エネルギーを新しい時代へ

FY2023 First Quarter Consolidated Financial Results

(Note1) The company's fiscal year (FY) is from April 1 to March 31 of the following year in this material.
"1Q" refers to the period from April 1 to June 30.
(Note2) The Company has voluntarily adopted International Financial Reporting Standards (IFRS) from the consolidated financial statements for the fiscal year ended March 31, 2023 (FY2022).
Therefore, the following pages and thereafter have been prepared in accordance with IFRS.

JERA Co., Inc.

July 28, 2023

Outline of Financial Results

Consolidated Statement of Profit or Loss

(Unit: Billion Yen)

	2023/1Q(A)	2022/1Q(B)	Change(A-B)	Rate of Change(%)
Revenue (Net sales)	935.9	893.8	42.0	4.7
Operating profit	255.2	99.6	155.5	156.1
Quarterly profit attributable to owners of parent	178.4	27.8	150.6	540.4
<Reference> Quarterly profit excluding time lag	23.1	125.2	-102.0	-81.5

Consolidated Statement of Financial Position

(Unit: Billion Yen)

	As of Jun 30,2023(A)	As of Mar 31,2022(B)	Change(A-B)	Rate of Change(%)
Assets	9,092.1	9,172.3	-80.2	-0.9
Liabilities	6,795.4	7,132.6	-337.2	-4.7
Equity	2,296.6	2,039.7	256.9	12.6

Key Points of Financial Results

【Revenue】

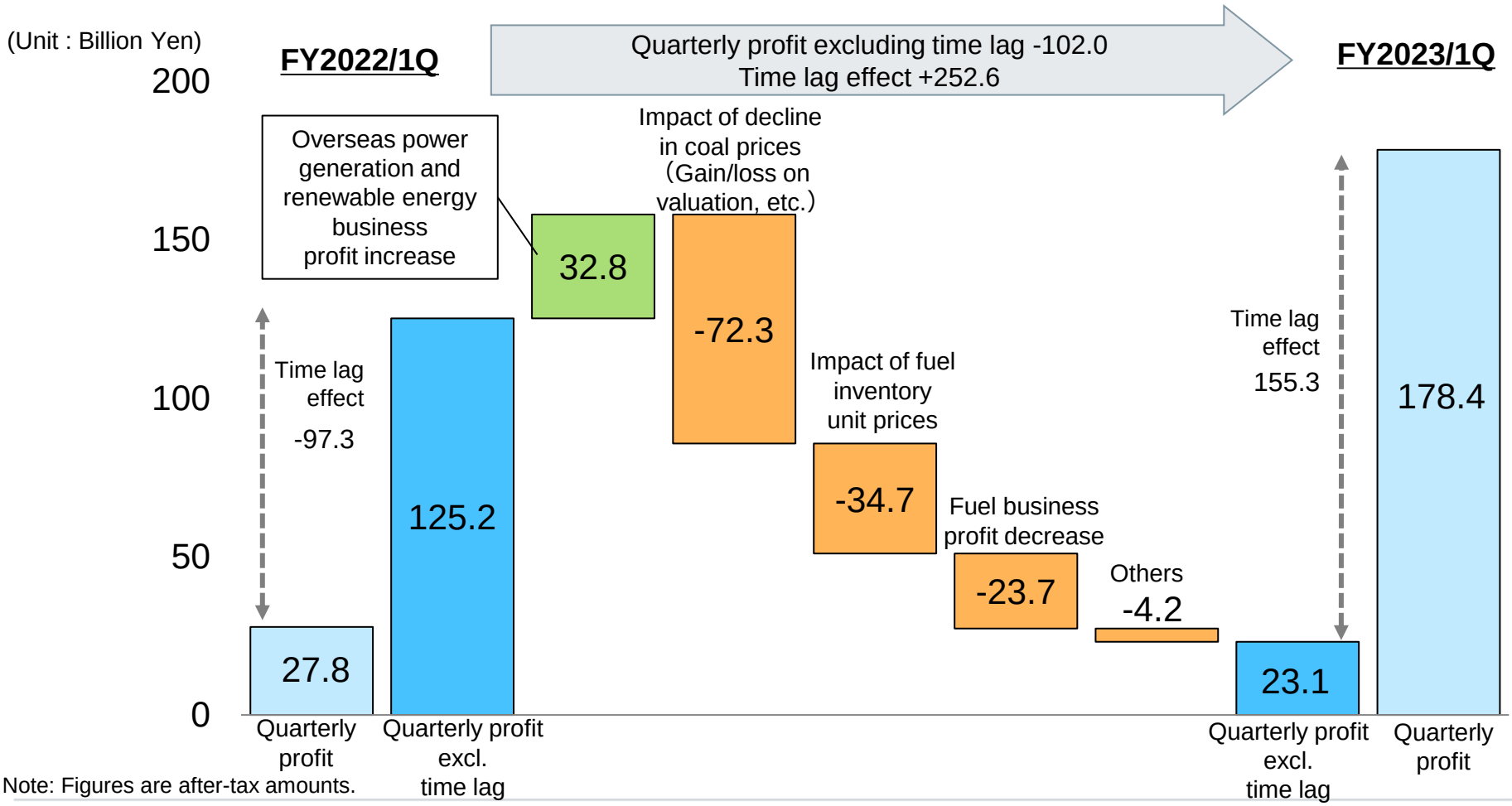
- Revenue **increased by 42.0 billion yen (up 4.7%) from the same period last year to 935.9 billion yen** mainly due to an increase of income unit price in electrical energy sales.

【Quarterly profit】

- Quarterly profit **increased by 150.6 billion yen from the same period last year 27.8 billion yen and rose to profit of 178.4 billion yen.**
  - ・The effect of time lag shifted from losses to gains.
    (+252.6 billion yen [-97.3 billion yen to 155.3 billion yen])
  - ・Quarterly profit excluding time lag decreased.
    (-102.0 billion yen [125.2 billion yen to 23.1 billion yen])
- Quarterly profit excluding time lag decreased due to the impact of decline in coal prices, the impact of fuel inventory unit prices, and the decrease in profit from fuel business, while the profit from overseas power generation and renewable energy business increased.

Change Factors of Quarterly Consolidated Profit

- Quarterly profit excluding time lag decreased due to the impact of decline in coal prices, the impact of fuel inventory unit prices, and the decrease in profit from fuel business, while the profit from overseas power generation and renewable energy business increased.



Note: Figures are after-tax amounts.

Consolidated Statement of profit or loss

(Unit: Billion Yen)

	2023/1Q(A)	2022/1Q(B)	Change(A-B)	Main Factors of Changes
Revenue (Net sales)	935.9	893.8	42.0	• Increase of income unit price
Operating expenses	705.7	794.3	-88.5	• Decrease of fuel costs
Other operating income/ loss	25.0	0	25.0	• Decrease of exchange loss +12.1 • Increase of share of profit / loss of investments accounted for using equity method +11.6
Operating profit	255.2	99.6	155.5	
Financial income	16.1	2.2	13.8	• Increase of interest received +10.9
Financial costs	20.7	47.3	-26.5	• Decrease of exchange loss -28.1
Profit before tax	250.5	54.5	196.0	• Decrease of time lag effect +350.9(-135.2 → 215.7) • Decrease of profit excluding time lag -154.9(189.8 → 34.8)
Income tax expense	47.4	-14.7	62.1	
Quarterly profit attributable to non-controlling Interests	24.6	41.4	-16.7	
Quarterly profit attributable to owners of parent	178.4	27.8	150.6	

Key Elements

	2023/1Q(A)	2022/1Q(B)	Change(A-B)
Electrical Energy Sold (TWh)	48.1	57.9	-9.8
Crude Oil Prices(JCC) (dollar/barrel)	84.0	110.7	-26.7
Foreign Exchange Rate (yen/dollar)	137.4	129.6	7.8

Note: Crude Oil Prices(JCC) for 2023/1Q is tentative.

Consolidated Statement of Financial Position

(Unit: Billion Yen)

	As of Jun 30,2023(A)	As of Mar 31,2022(B)	Change(A-B)	Main Factors of Changes
Cash and cash equivalents	1,660.2	1,360.9	299.3	• Increase in JERA, etc.
Property, plant and equipment	2,376.5	2,387.8	-11.3	
Investments accounted for using equity method	1,142.8	1,112.7	30.1	
Others	3,912.4	4,310.8	-398.3	• Decrease of accounts receivable trade -232.0 • Decrease of derivative assets (JERAGM, etc.) -102.1
Assets	9,092.1	9,172.3	-80.2	
Interest-bearing liabilities	3,389.2	3,510.8	-121.5	• Borrowings -162.7 (Subsidiaries +14.5) • Commercial Paper -32.0 • Corporate Bonds +73.2
Others	3,406.1	3,621.8	-215.6	• Decrease of derivative liabilities (JERAGM, etc.) -100.0 • Decrease of accounts payable trade -83.3
Liabilities	6,795.4	7,132.6	-337.2	
Equity attributable to owners of parent	2,289.3	2,022.8	266.4	• Profit +178.4 • Foreign currency translation adjustments +56.6
Non-controlling interests	7.3	16.8	-9.4	
Equity	2,296.6	2,039.7	256.9	

Consolidated Statement of Cash Flows

(Unit: Billion Yen)

		2023/1Q(A)	2022/1Q(B)	Change(A-B)
Operating cash flow		488.2	-281.2	769.4
Investment cash flow	Purchase of property, plant, and equipment	-45.5	-99.4	53.8
	Purchase of investment securities	0	-6.0	6.0
	Others	17.0	6.2	10.8
		-28.4	-99.2	70.7
Free cash flows		459.7	-380.5	840.2
Financial cash flow	Increase (decrease) in interest-bearing debt	-144.7	419.1	-563.9
	Dividends paid *1	0	-83.1	83.1
	Others	-79.2	-14.6	-64.6
		-224.0	321.3	-545.4
Increase (decrease)in cash and cash equivalents (minus indicates decrease)		299.3	-39.0	338.3

*1 Excluding Dividends paid to non-controlling interests

Segment Information

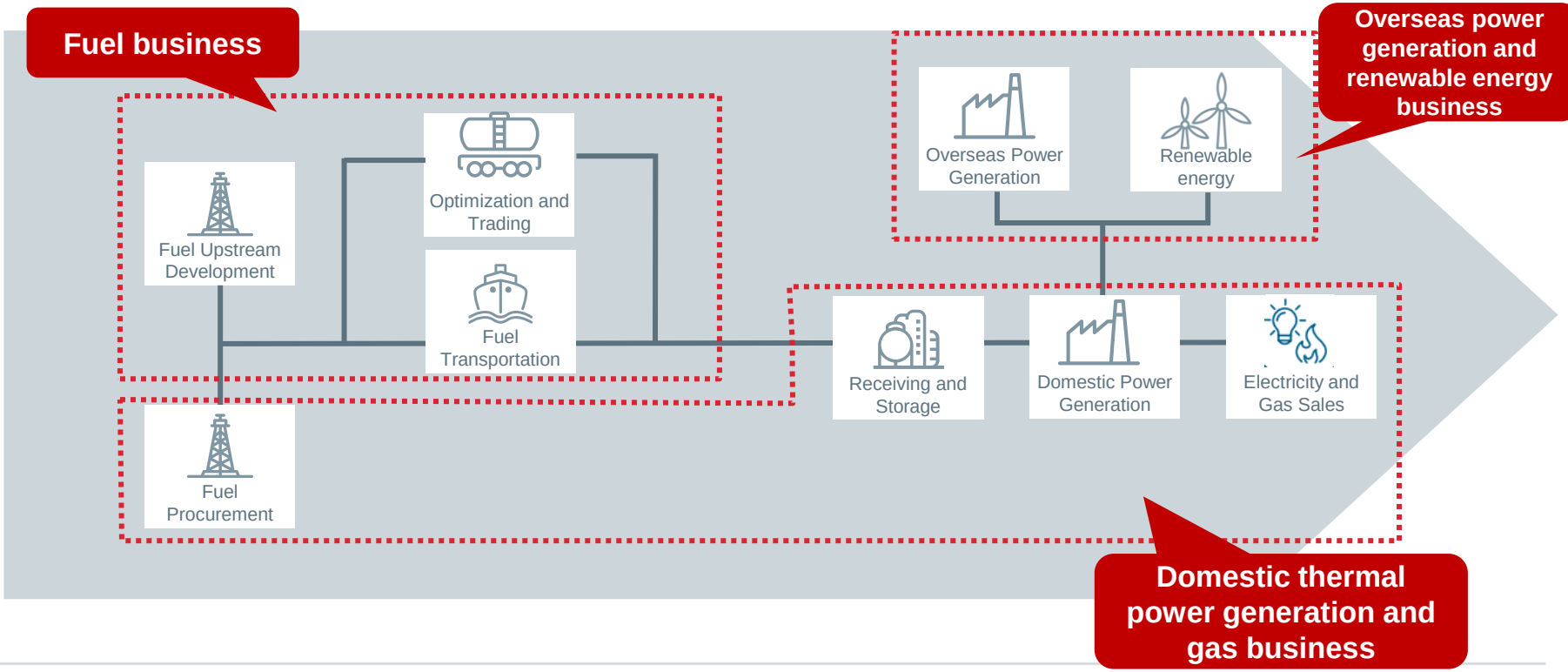
(Unit: Billion Yen)

	2023/1Q(A)		2022/1Q(B)		Change(A-B)		Main Factors of Changes in Profit / Loss
	Revenue	Profit / Loss	Revenue	Profit / Loss	Revenue	Profit / Loss	
Fuel	128.7	36.6	192.2	60.4	-63.4	-23.7	•Profit decrease in JERAGM, etc.
Overseas power generation and renewable energy	5.6	31.3	0.9	-1.4	4.7	32.8	•Gain on reversal of impairment loss in Formosa 2 +19.6 •Profit increase in overseas IPPs +13.0
Domestic thermal power generation and gas	1,070.7	109.0 -46.2※2	1,019.0	-31.8 65.5※2	51.7	140.8 -111.8※2	• Impact of decline in coal prices (Gain/loss on valuation, etc.) -72.3 •Impact of fuel inventory unit prices -34.7 • Gain/loss on sale of LNG -9.5
Adjustments※1	-269.2	1.4	-318.3	0.7	49.0	0.7	
Consolidated	935.9	178.4 23.1※2	893.8	27.8 125.2※2	42.0	150.6 -102.0※2	

※1 : “Adjustments” includes headquarter expenses and consolidation adjustments such as intersegment eliminations
※2 : Excluding the effect of time lag

(Reference) : JERA's Value Chain and Segment

- JERA owns the entire supply chains for fuel and thermal power generation, from fuel upstream business (development of gas fields) to transportation and storage (fuel terminal operation) to power generation and wholesaling.
- We have three business segments; "Fuel business" for investment in fuel upstream, transportation and trading business, "Overseas power generation and renewable energy business" for investment in overseas power generation and domestic and overseas renewable energy business, and "Domestic thermal power generation and gas business" for sales of electricity and gas in Japan.



FY2023 Forecast

- Profit excl. time lag is expected to be around 150 billion yen same as the previous announcement.
- Profit is expected to be around 350 billion yen, +50 billion yen from the previous announcement due to increase of time lag profit in light of current fuel price trends.
- Results may fluctuate due to changing trends in fuel markets and other factors.

(Unit: Billion Yen)

	Current Forecast(A)	Previous Forecast(B)	Change (A-B)	Rate of Change (%)
Profit	350.0	300.0	Approx. 50.0	16.7
Time lag effect	200.0	150.0	Approx. 50.0	33.3
Profit excl. time lag	150.0	150.0	-	-

【Reference : Comparison with the previous year's result】

(Unit: Billion Yen)

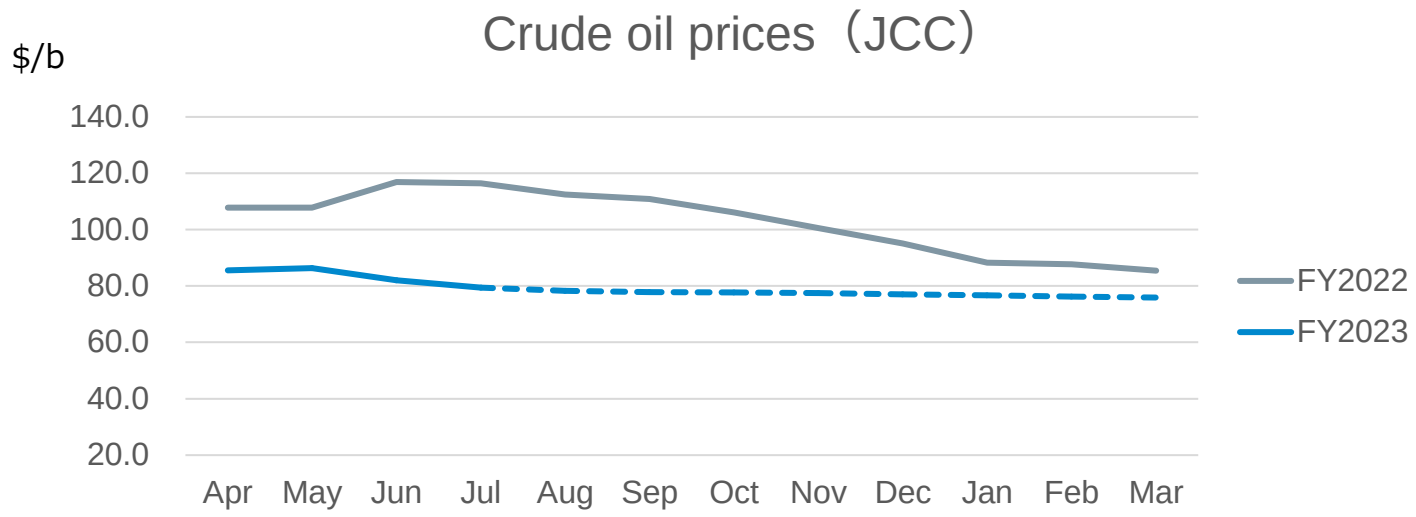
	Current Forecast(A)	FY2022 Result(B)	Change (A-B)	Rate of Change (%)
Profit	350.0	17.8	Approx. 330.0	1,866.3
Time lag effect	200.0	-182.4	Approx. 380.0	-
Profit excl. time lag	150.0	200.3	Approx. -50.0	-25.1

【Key Data】

	Current Forecast	(Of these, from June onwards)	Previous Forecast	【Reference】 FY2022 Result
Crude oil prices(JCC) (dollar/barrel)	Approx.79	Approx.77	Approx.77	102.7
Foreign exchange rate (yen/dollar)	Approx.140	Approx.141	Approx.127	135.5

Appendix

Trends in crude oil price and exchange rates



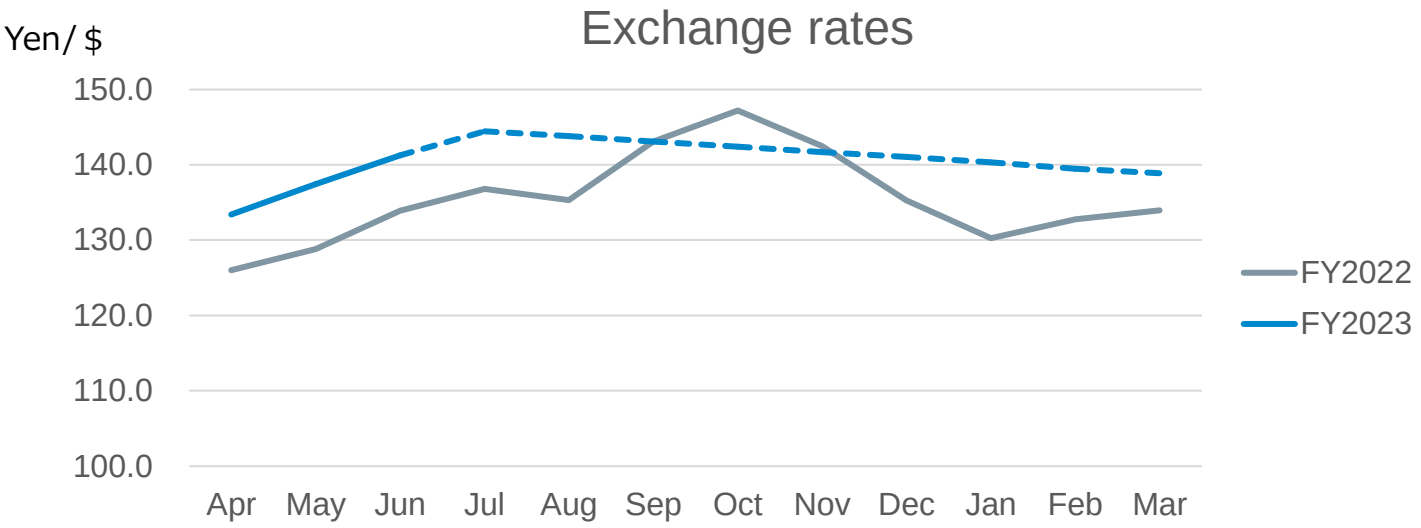
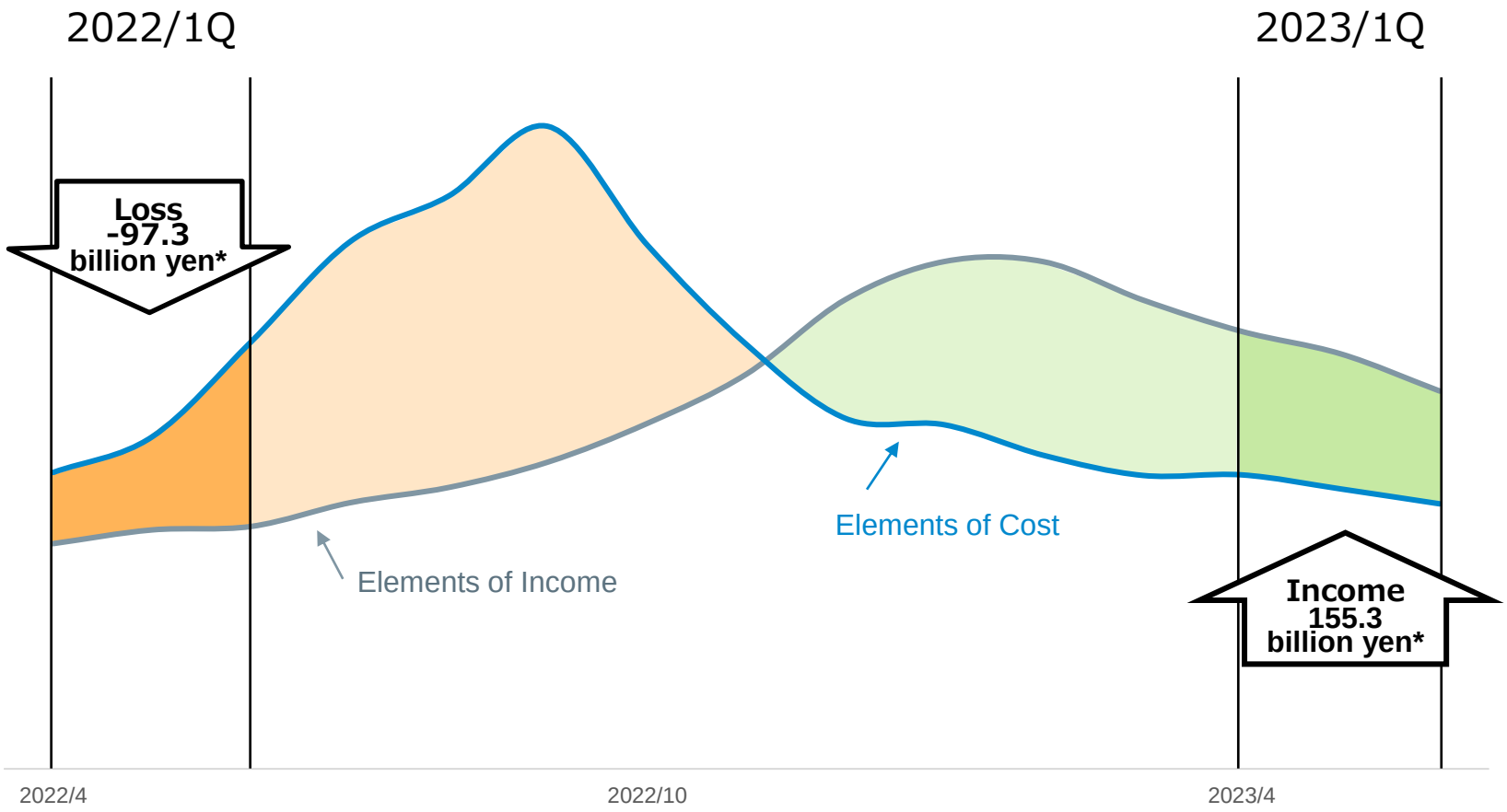


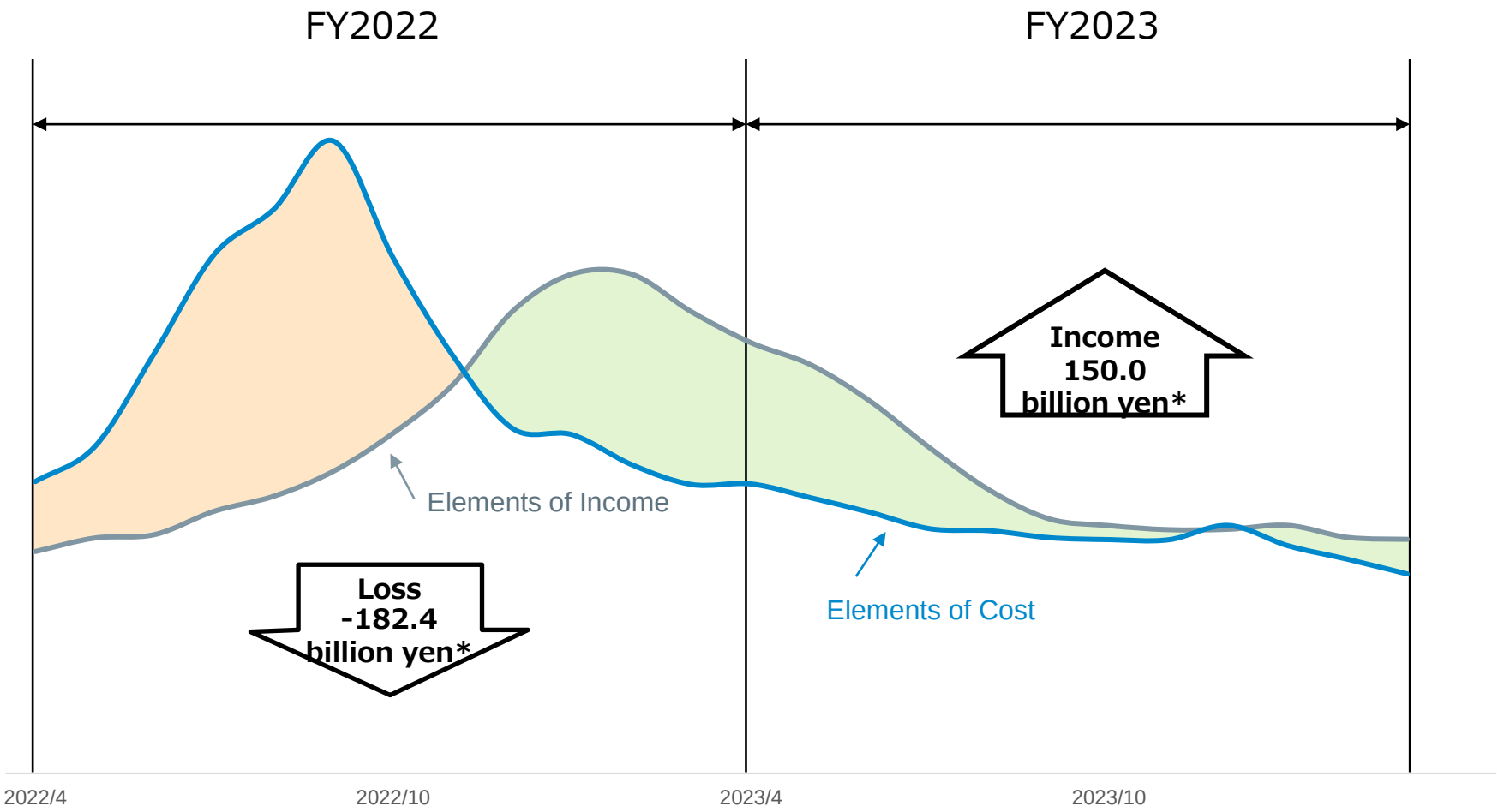
Image of Time Lag （2022/1Q－2023/1Q）

- Time lag is profits and losses due to the time difference between changes in fuel prices and their reflection in sales prices.
- The impact on profits and losses will be neutral in the medium to long term.



* Figures are after-tax amounts.

Image of Time Lag （FY2022－FY2023）



* Figures are after-tax amounts.

Electrical Energy Sold and Electrical Power Generated

【Electrical Energy Sold(TWh)】

	Apr to Jun	Jul to Sep	Oct to Dec	Jan to Mar	Total
FY2023	48.1				48.1
FY2022	57.9	69.9	63.6	63.7	255.1

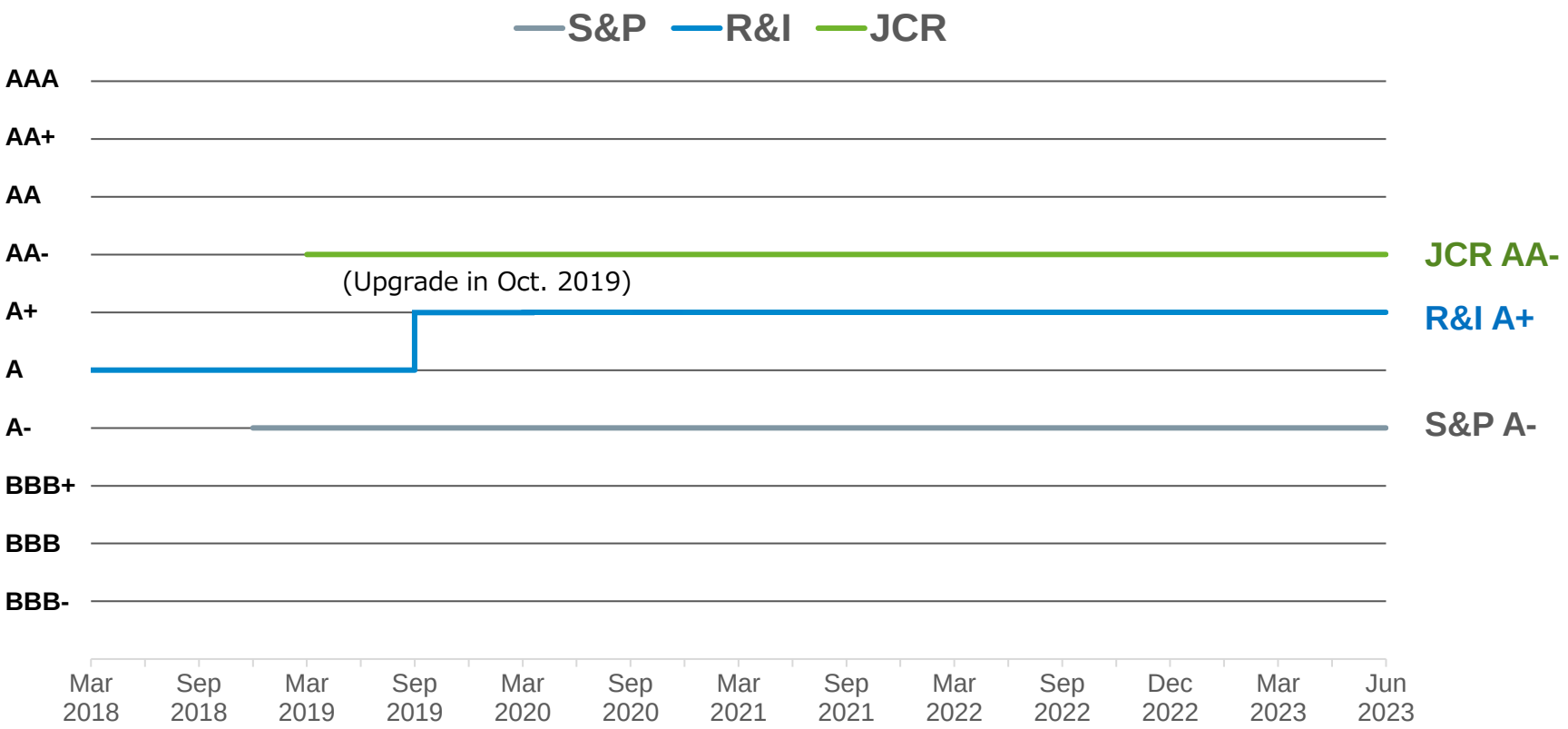
【Electrical Power Generated(TWh)】

		Apr to Jun	Jul to Sep	Oct to Dec	Jan to Mar	Total
FY2023		47.5				47.5
	LNG	36.2（76%）				36.2（76%）
	Coal	11.2（24%）				11.2（24%）
	Others	0（0%）				0（0%）
FY2022		52.8	63.5	58.0	60.8	235.1
	LNG	41.7（79%）	47.0（74%）	43.9（76%）	45.8（75%）	178.4（76%）
	Coal	11.2（21%）	16.5（26%）	14.0（24%）	15.0（25%）	56.7（24%）
	Others	0（0%）	0（0%）	0（0%）	0（0%）	0（0%）

*The total may not match due to rounding.

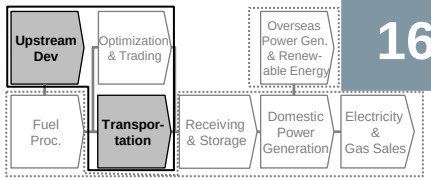
Credit Ratings

【 Issuer Credit ratings history 】



Reference:
Overview and topics of each segment

Fuel Business:
Fuel Upstream / Transportation Business



- Participating in LNG upstream projects by leveraging one of the world's largest LNG transaction volume (FY2022: Approximately 35 million tons*), we secure stable LNG sources and acquire the information related to procurement and the market trend. Additionally, We own fuel carriers that contribute to highly consistent, flexible, and competitive fuel supply.

*JERA Group as a whole

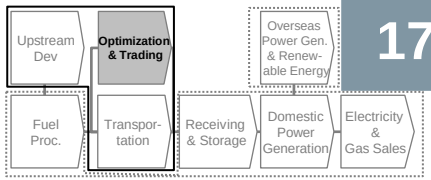
Fuel Upstream Project

Project Name	Country	LNG Production / Liquefaction Capability	Investment Ratio *1
Darwin LNG Project	Australia	Approx. 3.7 million tons/year	6.132%
Gorgon LNG Project		Approx. 15.6 million tons/year	0.417%
Ichthys LNG Project		Approx. 8.9 million tons/year	0.735%
Wheatstone LNG Project		Approx. 8.9 million tons/year	Gas field: 10%, LNG plant: 8%
Barossa gas field Project		LNG production and liquefaction capacity is the same scale as Darwin LNG Project.	12.5%
Freeport LNG Project (Train1)	United States	Approx. 5.15 million tons/year	25%
Freeport LNG Development, L.P.*2		Approx. 15.45 million tons/year*3 for all three lines	25.7%

*1 The stake of Wheatstone LNG Project represents the ratio of shares held through PE Wheatstone in which JERA invests
*2 Freeport LNG Project Management Company
*3 Including 5.15 million tons/year from Train 1

- In June 2022, a fire incident occurs at the Freeport LNG terminal, shutting down operations at the terminal.
  In 2023, regulatory approvals for resumption of production were obtained one by one. And production has resumed at all lines.

Fuel Business:
Trading Business



- In addition to the Singapore headquarters, JERAGM has offices in the United Kingdom, the Netherlands, the United States, and Japan, and holds approximately 300 employees engage in asset-backed trading.
- Utilizing a global trading network, JERAGM supplies LNG and coal to JERA's domestic power generation business. Leveraging this commercial flow, JERAGM has been able to achieve both the enhancement of supply stability and the expansion of profits by efficiently capturing profit opportunities through transactions with markets and third parties.
- JERAGM trades within the limited volume under the governance of the Board of Directors elected by shareholders.

Procurement contract

LNG

JERA's Portfolio
- DES (Delivered Ex Ship)
- FOB (Free on Board)

LNG suppliers and traders

Coal

Coal suppliers and traders

JERAGM
- Achieve a stable fuel procurement for JERA through adjusting volume needs in the market
- Pursue the profit-earning opportunities based on global-level market intelligence, by leveraging the flexibility of the procurement contracts

Sales contract

JERA's Power plants

Domestic and overseas LNG traders and users

LNG terminals in Europe

JERA's Power plants (Including Power plants of Affiliated Companies)

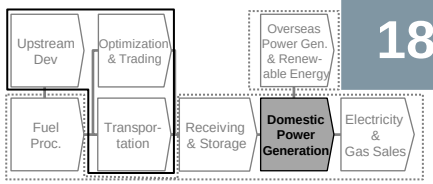
Domestic and overseas coal traders and users

LNG

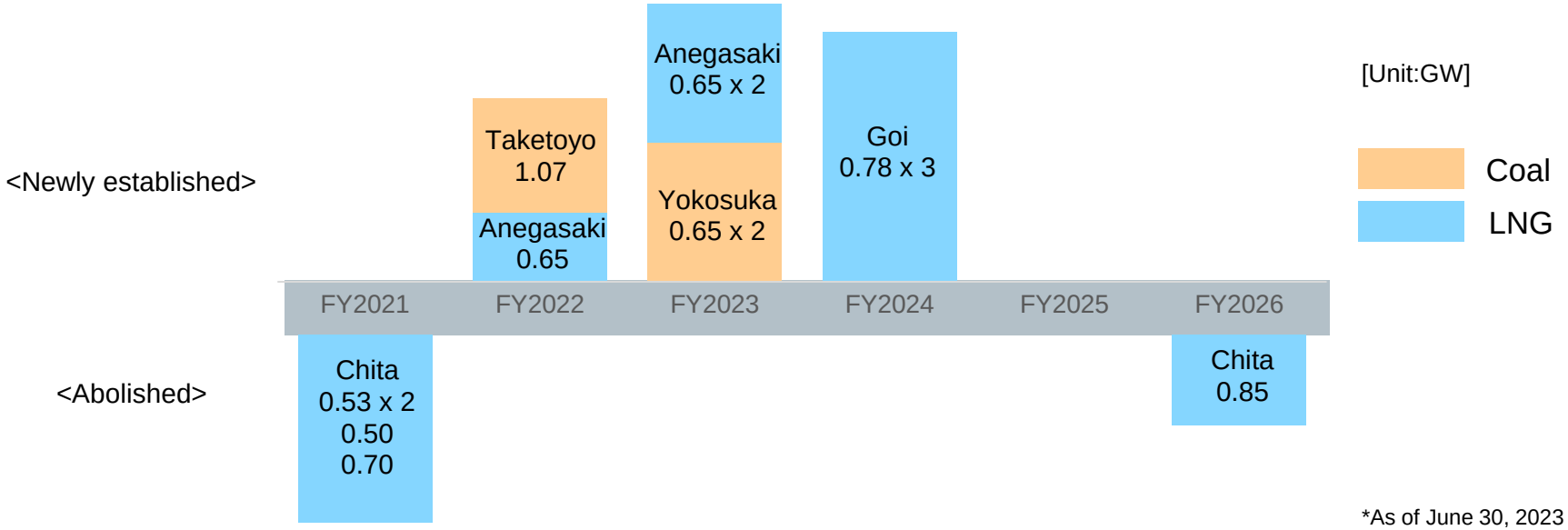
Coal

Financial Market

Domestic Thermal Power and Gas Business: Progress of Replacement of Thermal Power Plants in Japan



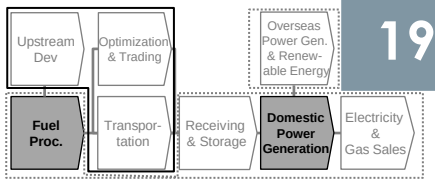
- Replaced with the latest high-efficiency thermal power generation facilities. Following Taketoyo and Anegasaki New Unit 1, commercial operations of Anegasaki New Unit 2 and Yokosuka Unit 1 commenced in April and June 2023, respectively.
- Construction and commissioning of Anegasaki New Unit 3, Yokosuka Unit 2, and Goi Unit 1 to 3 are well underway.
- Unit 1 to 4 of Chita were abolished in FY2021. Unit 5 is planned to be abolished in FY2026 and is being considered for replacement (environmental impact assessment has been conducted).



*As of June 30, 2023

Development Point	Status of Development
Anegasaki	Full-scale construction started in February 2020. Construction progress: 99%
Yokosuka	Full-scale construction started in August 2019. Construction progress: 99%
Goi	Full-scale construction started in April 2021. Construction progress: 87%

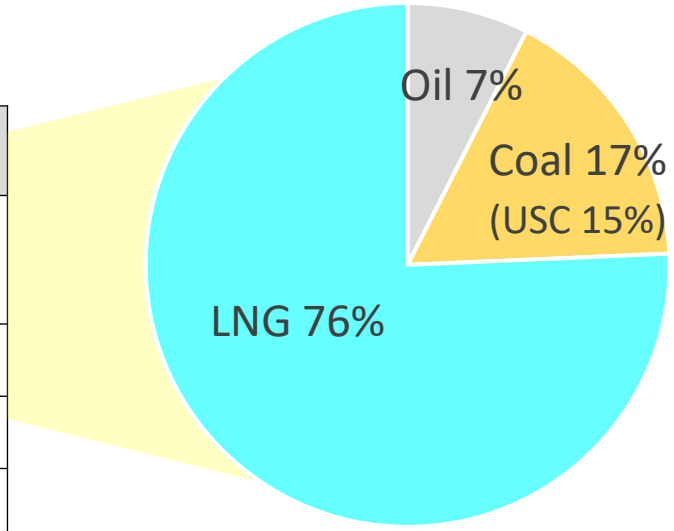
Domestic Thermal Power and Gas Business: Composition of Power Sources



- 76% of our power source is LNG, which has low CO_2 emissions.
- In coal, ultra super critical power generation system (USC), which emits comparatively small amount of CO_2, accounts for a large proportion. We will shut down all inefficient coal power plants by 2030[*1].

Composition of Power Sources[*2]

Fuel	Capacity (Generator output)
Coal (USC)	10.32 GW (8.92 GW)
LNG[*3]	46.44 GW
Oil	4.60 GW
Total	61.36 GW

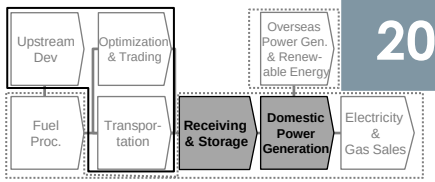


*1 Press release on October 13, 2020 “Towards Zero CO_2 Emissions in 2050”
https://www.jera.co.jp/english/information/20201013_539

*2 As of June 30, 2023. Includes capacity under construction.
Excludes capacity of affiliates.

*3 Includes LPG and City Gas.

Domestic Thermal Power and Gas Business:
Domestic Thermal Power Plants



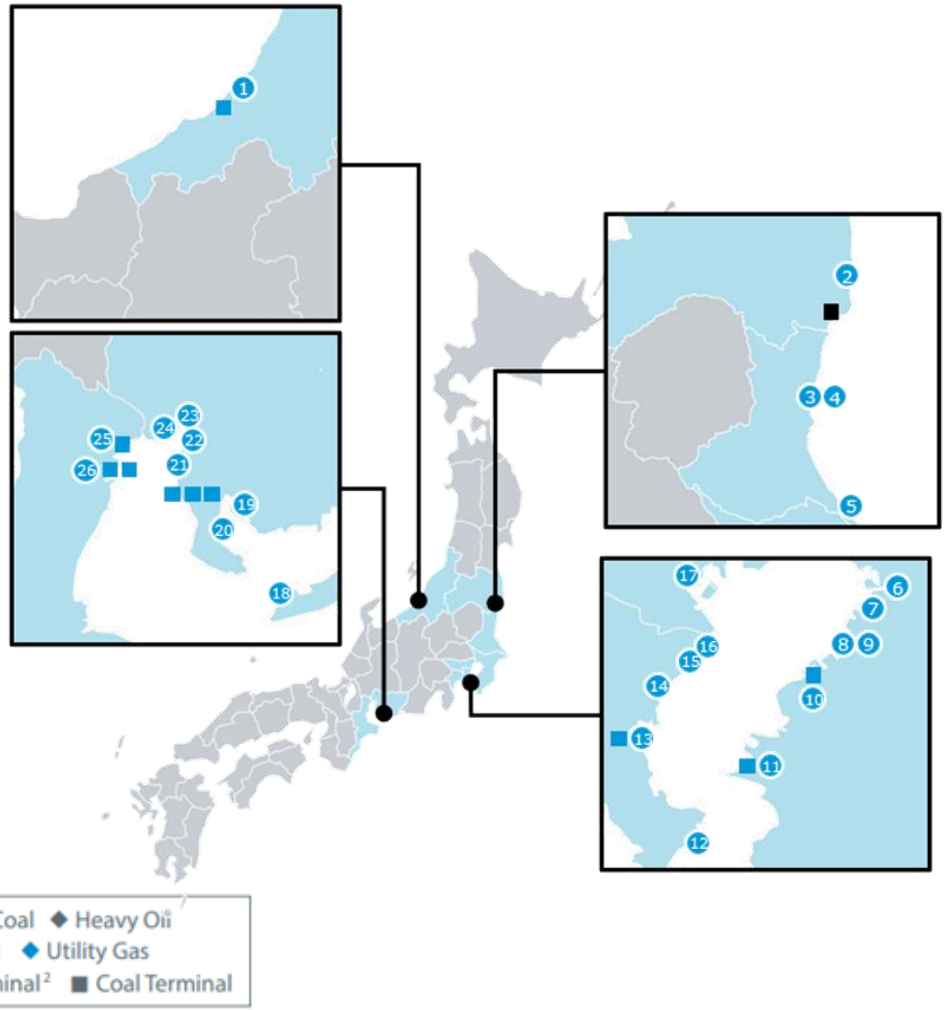
➢ We own nearly half of total thermal power generation capacity in Japan.

List of Thermal Power Plants in Japan[1]

(Total output and fuel type listed for each thermal power plant)

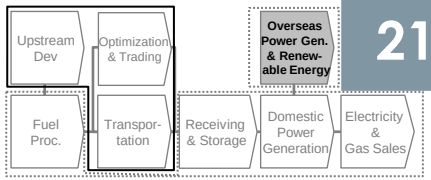
As of June 30, 2023

①	Joetsu	2.38 GW	◆
②	Hirono	4.40 GW	◆◆◆
③	Hitachinaka	2.00 GW	◆
④	Hitachinaka Kyodo <HITACHINAKA GENERATION>	0.65 GW	◆
⑤	Kashima	1.26 GW	◆
⑥	Chiba	4.38 GW	◆
⑦	Goi <GOI UNITED GENERATION> *Scheduled to start operation in FY2024	2.34 GW	◆
⑧	Anegasaki	1.20 GW	◆
⑨	Anegasaki <JERA Power ANEGASAKI> *Scheduled to start operation in phase of 0.65GW each from February 2023	1.941 GW	◆
⑩	Sodegaura	3.60 GW	◆
⑪	Futtsu	5.16 GW	◆
⑫	Yokosuka <JERA Power YOKOSUKA> *Scheduled to start operation in phase of 0.65GW each from June 2023	1.30 GW	◆
⑬	Minami-Yokohama	1.15 GW	◆
⑭	Yokohama	3.016 GW	◆
⑮	Higashi-Ohgishima	2.00 GW	◆
⑯	Kawasaki	3.42 GW	◆
⑰	Shinagawa	1.14 GW	◆
⑱	Atsumi	1.40 GW	◆◆
⑲	Hekinan	4.10 GW	◆
⑳	Taketoyo<JERA Power TAKETOYO> *Started operation in August 2022	1.07 GW	◆
㉑	Chita	1.708 GW	◆
㉒	Chita Daini	1.708 GW	◆
㉓	Shin-Nagoya	3.058 GW	◆
㉔	Nishi-Nagoya	2.376 GW	◆
㉕	Kawagoe	4.802 GW	◆
㉖	Yokkaichi	0.585 GW	◆



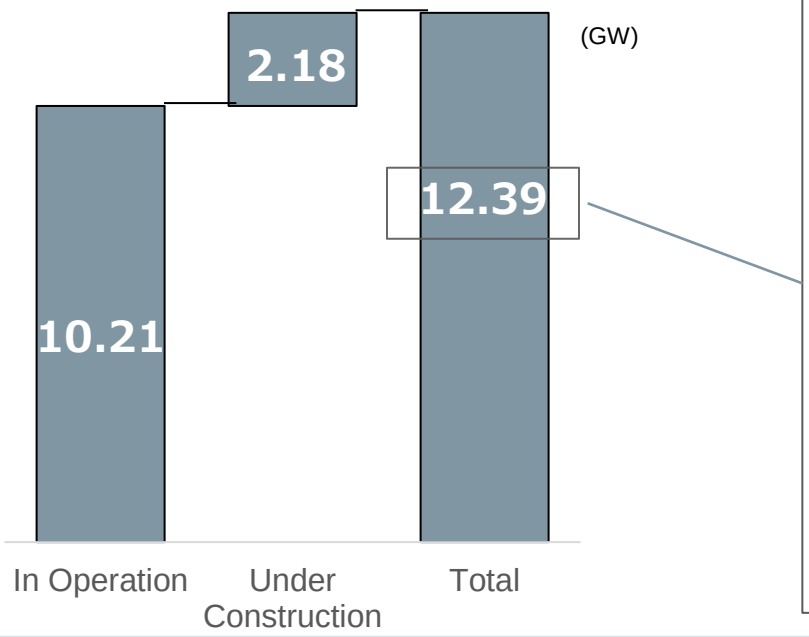
1 Power plant's name <Operator's name>
2 Includes jointly operated terminals in the Chita and Yokkaichi areas

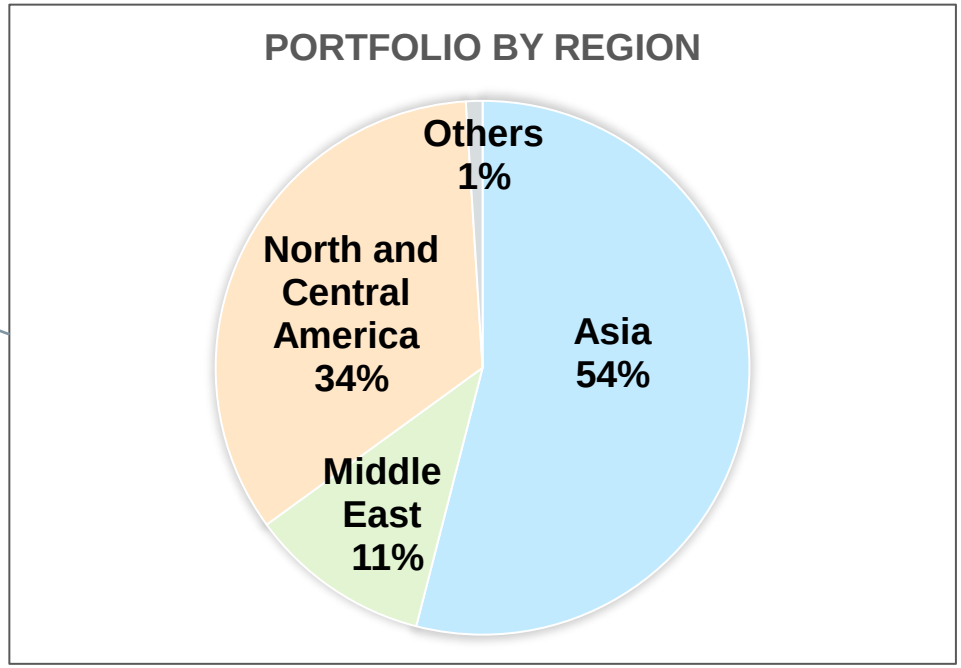
Overseas Power Generation and Renewable Energy Business: Portfolio of Overseas Power Generation Business



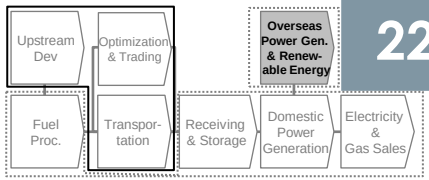
- JERA is expanding its businesses through the experience gained from projects around the world. Total capacity of power generation in overseas projects is 12.39 GW (including under construction).
- JERA aims to secure funds and expand earnings by replacing its portfolio through the sale and reinvestment of assets to achieve an optimal asset structure in line with changes in the business.
- In 2022, JERA sold shares in Falcon Gas Thermal Power Co. in Mexico, signed an agreement to acquire 100% of the shares of Parkwind NV in Belgium, and acquired shares in Brady thermal IPP project in the United States and Gia Lai Electricity Joint Stock Company in Vietnam.

< Power Generation Capacity (As of June 30, 2023) >





Overseas Power Generation and Renewable Energy Business: List of overseas power generation projects (1)



(As of June 30, 2023)

Investment on Platform Companies*

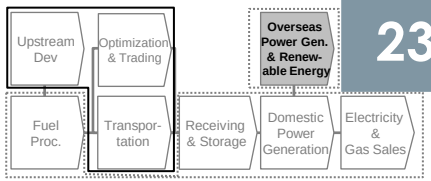
*Companies participating in multiple power generation projects

Country	Project Name	Investment ratio	Capacity	Fuel type	Notes
Philippines	TeaM Energy IPP	25.0%~50.0%	2,341 MW	Coal	
	Aboitiz Power Corporation	27%	4,829 MW	Coal/Oil/ Renewable	Including under construction
Thailand	EGCO Corporation	12.3%	6,202 MW	Coal/Gas/ Renewable	Including under construction
Vietnam	Gia Lai Electricity Joint Stock Company	35.1%	503 MW	Solar/Wind/Hydro	Including under construction
India	ReNew Company	7.3%	13,726 MW	Solar/Wind/Hydro	Including under construction
Bangladesh	Summit Power IPP	22.0%	2,418 MW	Gas	Including under construction
United Kingdom	Zenobe Battery Storage	9.9%	235 MW	-	

Power Generation / Renewable Energy Projects(1/2)

Taiwan	Chang Bin/Fong Der/Star Buck Gas Thermal IPP	19.5%~22.7%	3,060 MW	Gas	Including under construction
	Formosa 1 Offshore Wind IPP	32.5%	128 MW	Offshore Wind	
	Formosa 2 Offshore Wind IPP	49.0%	376 MW	Offshore Wind	Under construction
Vietnam	Phu My Gas Thermal IPP	15.6%	715 MW	Gas	
Indonesia	Cirebon2 Coal Thermal IPP	10.0%	1,000 MW	Coal	
Thailand	Ratchaburi Gas Power Thermal IPP	15.0%	1,400 MW	Gas	

Overseas Power Generation and Renewable Energy Business: List of overseas power generation projects (2)



(As of June 30, 2023)

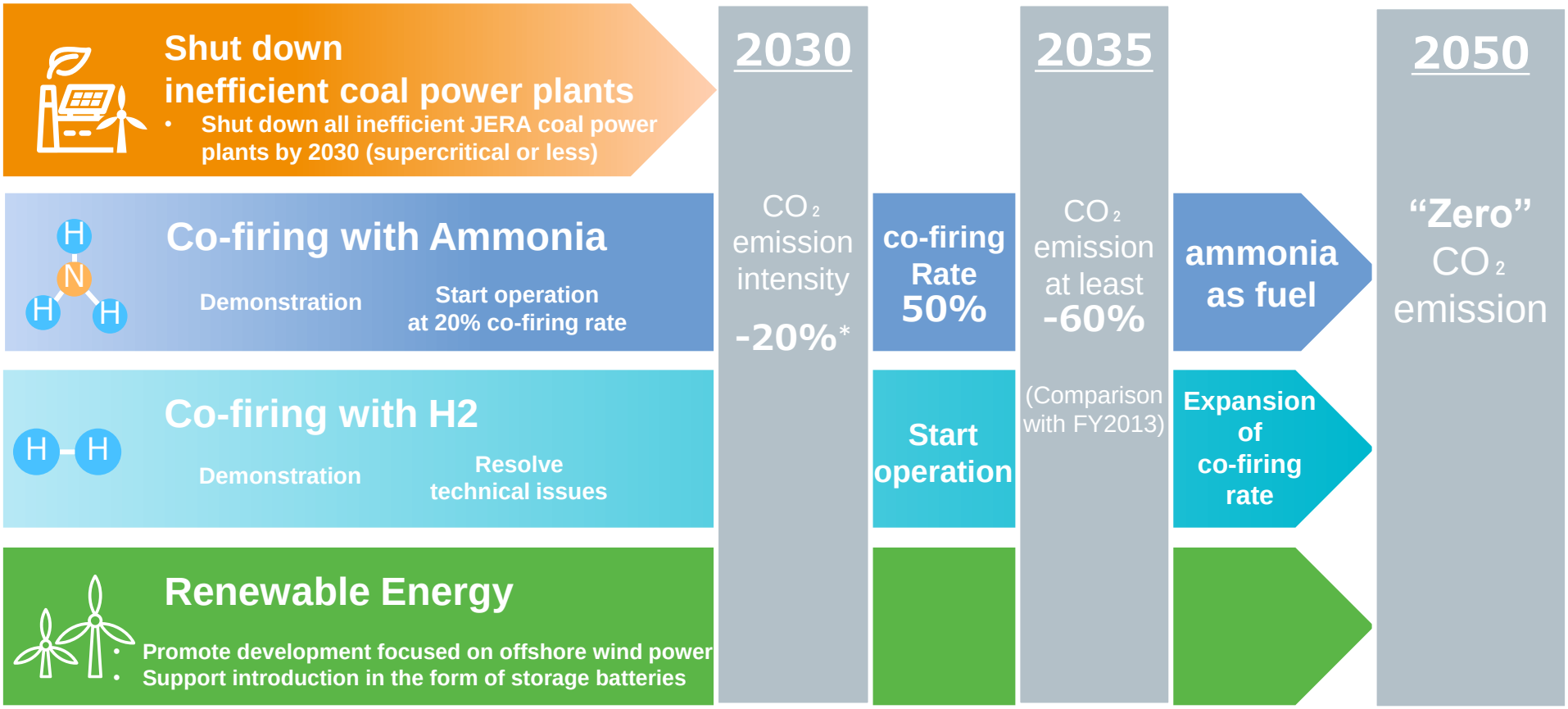
Power Generation / Renewable Energy Projects(2/2)

Country	Project Name	Investment ratio	Capacity	Fuel type	Notes
Thailand	Solar Power IPP	49.0%	31 MW	Solar	
	Wind Power IPP	5.0%	180 MW	Onshore Wind	
Bangladesh	Meghnaghat Gas Thermal IPP	49.0%	718 MW	Gas	Under construction
UAE	Umm Al Nar Gas Thermal IWPP	20.0%	1,550 MW	Gas	
Qatar	Ras Laffan B Gas Thermal IWPP	5.0%	1,025 MW	Gas	
	Ras Laffan C Gas Thermal IWPP	5.0%	2,730 MW	Gas	
	Mesaieed Gas Thermal IPP	10.0%	2,007 MW	Gas	
	Umm Al Houl Gas Thermal IWPP	10.0%	2,520 MW	Gas	
Oman	Sur Gas Thermal IPP	19.5%	2,000 MW	Gas	
Mexico	Valladolid Gas Thermal IPP	50.0%	525 MW	Gas	
United States	Tenaska Gas Thermal IPP	11.1%~17.5%	2,950 MW	Gas	
	Carroll County Gas Thermal IPP	20.0%	702 MW	Gas	
	Cricket Valley Gas Thermal IPP	38.0%	1,100 MW	Gas	
	Linden Gas Thermal IPP	50.0%	972 MW	Gas	
	Compass Gas Thermal IPP	50.0%	1,123 MW	Gas	
	Brady Thermal IPP	100.0%	1,633 MW	Oil/Gas	
	El Sauz Onshore Wind IPP	100.0%	302 MW	Onshore Wind	Under construction
United Kingdom	Gunfleet Sands Offshore Wind IPP	25.0%	173 MW	Offshore Wind	

Reference:
Progress of
JERA Zero CO_2 Emissions 2050

JERA Zero CO2 Emissions 2050: Roadmap for its Business in Japan

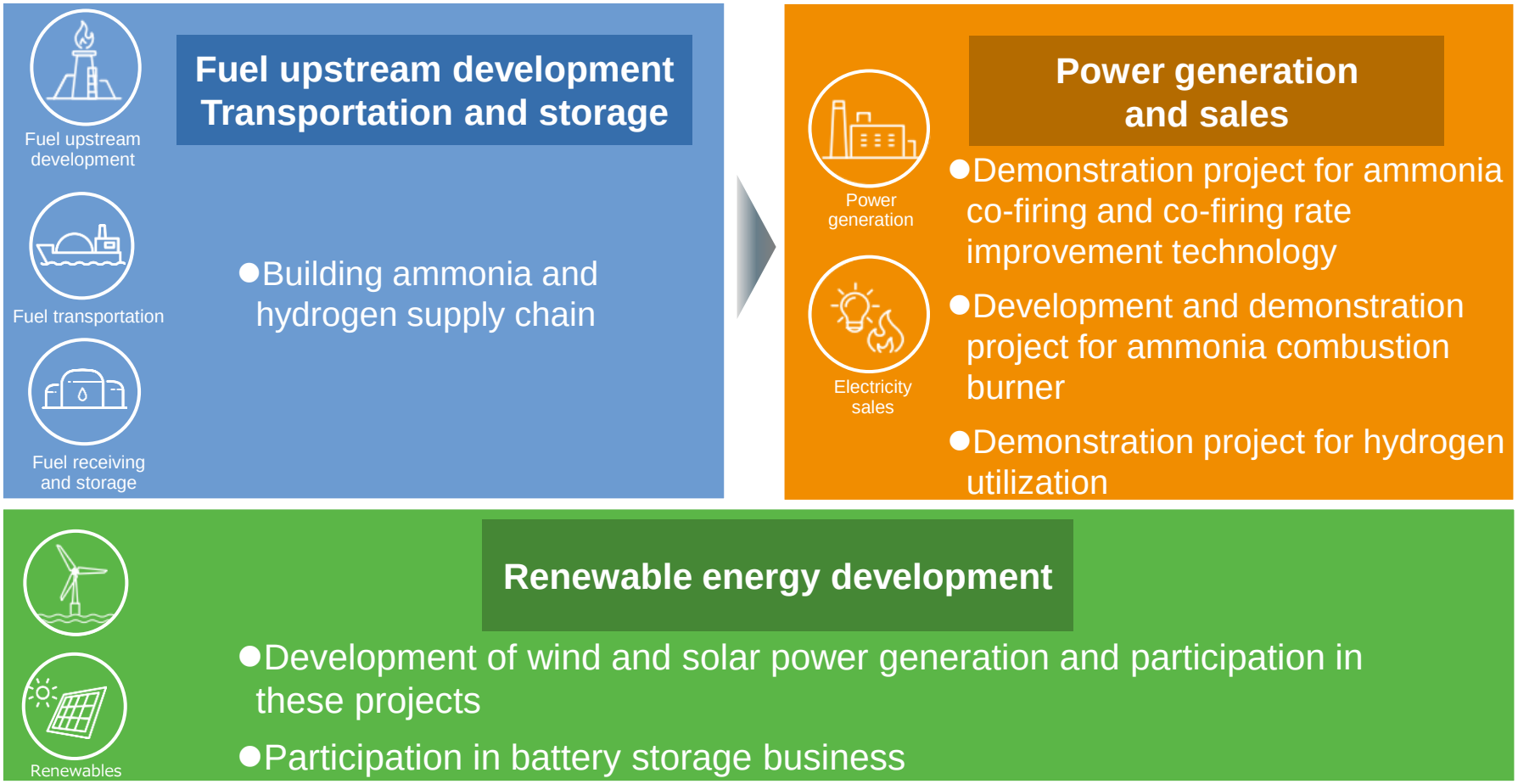
➢ JERA established “JERA Zero CO_2 Emissions 2050 Roadmap for its Business in Japan”, including four initiatives.



*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 Zero CO2 Emissions 2050:
Efforts to Achieve Zero CO2 Emissions in JERA's Value Chain

- JERA is participating in business throughout the value chains, from fuel upstream development, transportation, and storage and to the power generation and electricity sales. We are working with many countries and companies around the world to achieve zero emissions at each stage.



JERA Zero CO2 Emissions 2050: Efforts towards Zero CO2 Emissions (Ammonia and Hydrogen Supply Chain)

(Announced in the last one year)

Field		Business Partners	Contents	Date
Upstream Development /Production		ADNOC (UAE)	Consideration of cooperation in the fields of clean hydrogen and ammonia	2023/7
		PIF (Saudi Arabia)	Consideration of opportunities for the development including green hydrogen production	2023/7
		TAQA (UAE)	Consideration of project development in the area of decarbonization, including green hydrogen and ammonia production	2023/2
		CF Industries (United States)	Consideration of project development for blue ammonia production and sales & purchase of clean ammonia	2023/1
		Yara (Norway)		
		Chevron (United States)	Consideration of collaboration on multiple lower carbon opportunities in Asia Pacific region (Australia) and the United States	2022/11
Transportation		Nippon Yusen Mitsui O.S.K. Lines	Consideration of transporting fuel ammonia for the Hekinan Thermal Power Plant	2022/11
Power Supply / Utilization	Japan	Kyushu Electric Power Chugoku Electric Power Shikoku Electric Power Tohoku Electric Power Hokuriku Electric Power Hokkaido Electric Power	Consideration of cooperation in the adoption of hydrogen and ammonia as fuel for power generation	2022/11~ 2023/6
		Mitsui	Signed an Ammonia Sales and Purchase Agreement for its use in the demonstration project at the Hekinan Thermal Power Station	2023/6
	Europe	EnBW (Germany) VNG (Germany)	Consideration of the development of ammonia cracking technology for hydrogen production	2023/6
		Uniper (Germany)	Consideration of procurement and sale of LNG and clean ammonia from the United States	2022/9
	Asia	PPT (Thailand)	Consideration of collaboration on initiatives for expanding the supply chain and usage of hydrogen and ammonia towards decarbonization in Thailand	2023/5
		Aboitiz Power (Philippines)	Consideration of cooperation in studies to decarbonize business and co-firing using ammonia at a coal-fired power plant	2023/2
		EGCO (Thailand)	Consideration of cooperation in co-firing using ammonia towards decarbonization	2023/1
		IHI Asia Pacific (Singapore)	Consideration of collaboration on the expansion of ammonia usage in Malaysia	2022/10
		Jurong port, MHI-AP (Singapore)	Consideration of establishing a 100% ammonia direct combustion power plant in Singapore	2022/8
R&D (NEDO's Project)		NIPPON SHOKUBAI Chiyoda Corporation	Development of large-scale ammonia cracking catalyst and technology	2023/6
		ENEOS	Construction of hydrogen quality standard system for industrial utilization	2023/6

JERA Zero CO2 Emissions 2050:
Efforts towards Zero CO2 Emission(Power Generation)

Initiatives for Ammonia Co-firing

➢ The following projects have been adopted by NEDO and are currently being implemented.

Project	Development of technologies for carbon recycling and next-generation thermal power generation / Research, development and demonstration of technologies for ammonia co-firing thermal power generation	Green Innovation Fund Program / Establishment of Fuel Ammonia Supply Chains project / Demonstration project to develop technology to increase the ammonia co-firing rate at coal-fired boilers
Overview	• At Hekinan Thermal Power Station Unit 4 (power output: 1 million kW), JERA will aim to achieve **20% co-firing of ammonia by FY2023.** • In addition, small-scale tests using burners of different materials was conducted at Unit 5 of Hekinan Thermal Power Station (power output: 1 million kW).  Hekinan Thermal Power Station	• Ammonia high co-firing burners will be implemented in Hekinan Thermal Power Station Units 4 or 5, with the aim of **increasing the ammonia co-firing rate to 50% or more**. • JERA will plan to develop a burner capable of 50% or more ammonia co-firing by FY2024, and to start 50% or more ammonia co-firing in actual equipment by FY2028. • JERA will plan to develop an ammonia-fired burner suitable for coal boilers and to demonstrate its operation with actual equipment. • We have the plan to develop the burner that can exclusively co-fire ammonia by FY2024, and verify that two units of different boiler types can **co-fire more than 50% ammonia** by FY2028.

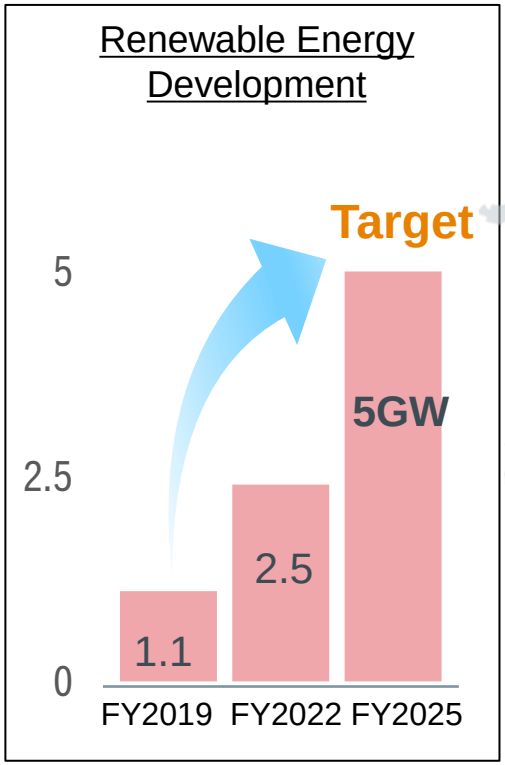
Initiatives for Hydrogen Co-firing

➢ Received notice of acceptance of “Demonstration project related to hydrogen utilization at an LNG thermal power plant in Japan” under Green Innovation Fund program lead by NEDO, and conducted evaluation of operational and environmental characteristics for hydrogen utilization at existing LNG thermal power plants in Japan from FY2021 to FY2028.

➢ Completed modification of the gas turbine at Linden Gas Thermal Power Station Unit 6 in the United States to enable the use of hydrogen, making possible the co-firing of natural gas with hydrogen-containing off-gas generated at the adjacent oil refinery.

JERA Zero CO2 Emissions 2050: Efforts towards Zero CO2 Emission(Renewable Energy Development)

➢ JERA has set a target of 5GW renewable energy development by FY2025, and is widely promoting wind power, solar power, battery storage, etc.



Plans to acquire shares of a leading Japanese renewable energy power generation company (Green Power Investment *3)

Development of offshore wind power, Japan (Akita, Yamagata, Aomori, and Hokkaido Pref)

Development of solar power, Japan (West HD) *1

Collaboration on a large-capacity Sweep Energy Storage System from used EV Batteries (Toyota)

Demonstration testing of Film-type Perovskite Solar Cells, Japan (SEKISUI CHEMICAL)

Participation in Gunfleet Sands offshore wind power, UK

Participation in battery storage, UK (Zenobē)

Acquisition of a major European offshore wind company (Parkwind *2)

Investment in ReNew Power, India (Wind, Solar)

Investment in Gia Lai Electricity, Vietnam (Wind, Solar)

Participation in Formosa offshore wind power, Taiwan

Participation in El Sauz onshore wind power, US

Collaboration on battery storage, US (Zenobē)

:Wind :Solar :Battery

*1 In November 2022, the first solar power project has started its operation.

*2 Completed acquisition of 100% of the shares in July 2023. Parkwind's equity generation capacity in operation and under construction is 0.6GW, equity generation capacity under development is 4.5GW.

*3 Stock purchase agreement has been executed, and closing of the transaction is expected later 2023. JERA's equity generation capacity is approximately 0.1GW.

JERA Zero CO2 Emissions 2050:
Efforts towards Zero CO2 Emission(Renewable Energy Development)

Renewable Energy Development Status

JERA and Other Major Renewable Energy Operators in Asia		Equity Generation Capacity
JERA	(Japan)	3.2 GW*
adani	(India)	8.0 GW
ReNew	(India)	7.7 GW
KEPCO	(Korea)	5.6 GW
TENAGA NASIONAL	(Malaysia)	3.8 GW
TATA TATA POWER	(India)	3.6 GW

* JERA's generation capacity is aggregated development basis including capacity of Parkwind and GPI. (as of June 2023)
Source: Compiled by JERA based on each company's website (as of May 2023)

Future Initiatives

Consolidate renewable energy businesses under a specialized organization to create a global structure