

2035

2050

TEPCO and Chubu Electric Power Company form a 50/50 joint venture to become a Japan-based global energy company

JERA completes the integration of all domestic and overseas fuel-fired businesses, establishing itself as one of the world's largest LNG buyers

JERA supplies one-third of the power in Japan and leads the country's decarbonization efforts

2035 Vision

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

JERA Zero CO₂ Emissions 2050

Achieve virtually zero CO₂ emissions from JERA operations



90 billion yen

Net Profit¹

148.7 billion yen

Approx. 4 trillion yen

Total Assets

Approx. 8.5 trillion yen

Approx. 3 GW

New Domestic Power Supply²

Approx. 7 GW

Approx. 35 million t

LNG Handling Volume³

Approx. 36 million t

Approx. 1.5 GW

Renewable Energy
Development Output²

Approx. 3.4 GW

N/A

Hydrogen & Ammonia Investment

Approx. 15 billion yen

- Ensured steady achievement of targets
- Expanded business at a time of low interest rates
- Secured and delivered stable supply in Japan
- Achieved status as one of the world's largest volume handlers
- Built a new business pillar for decarbonization

¹ Excluding the effect of time lags after fuel cost adjustments ² Cumulative development capacity ³ Including trading volume

JERA's Co-CEO Structure

As Chair of the Board of Directors and the Nomination and Compensation Committee, Yukio Kani is responsible for their oversight. As Global CEO, he is the executive leader in charge of constructing a global management structure to achieve the corporate mission and fulfill its vision. As President, Director, CEO and COO, Hisahide Okuda is responsible for day-to-day safety and stable domestic electricity supply. He also leads JERA's initiative to promote a decarbonization strategy and build a system of collaboration, primarily among domestic stakeholders.

JERA maintains a flat organization that keeps top management in touch with on-site operations while taking on challenges in new areas to achieve our vision. We believe that this co-CEO structure is effective for rapidly transforming our business model while preserving a steady electricity supply in Japan on a day-to-day basis.

Kani and Okuda value diversity as the foundation of this structure. Over the past year, there has been further diversification on the board and among directors. This allows our executive team to draw upon varied backgrounds and expertise to achieve our mission and vision. This culture of valuing diversity not only attracts new talent but also helps increase opportunities for collaboration with global companies both domestically and internationally across various fields.



Co-CEOs Yukio Kani (left) and Hisahide Okuda (right)

Message from the Global CEO and Chair



JERA's Roadmap for the Next Decade Collaboration: the Key to Success

Global CEO and Chair
Yukio Kani

Q

It has been around 10 years since JERA's inception, and we are now looking toward the next decade. As the global energy business environment continues to undergo major change, we have announced the "JERA Growth Strategy to Realize the 2035 Vision." What are JERA's aspirations going forward?

In 2014, TEPCO and Chubu committed to creating a global energy company. Five years later, in 2019, we fully integrated our fuel and thermal operations both domestically and abroad. As one of the world's largest buyers of liquefied natural gas (LNG), we now supply one-third of Japan's electricity and have accelerated our decarbonization efforts while exceeding profit targets. However, we felt that it was now time to pause and chart a new course for the coming decade.

After reflecting upon the domestic and international business environment, it is clear that climate change, poverty, and geopolitical risks are directly linked to energy issues in our increasingly uncertain world. These three issues especially need to be addressed in Asia, which will continue to act as a hub for growth even as the relative size of Japan's economy is predicted to shrink. AI is another prime example of the kind of major change our society faces, and here too, energy holds the key. So, in light of these challenges, where does JERA go now?

Our mission is our top priority. This mission defines the global energy challenge in three ways: "Sustainability," meaning the reduction of carbon dioxide (CO₂); "Affordability," representing affordable energy prices; and "Stability," which means maintaining a reliable energy supply even in the face of geopolitical risks. Our goal is to provide cutting-edge solutions to address these three areas simultaneously, and we remain mindful of this mission every day as we strive to realize our vision for 2035.

In concrete terms, we aim to commercialize a new business model in Japan that combines low-carbon thermal power generation with renewable energy, thereby addressing the instabilities faced by renewable sources. We will then seek to expand this model globally, with a focus on Asia.

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Can you tell us what JERA's specific strategies are for realizing the 2035 Vision?

At JERA, we first clarify where to invest—and where not to. Currently, our investments are focused on three areas of Strategic Positioning (SP): LNG, renewables, and hydrogen & ammonia. We also seek to refine each of these investments by continually improving our approaches to our daily work. Specifically, we are committed to strengthening our three Operational Capabilities (OC): investing wisely, optimizing energy flows, and leveraging our assets safely and flexibly.

Message from the Global CEO and Chair



Explaining our mission, vision, and business strategy in various situations (Photo: Gastech 2023 in Singapore)

In turn, the synergy between these three SPs and OCs increases the number of solutions we can offer, enabling us to tailor our combined approach to the needs of each customer, region, and country.

Over the next 10 years, we will invest 5 trillion yen in these three SPs. We will also establish a renewable energy and low-carbon thermal power structure to generate more than 350 billion yen in annual profits. As interest rates and construction and material costs rise, we will respond with further discipline in our investments, as well as increased profitability through optimization and enhanced O&M capabilities. Finally, we will adapt and adjust our three areas of investment flexibly as the situation demands.



LNG boasts one of the world's largest volumes of trade; what is your blueprint for providing solutions in Asia with regard to this energy source?

We are leveraging some of the world's largest offtake capabilities to enhance our three-pronged approach of strengthening the LNG value chain, diversifying procurement and sales flows, and optimizing LNG flows on a global level. For example, in the case of Japan, which is poor in resources, our solutions provide energy security. These solutions have continued to function effectively since the outbreak of the crisis in Ukraine, providing a stable supply and successfully responding to fluctuations in demand.

We are also working to promote decarbonization in conjunction with renewable energy by introducing LNG to regions—predominantly in Asia—where coal- and oil-fired power generation is still prevalent.



When engaging with renewable energy, what are the actual benefits of collaborating with a local team strongly connected to an area?

We began our renewable energy business from the ground up but have since become one of the top players in Asia. We have made especially noticeable gains during the last five years and now have 5 GW and 300 employees. Our large-scale renewable energy business represents a unique growth opportunity because it enables us to produce green hydrogen & ammonia without greenhouse gas emissions.

Moving forward, we will take three steps to scale up our efforts. We are already engaged in step 1, which involved establishing JERA Nex (UK), headquartered in London, and acquiring Parkwind, Belgium's largest offshore wind company, in 2023. This step is focused on building a core base of operations in Europe replete with a team of experts.

In step 2, we will integrate existing domestic and overseas teams with this European team, combining local and global operations into a "glocal" system. Once we have created a business entity with both size of scale and diversity in business areas, our final step will be to ally and integrate with fellow global players.



Team building with diversity, expertise, and mobility is the key to business success (Photo: key members of the Renewable Energy Business)

Message from the Global CEO and Chair

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JERA has declared its intent to be a “first mover” in value chain construction with regard to hydrogen & ammonia.

Does this mean that you are working to develop various applications for hydrogen & ammonia and not only use them in fuel conversion for thermal power plants?

To be clear, “hydrogen & ammonia” is a symbolic phrase. In more precise terms, we are thoroughly committed to tackling the task of decarbonizing thermal power generation, although our work to convert Hekinan Thermal Power Station from coal to ammonia is at the forefront of our efforts. Much like the LNG value chain, we aim to leverage thermal power’s large offtake capacity to build an ammonia value chain.

A further unique aspect here is our desire to broaden the applications of the ammonia infrastructure we have built, such as using it as ship fuel or a power source for small and medium-sized factories. We believe that these efforts will contribute to promoting the decarbonization of society as a whole.

As for hydrogen, last year in the United States, we began introducing up to 40% hydrogen fuel in our gas-fired power generation. We have also initiated efforts to create a hydrogen value chain. As we continue to utilize the existing LNG value chain, we are also challenging ourselves to find new solutions, such as integrating it with CCS, which captures CO₂ on the power generation side and stores it underground.



We aim to create a flat culture where people from Japan and overseas can openly exchange ideas. (Photo: town meeting in Perth, Australia)



Collaboration with partners is essential to achieve our vision (Photo: Speaking at the main event of CERAWeek 2024)

Q

What is the key to success in both long-term energy transition and growth strategies for achieving the 2035 Vision?

There is still a long way to go in the energy transition. So while maintaining a long-term perspective is essential, it is also vital that we are able to quickly adjust priorities in our three areas (LNG, Renewable Energy, Hydrogen & Ammonia) of investment as the business environment evolves and new technological innovations progress. Flexible decision-making mechanisms paired with a shared infrastructure for business development, optimization, and O&M enable us to respond with agility. Consider our three investment areas from the perspective of hydrogen & ammonia. In the case of blue hydrogen ammonia, we can capitalize on our LNG value chain expertise and network of personal connections. And for green hydrogen ammonia, in addition to the LNG value chain, we can tap into our knowledge and human network with regard to large-scale renewable energy projects.

The key to achieving our mission and vision also lies in collaboration. We are undertaking many large projects in all three of our investment areas and must diversify risk while collaborating with partners we can trust. Becoming partners means working side by side for 40 years or more, so it is essential that we are chosen as a business partner by top global players in Japan and abroad.

It is also vital that strides in decarbonization are made through open dialogue that is not limited to the private sector but includes governments and other public institutions as well in order to create a shared vision for the path forward. Having this shared understanding with the government and other institutions will help to reduce uncertainty in the long-term business environment as we strive to find new solutions.

We believe that there are two critical aspects to making these collaborations a success. First, do our partners share the end goal of our mission and vision? And more importantly, can we share a culture with our partners? We value a culture of equality where our diverse talent can gather and openly express their opinions. To this end, we are committed to collaborating with our many partners and stakeholders to achieve our vision together.

Message from the President, Director, CEO and COO



**Establishing a new clean energy supply platform in Japan and Asia by integrating options tailored to each country's needs.
To manage rising fluctuations in supply and demand, thermal power remains indispensable in driving our low-carbon and decarbonization initiatives.**

President, Director, CEO and COO
Hisahide Okuda



How will you lead the decarbonization of the electricity sector in Japan?

We are promoting a variety of CO₂ emission reduction initiatives based on our JERA Zero CO₂ Emissions 2050 commitment announced in October 2020. Within Japan, we are driving the development of renewable energy and low-carbon thermal power generation, aiming to establish a business model that complements these initiatives. We believe this will pave the way for the decarbonization of the domestic electricity sector.

For renewable energy, we are mainly promoting the development of large-scale offshore wind power generation. As for achieving low-carbon thermal power, we are driving the conversion from coal to ammonia and liquefied natural gas (LNG) to hydrogen, reshaping our fuel sources. Looking ahead at technological developments, we will also utilize carbon capture and storage (CCS), which involves capturing CO₂ emissions and storing them underground, as well as carbon capture, utilization, and storage (CCUS), which makes use of captured and stored CO₂.



JERA completed a demonstration test at the Hekinan Thermal Power Station that substituted fuel ammonia for coal. Could you tell us about the results and future prospects for applications?

We conducted the world's first large-scale demonstration test on fuel ammonia as a conversion fuel for at Unit 4 of our Hekinan Thermal Power Station in Aichi Prefecture. We achieved a 20% ammonia fuel conversion rate at the power plant's full output of 1 GW in April 2024.

In addition to successfully burning ammonia as fuel, our demonstration test confirmed excellent results related to air pollution: nitrogen oxide (NO_x) emissions were comparable to or lower than before the conversion, and sulfur oxide (SO_x) emissions were reduced by about 20%. We also did not detect any emissions of nitrous oxide (N₂O), which is believed to have a high greenhouse effect, thereby achieving another one of our goals for the demonstration test.

Another significant outcome was that we were able to carry out the construction necessary for the ammonia conversion, such as installing tanks and pipelines while keeping the power plant operational. The final step before starting the demonstration test was replacing the burners during a scheduled maintenance period. In other words, we were able to carry out the necessary maintenance to achieve the 20% ammonia fuel conversion rate without any disruption to the stable supply of electricity. We believe this is a very important point.

To realize commercial operation, we need to set up the entire value chain, from procuring and transporting ammonia fuel through to power generation. There are currently no major bottlenecks, so we believe we can start commercial operation around 2027 or 2028. The 20% conversion rate is also not our end goal, and we are working closely with manufacturers to develop burners that can achieve a rate above 50%. If all goes well, we aim to bring these burners online with the goal of exceeding 50% conversion by the late 2020s.



Hekinan Thermal Power Station

Message from the President, Director, CEO and COO



There was a fire accident at Taketoyo Thermal Power Station in January 2024. Could you tell us your thoughts on safety and compliance?

We believe safety and compliance are the non-negotiable foundation for everything we do. We have made it clear to every employee that safeguarding this foundation is essential for business continuity and maintaining the trust and support of all our stakeholders. The fire in January 2024 at Taketoyo Thermal Power Station in Aichi Prefecture caused significant concern and disruption. Our Accident Investigation Committee is currently conducting a thorough investigation and has identified a combination of factors that led to the fire. We are now reviewing preventive measures to ensure such an incident never happens again. We finalize preventive measures in September 2024. We will coordinate with relevant parties inside and outside the company on the timing for restarting the plant. The fire did not cause any major damage thanks to the quick, effective collaborative response by firefighters, police, municipal authorities, and everyone in the community. This incident has underscored the importance of continuing to hold safety drills and build our relationship with the community. Based on our commitment to the principle “Think globally, Act locally,” we will continue to thoroughly prioritize safety and compliance while bearing in mind that our power generation business can only thrive in harmony with the local community.



As JERA strives for decarbonization, it is also essential to ensure stable supply and economic viability. How are you approaching this challenge in Asia?

Our strategy is to build a clean energy platform by combining low-carbon thermal power with renewable energy. We are rolling out this strategy in Japan as well as the rest of Asia using a comprehensive step-by-step approach. In Asia, the important first step is to provide strong support for more introduction of LNG at thermal power plants. Given that many Asian countries and regions still struggle to secure a stable supply, instead of developing new coal-fired power plants, we help transfer Japan's advanced thermal power technology to these areas to facilitate the development of LNG-fired thermal power with relatively lower greenhouse gas emissions. At the same time, we will assist in the adoption of decentralized renewable energy and support the future transition of coal-fired plants to ammonia. We believe that proposing realistic energy transitions tailored to the specific circumstances of each country and region is the most effective way to contribute to low-carbon and decarbonization initiatives in Asia.

Our basic approach is to simultaneously pursue decarbonization, a stable energy supply, and economic viability by combining diverse options to create an optimal solution tailored to the local circumstances. Fuel conversion to hydrogen & ammonia represents one of many options for low-carbon thermal power generation, but it is just one of several possibilities.

For example, in Europe, countries are connected by transmission grids, allowing them to share electricity across borders. This makes it possible to freely exchange electricity generated from sources such as abundant hydropower in Scandinavia, offshore wind power in the North Sea, and nuclear power in France. In contrast, island nations such as Japan and those in Southeast Asia are not connected to international power grids, and with limited land and extensive forests, they have neither abundant natural resources nor significant renewable energy potential. That is why it is more realistic to respond by adding options like decarbonization of thermal power. We gain a firm understanding of the specific circumstances of each country or region and provide solutions that fit their needs.



Will the need for thermal energy decrease with the restart of nuclear power plants in Japan as well as worldwide progress in the development of renewable energy?

First, we need to recognize that different energy sources provide different types of value. We do not just measure value in terms of generation capacity or output anymore. When considering how to configure the optimal energy mix, it's important to go beyond traditional measures of generation capacity and output and take into account environmental value, such as CO₂-free emissions, as well as the flexibility to adapt to short-term supply-demand fluctuations caused by changes in day and night or weather, and long-term seasonal shifts.

Message from the President, Director, CEO and COO

For example, renewable energy that does not emit greenhouse gases has significant environmental value and is crucial for achieving decarbonization. However, both solar and offshore wind power are heavily affected by natural conditions and lack the ability to maintain frequency stability, which is essential for a stable supply. Similarly, while nuclear power does not generate CO₂ emissions, it is not well-suited to respond to short-term supply and demand fluctuations. As we introduce more renewable energy, flexibility is necessary to handle these short- and long-term fluctuations in supply and demand. Amid this, we believe that thermal power generation, alongside battery storage, will become increasingly important, given its role in smoothing out supply and demand fluctuations.

However, while thermal power generation offers the value of flexibility, it also emits greenhouse gases in the process of burning fossil fuels. That is why there is an urgent need to achieve low-carbon and decarbonized thermal power generation. The first step is converting hydrogen & ammonia for use as fuel, allowing us to reduce CO₂ emissions while maintaining the benefits of thermal power, such as its ability to adjust output and provide a reliable supply. While considering energy security in a world increasingly divided, it is essential to pursue the best energy mix that can reliably respond to supply and demand fluctuations by enabling renewable energy, nuclear power, and thermal power to work in concert.



Could you share some new strategies for balancing supply and demand, such as the introduction of battery storage, to meet varying electricity needs for different areas, seasons, and times of day?

To ensure a stable supply of high-quality electricity, it is crucial that supply and demand are constantly in sync—a concept referred to in Japanese as “simultaneous balancing.” To achieve this, it is necessary to build a power supply system that combines various energy sources and battery storage capable of responding to fluctuations in both short and long-term demand. For example, there is a significant difference in electricity demand between day and night. Demand can also fluctuate greatly due to weather changes even within a single day. Traditionally, we have achieved balance for these short-term demand fluctuations primarily with thermal and hydroelectric power. However, with the recent increase in renewable energy, which varies based on natural conditions, these fluctuations have grown larger than ever before. This has led to a significant rise in the frequency of starting, stopping, and adjusting the output of thermal power plants, putting considerable strain on the equipment.

Therefore, we believe it is essential to carefully design a power mix that can achieve balance in short-term demand fluctuations while introducing battery storage to the extent possible. On the other hand, relying solely on battery storage to achieve balance for long-term fluctuations, such as reduced output from renewables due to extended poor weather or seasonal variations in electricity demand, would require an enormous amount of

batteries spread over vast areas of land, which is unrealistic. For such long-term fluctuations in supply and demand, we need thermal power to make the necessary adjustments. Amid the increasing adoption of renewable energy, with its output fluctuating based on natural conditions, it is crucial to rebuild a system that can reliably manage short- and long-term supply and demand fluctuations by successfully combining battery storage, hydropower, and low-carbon or zero-emission thermal power.

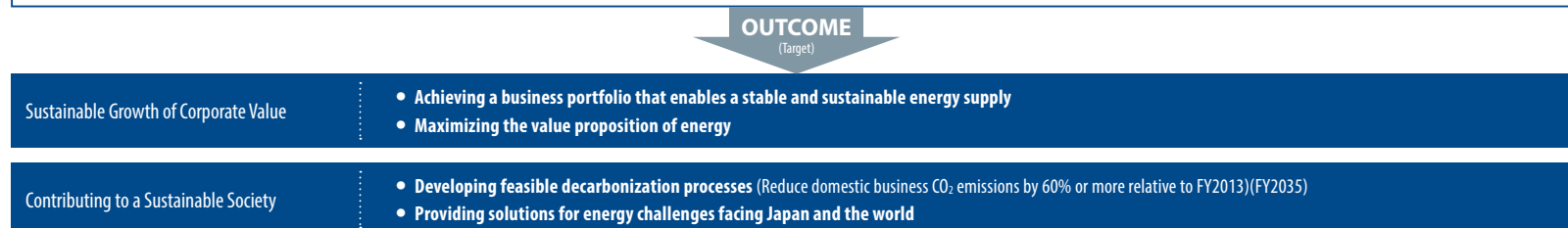
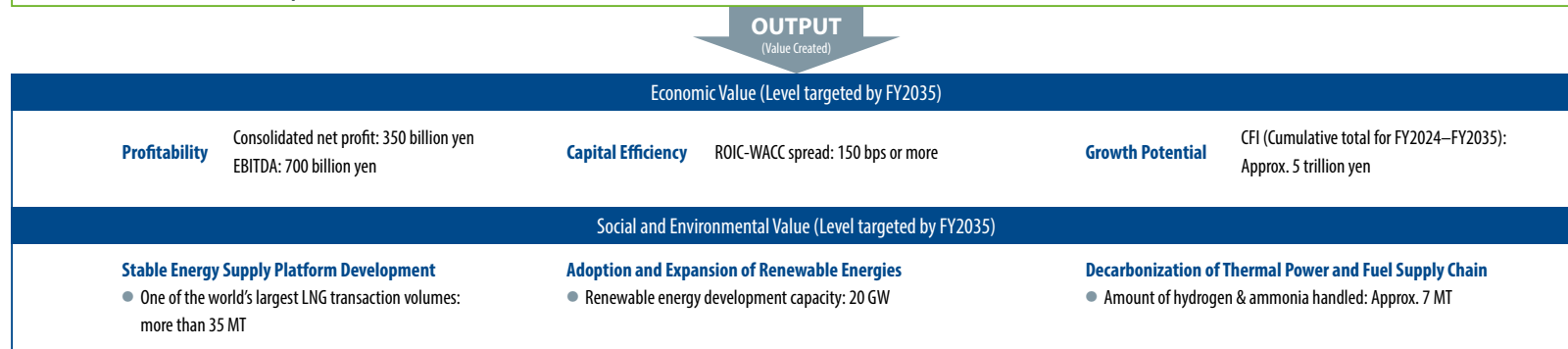
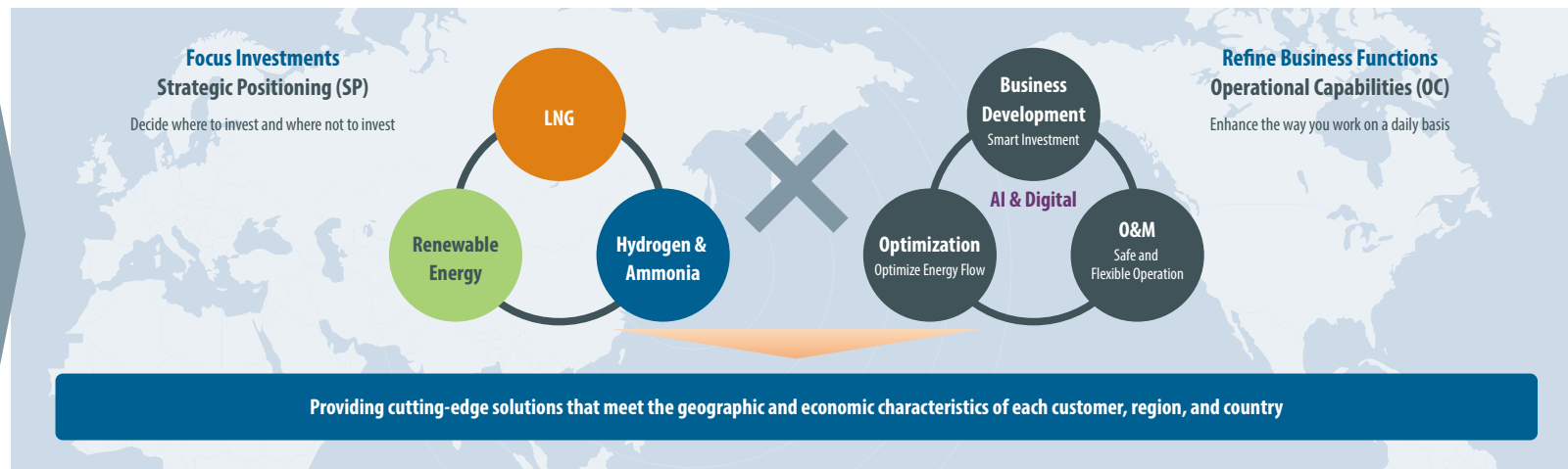


It is expected that electricity demand will increase due to the promotion of digital transformation, including the expansion of data centers and the spread of generative AI. Could you share your thoughts on the policies and approach to power development planning?

Alongside decarbonization, we are also focusing on addressing the anticipated rise in electricity demand. Until now, we have been investing in replacing aging thermal power plants and decarbonizing our energy sources.

However, the business environment is constantly changing. Just a few years ago, some claimed that electricity demand would gradually decrease due to factors such as population decline, slower economic growth, and energy conservation driven by global warming measures. But now, it is expected that there will be increasing demand for electricity related to digital transformation, including for data centers and AI. Furthermore, the return of manufacturing hubs for industries such as semiconductors to Japan is also contributing to the rise in electricity demand. There is a growing likelihood that the nation's overall electricity demand will begin to increase in the near future. Although some of this can be addressed through the restart of nuclear power plants and energy conservation measures, if the growth in demand is sustained and significant, new power sources will inevitably need to be established. As the role of thermal power shifts to balancing supply and demand, establishing new thermal power plants will require a regulatory environment that ensures business predictability appropriate for this new role. We intend to review our power development plan while thoroughly consulting with the national government to respond to this increasing demand for electricity.

Value Creation Process



^{*1} As of March 31, 2024 ^{*2} As of July 1, 2024 ^{*3} Totaled on a wet coal basis (arias received)