

FY2022 1st Quarter (April 1-June 30) Financial Statements

JERA CO., Inc.

- **Consolidated Statement of Income**
- **Consolidated Balance Sheet**

Consolidated Statement of Income
(From April 1, 2022 to June 30, 2022)

(Unit: Millions of yen)

Item	Amount
Net sales	1,574,596
Cost of sales	1,516,146
Gross profit (loss)	58,449
Selling, general and administrative expenses	28,983
Operating profit (loss)	29,465
Non-operating income	
Share of profit of entities accounted for using equity method	10,866
Other	5,162
Total non-operating income	16,029
Non-operating expenses	
Foreign exchange losses	34,157
Other	8,998
Total non-operating expenses	43,156
Ordinary profit (loss)	2,338
Profit before income taxes	2,338
Income taxes-current	9,504
Income taxes-deferred	(24,775)
Total income taxes	(15,271)
Profit (loss)	17,609
Profit (loss) attributable to non-controlling interests	29,337
Profit (loss) attributable to owners of parent	(11,728)

Consolidated Balance Sheet
(As of June 30, 2022)

(Unit: Millions of yen)

Assets		Liabilities and Net assets	
Item	Amount	Item	Amount
Assets		Liabilities	
Current assets		Current liabilities	
Cash and deposits	461,133	Notes and accounts payable - trade	620,447
Notes and accounts receivable - trade, and contract assets	706,076	Short-term borrowings	447,889
Inventories	584,897	Derivatives liabilities	3,099,581
Derivatives	3,517,377	Other	837,698
Other	586,537	Total current liabilities	5,005,616
Total current assets	5,856,022	Non-current liabilities	
Non-currents assets		Bond payable	293,092
Property, plant and equipment		Long-term borrowings	1,845,125
Buildings and structures	364,698	Retirement benefit liability	45,852
Machinery and equipments and vehicles	809,148	Derivatives liabilities	1,086,239
Land	331,653	Other	100,996
Construction in progress	719,290	Total non-current liabilities	3,371,306
Other	10,088	Total liabilities	8,376,923
Total property, plant and equipment	2,234,878	Net assets	
Intangible assets		Shareholders' equity	
Other	37,077	Share capital	100,000
Total intangible assets	37,077	Capital surplus	1,179,558
Investments and other assets		Retained earnings	313,777
Investment securities	1,121,404	Total shareholders' equity	1,593,336
Derivatives	1,096,093	Accumulated other comprehensive income	
Other	148,310	Valuation difference on available-for-sale-securities	4,731
Total investments and other assets	2,365,807	Deferred gains or losses on hedges	126,789
Total non-current assets	4,637,764	Foreign currency translation adjustment	177,327
		Remeasurements of defined benefit plans	(117)
		Total accumulated other comprehensive income	308,730
		Non-controlling interests	214,796
		Total net assets	2,116,863
Total assets	10,493,787	Total liabilities and net assets	10,493,787



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FY2022 First Quarter Consolidated Financial Results

(Note) 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.

JERA Co., Inc.

July 27, 2022

Outline of Financial Results

Consolidated Statement of Income

(Unit: Billion Yen)

	2022/1Q(A)	2021/1Q(B)	Change(A-B)	Rate of Change(%)
Operating revenue (Net sales)	1,574.5	721.2	853.3	118.3
Operating income	29.4	85.7	-56.3	-65.6
Ordinary income	2.3	91.6	-89.3	-97.4
Quarterly net income / loss attributable to owners of parent	-11.7	64.0	-75.8	—
<Reference>Income excluding time lag	81.7	86.9	-5.1	-5.9

Consolidated Balance Sheet

(Unit: Billion Yen)

	As of Jun 30,2022(A)	As of Mar 31,2022(B)	Change(A-B)	Rate of Change(%)
Assets	10,493.7	8,722.1	1,771.5	20.3
Liabilities	8,376.9	6,747.8	1,629.0	24.1
Net assets	2,116.8	1,974.3	142.4	7.2
Interest-bearing debt	3,078.1	2,646.5	431.5	16.3
Net DER (%)	1.38	1.18	0.20	

Key Points of Financial Results

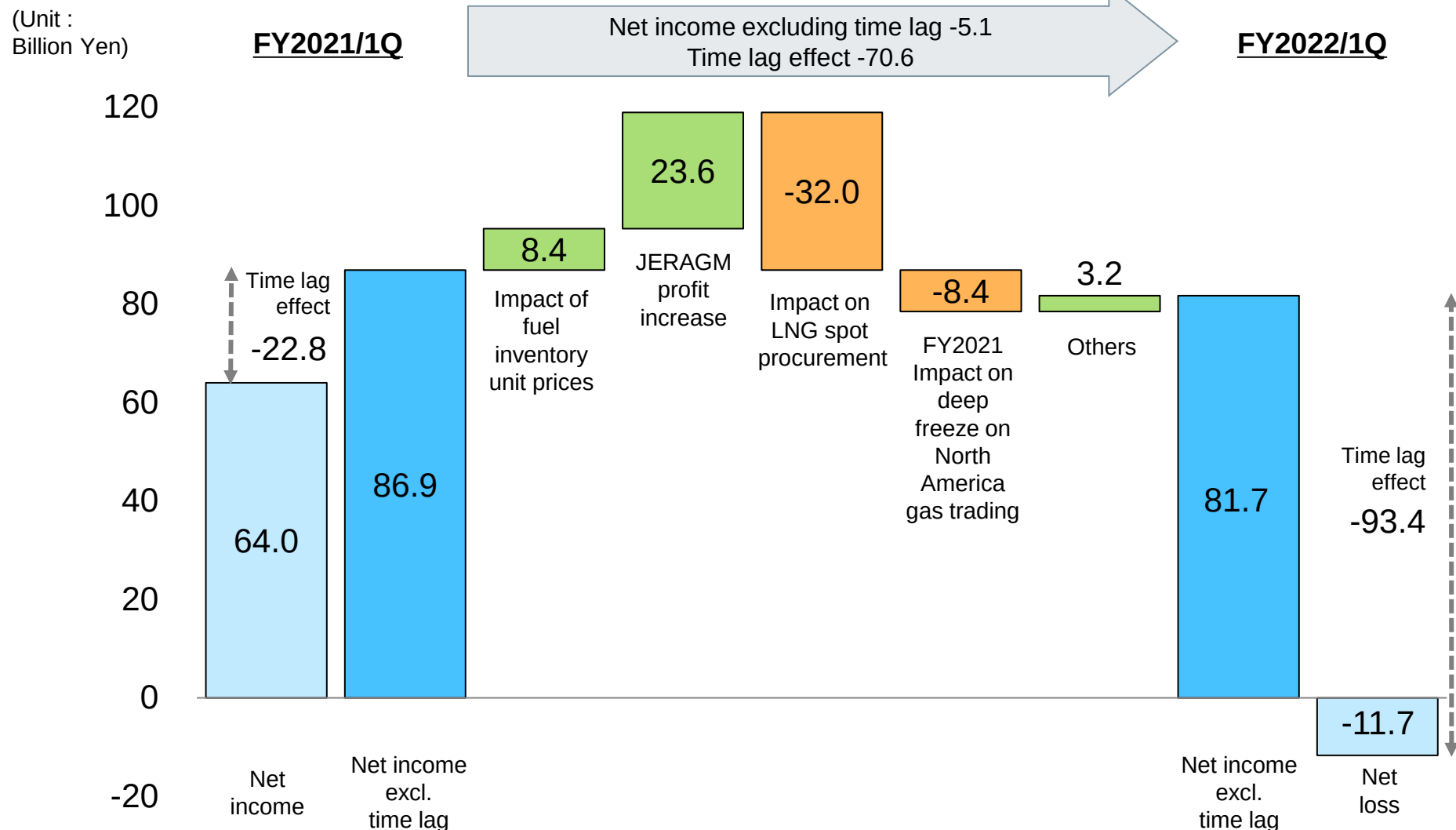
【Operating Revenue】

- Operating revenue **increased by 853.3 billion yen (up 118.3%) to 1,574.5 billion yen** mainly due to an increase in electrical energy sold and an increase in sales of JERA Global Markets Pte. Ltd. (JERAGM) .

【Net income】

- Net income / loss **decreased by 75.8 billion yen from the same period last year 64.0 billion yen and fell into net loss of 11.7 billion yen.**
 - The losses from time lag effect significantly increased.
(-70.6 billion yen [-22.8 billion yen to -93.4 billion yen])
 - Net income excluding time lag decreased.
(-5.1 billion yen [86.9 billion yen to 81.7 billion yen])
- Net income excluding the effect of time lag decreased mainly due to the impact on LNG spot procurement, despite JERAGM profit increase from fuel volume adjustment.

Analysis of Consolidated net income / loss



Note: Figures are after-tax amounts.

Consolidated Statement of Income

(Unit: Billion Yen)

	2022/1Q(A)	2021/1Q(B)	Change(A-B)	Main Factors of Changes
Operating revenue (Net sales)	1,574.5	721.2	853.3	• Increase of electrical energy sold • Increase in sales of JERAGM
Operating expenses	1,545.1	635.4	909.6	• Increase of fuel costs • Increase in costs of JERAGM
Operating income	29.4	85.7	-56.3	
Non-operating income	16.0	8.1	7.8	
Non-operating expenses	43.1	2.3	40.8	• Exchange loss +34.1
Ordinary income	2.3	91.6	-89.3	• Increase of time lag loss -98.0(-31.7 → -129.8) • Increase of income excluding time lag +8.7(123.3 → 132.1)
Income taxes, etc.	-15.2	13.2	-28.4	
Quarterly net income attributable to non-controlling Interests	29.3	14.3	14.9	
Quarterly net income / loss attributable to owners of parent	-11.7	64.0	-75.8	

Key Elements

	2022/1Q(A)	2021/1Q(B)	Change(A-B)
Electrical Energy Sold(TWh)	57.9	53.7	4.2
Crude Oil Prices(JCC) (dollar/barrel)	110.8	67.0	43.8
Foreign Exchange Rate (yen/dollar)	129.6	109.5	20.1

Note: Crude Oil Prices(JCC) for FY2022/1Q is tentative.

Consolidated Balance Sheet

(Unit: Billion Yen)

	As of Jun 30,2022(A)	As of Mar 31,2022(B)	Change(A-B)	Main Factors of Changes
Cash and deposits	461.1	514.3	-53.1	
Property, plant and equipment	2,234.8	2,173.8	61.0	• Progress in replacing domestic thermal power plants
Investment securities	1,121.4	1,026.5	94.8	
Others	6,676.3	5,007.4	1,668.9	• Increase in derivative assets (JERAGM, etc.) +1,400.2
Assets	10,493.7	8,722.1	1,771.5	
Interest-bearing debt	3,078.1	2,646.5	431.5	• Borrowings +93.4 (Subsidiaries -0.3) • Commercial Paper +195.0 • Corporate Bonds +143.0
Others	5,298.8	4,101.2	1,197.5	• Increase in derivative obligations (JERAGM, etc.) +1,180.4
Liabilities	8,376.9	6,747.8	1,629.0	
Shareholders' equity	1,593.3	1,688.1	-94.8	• Dividends paid -83.1 • Quarterly net income / loss -11.7
Others	523.5	286.2	237.3	• Foreign currency translation adjustments +96.0
Net Assets	2,116.8	1,974.3	142.4	

Segment Information

(Unit: Billion Yen)

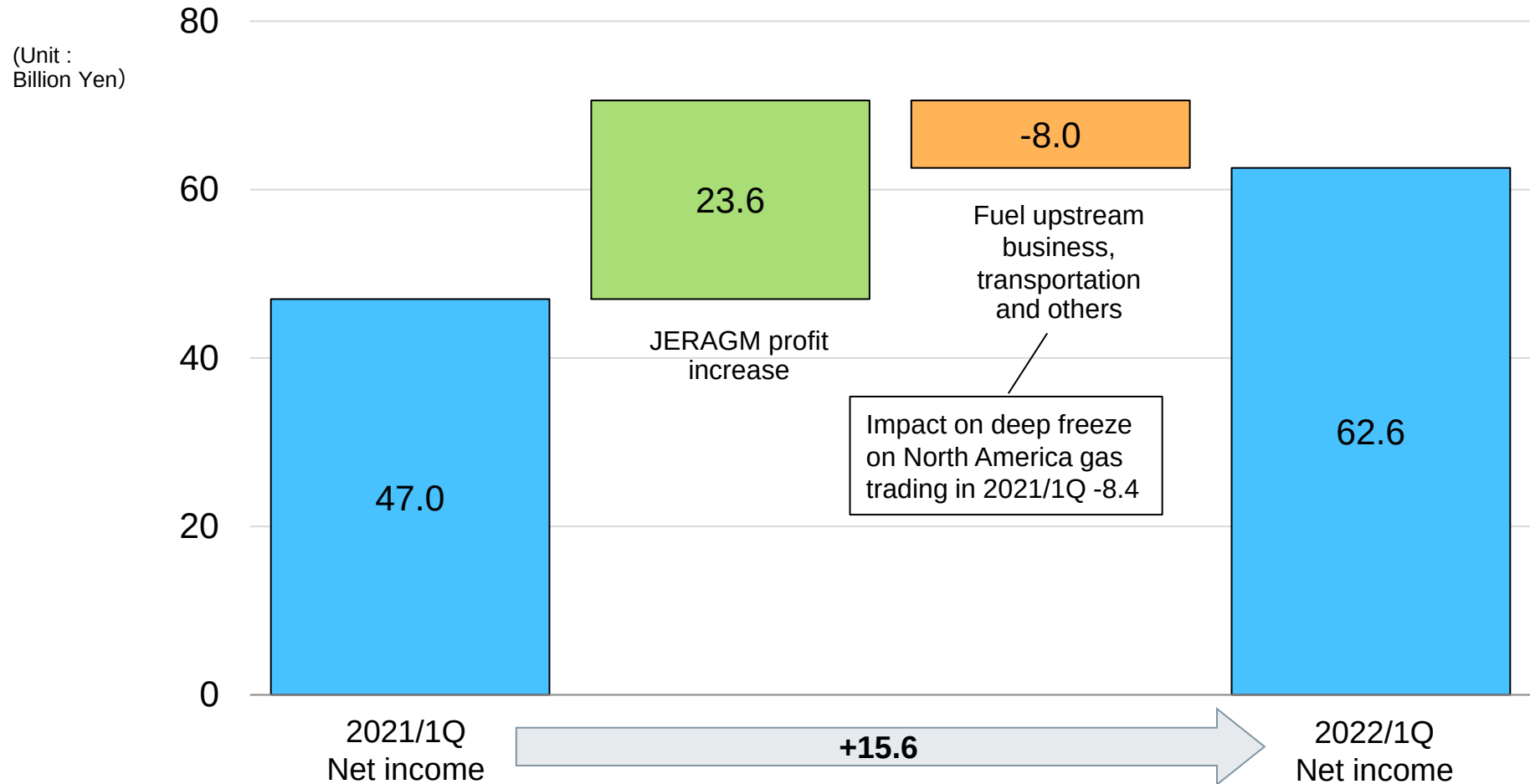
	2022/1Q (A)		2021/1Q (B)		Change (A-B)		Main Factors of Changes in Net Income
	Operating Revenue	Net Income / Loss	Operating Revenue	Net Income / Loss	Operating Revenue	Net Income / Loss	
Fuel Related *1	1,033.0	62.6	430.1	47.0	602.8	15.6	•JERAGM profit increase +23.6 •(2021/1Q) Impact on deep freeze on North America gas trading -8.4
Overseas Power Generation	0.9	1.2	0.8	1.3	0.1	-0.0	
Domestic Thermal Power Generation and Gas Supply	1,047.8	-59.7 33.7*2	521.2	27.8 50.6*2	526.5	-87.5 -16.9*2	•Impact on LNG spot procurement -32.0 •Impact of fuel inventory unit prices +8.4
Adjustments	-507.2	-15.9	-230.9	-12.0	-276.2	-3.8	
Consolidated	1,574.5	-11.7 81.7*2	721.2	64.0 86.9*2	853.3	-75.8 -5.1*2	

*1 Fuel upstream, transportation and trading

*2 Excluding the effect of time lag

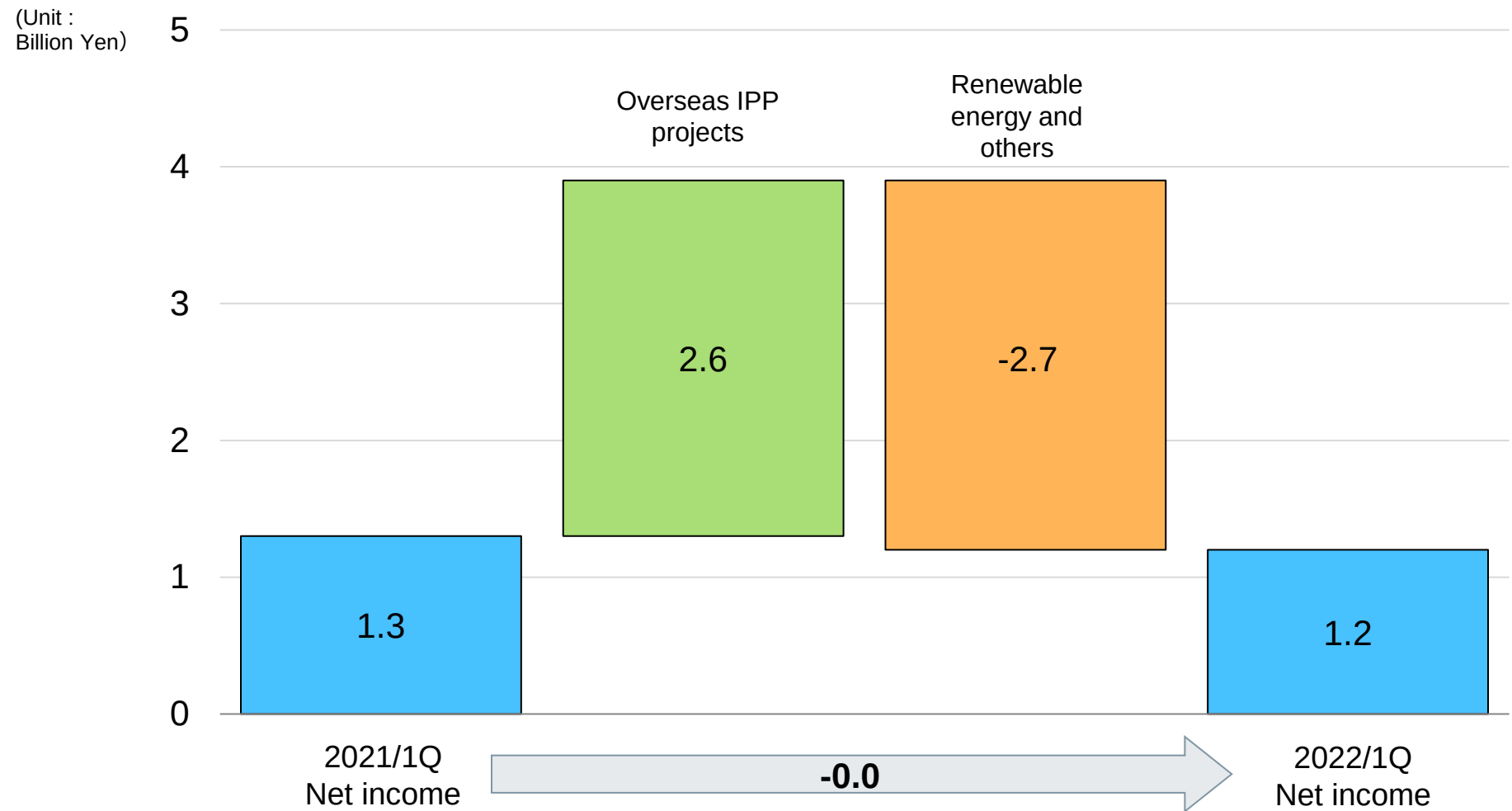
Analysis of Fuel related business

- Net income increased mainly due to JERAGM profit increase from fuel volume adjustment.



Note: Figures are after-tax amounts.

Analysis of Overseas power generation business

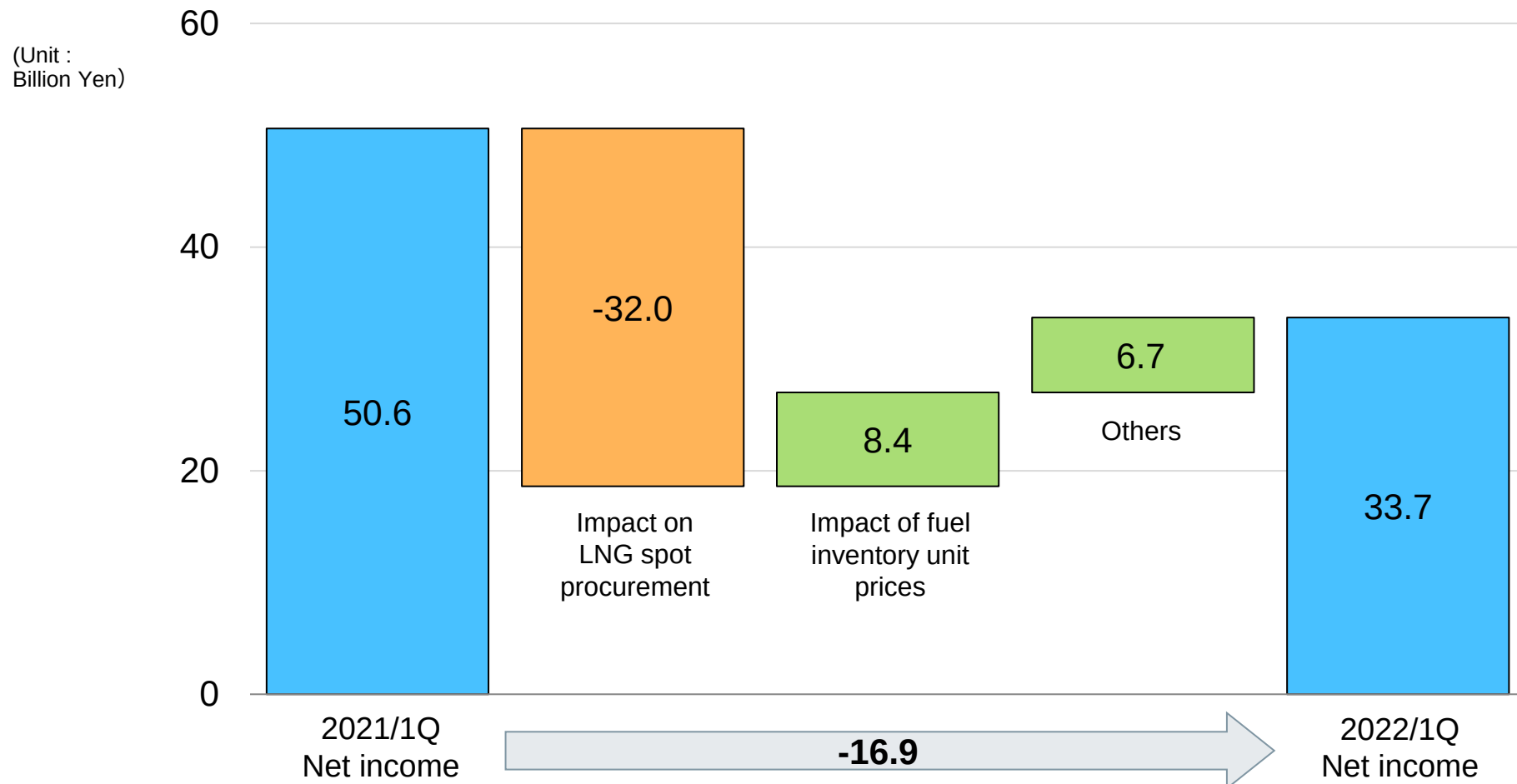


Note: Figures are after-tax amounts.

Analysis of Domestic thermal power generation and gas supply business

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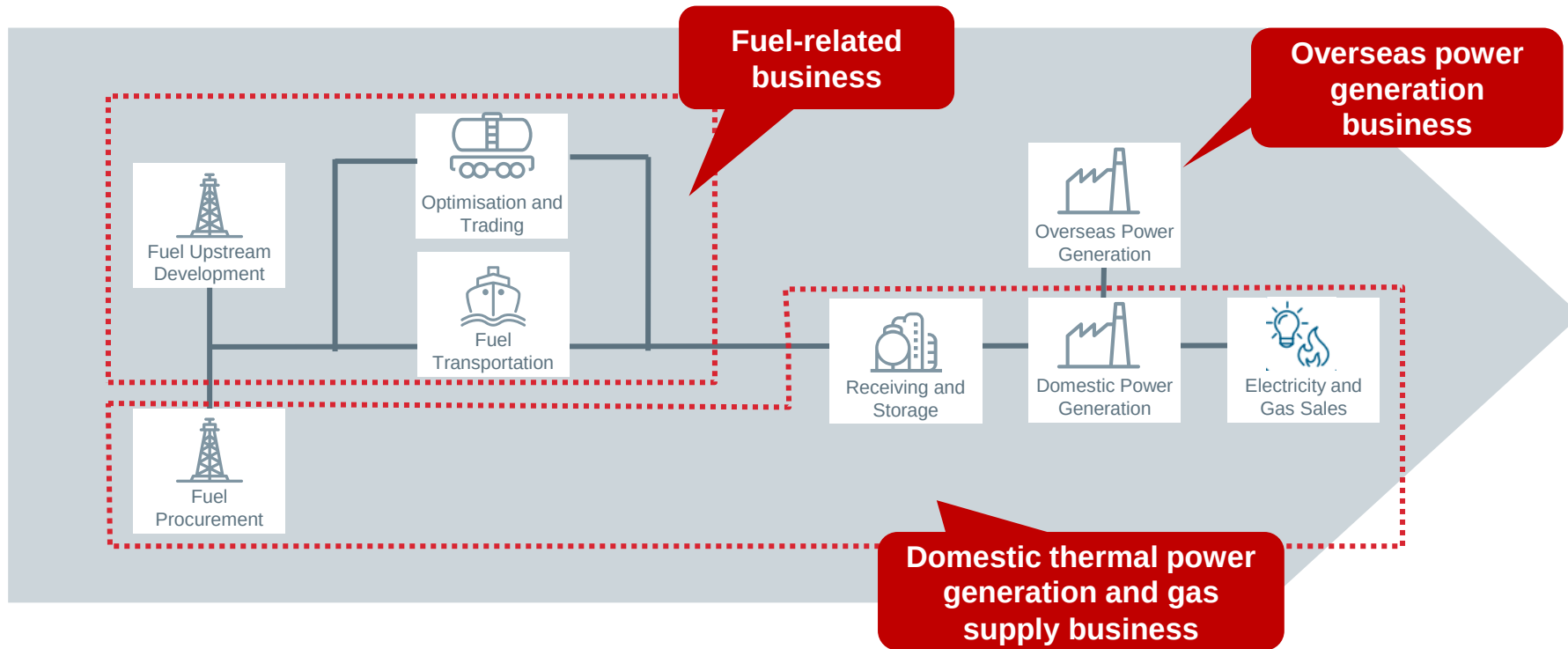
- Net income decreased mainly due to the impact on LNG spot procurement for a stable electricity supply .



Note: Figures are after-tax amounts excluding 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-related business" for investment in fuel upstream, transportation and trading business, "Overseas power generation business" for investment in overseas power generation business, and "Domestic thermal power generation and gas supply business" for sales of electricity and gas in Japan.



Forecast for FY2022

- JERA has not yet established consolidated financial results forecasts for the FY2022 as the outlook for resource prices, FX rate and electric power sales is uncertain under the influence of the situation in Ukraine, etc. and business performance cannot be reasonably calculated at present.
- We will announce our financial results forecasts promptly when we are able to provide these disclosures.

Appendix: Financial Results

Trends in crude oil price and exchange rates

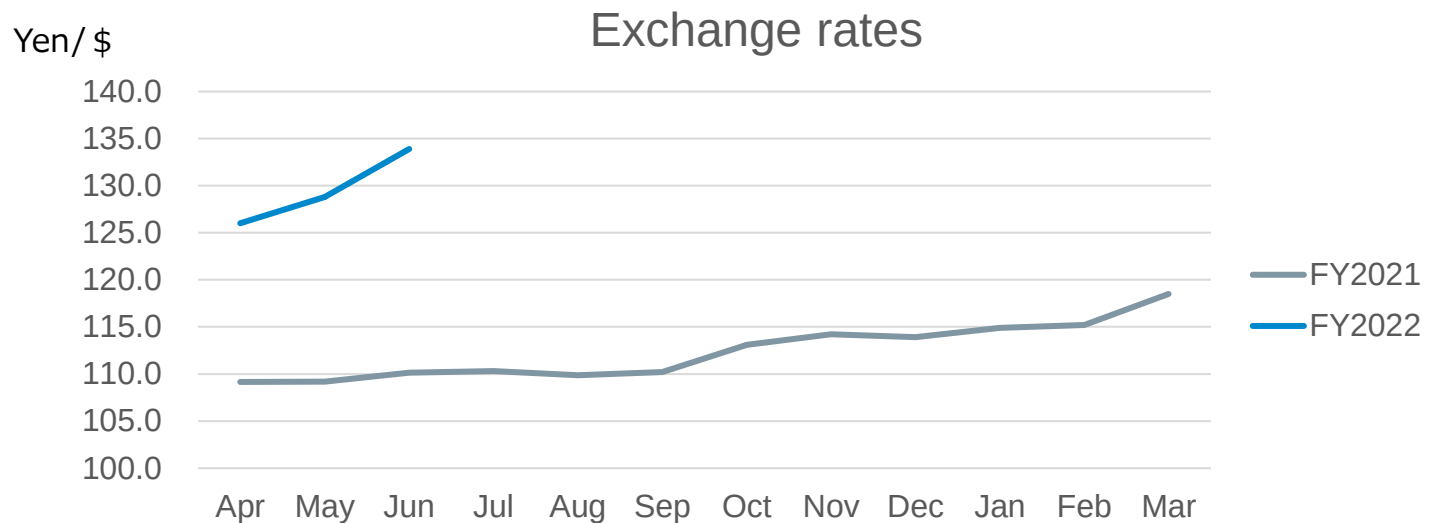
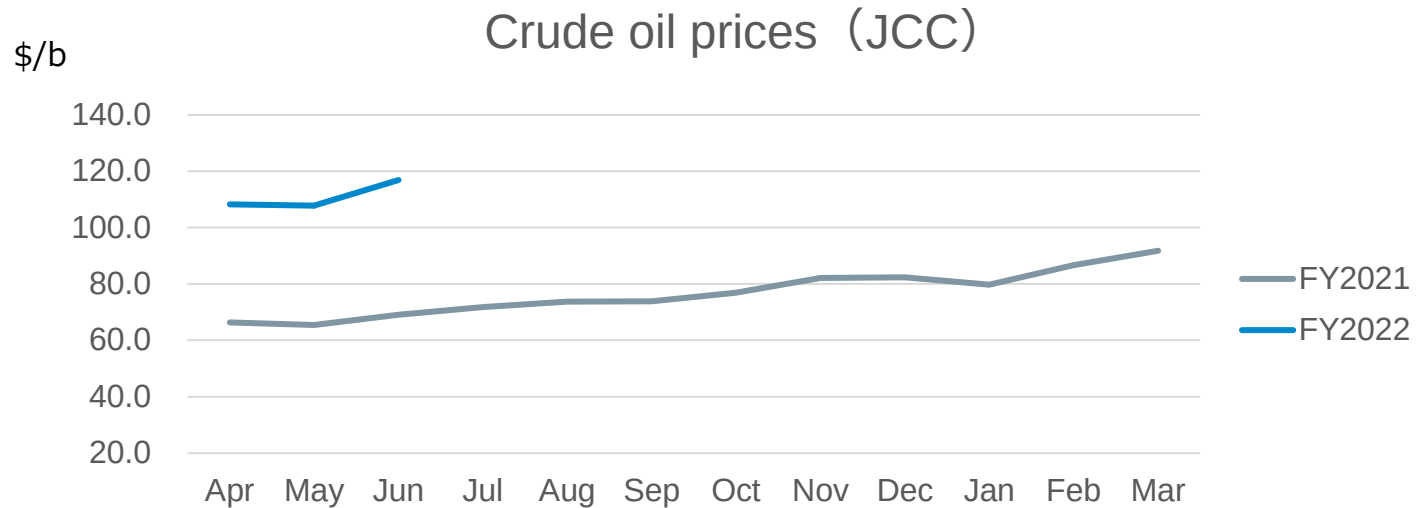
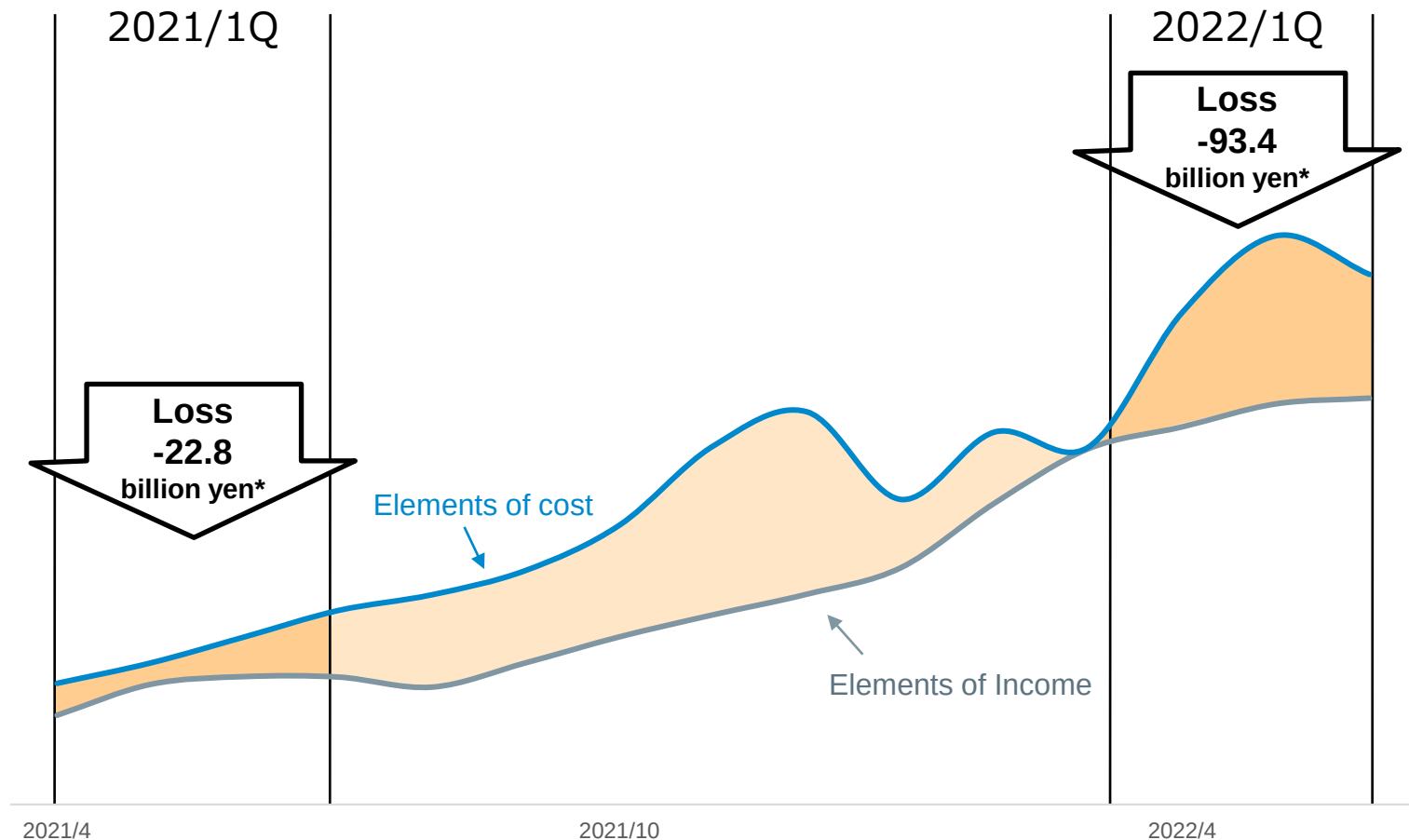


Image of Time Lag (2021/1Q – 2022/1Q)

- 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.

Electrical Energy Sold and Electrical Power Generated

【Electrical Energy Sold(TWh)】

	Apr to Jun	Jul to Sep	Oct to Dec	Jan to Mar	Total
FY2022	57.9				57.9
FY2021	53.7	64.6	64.9	72.3	255.5

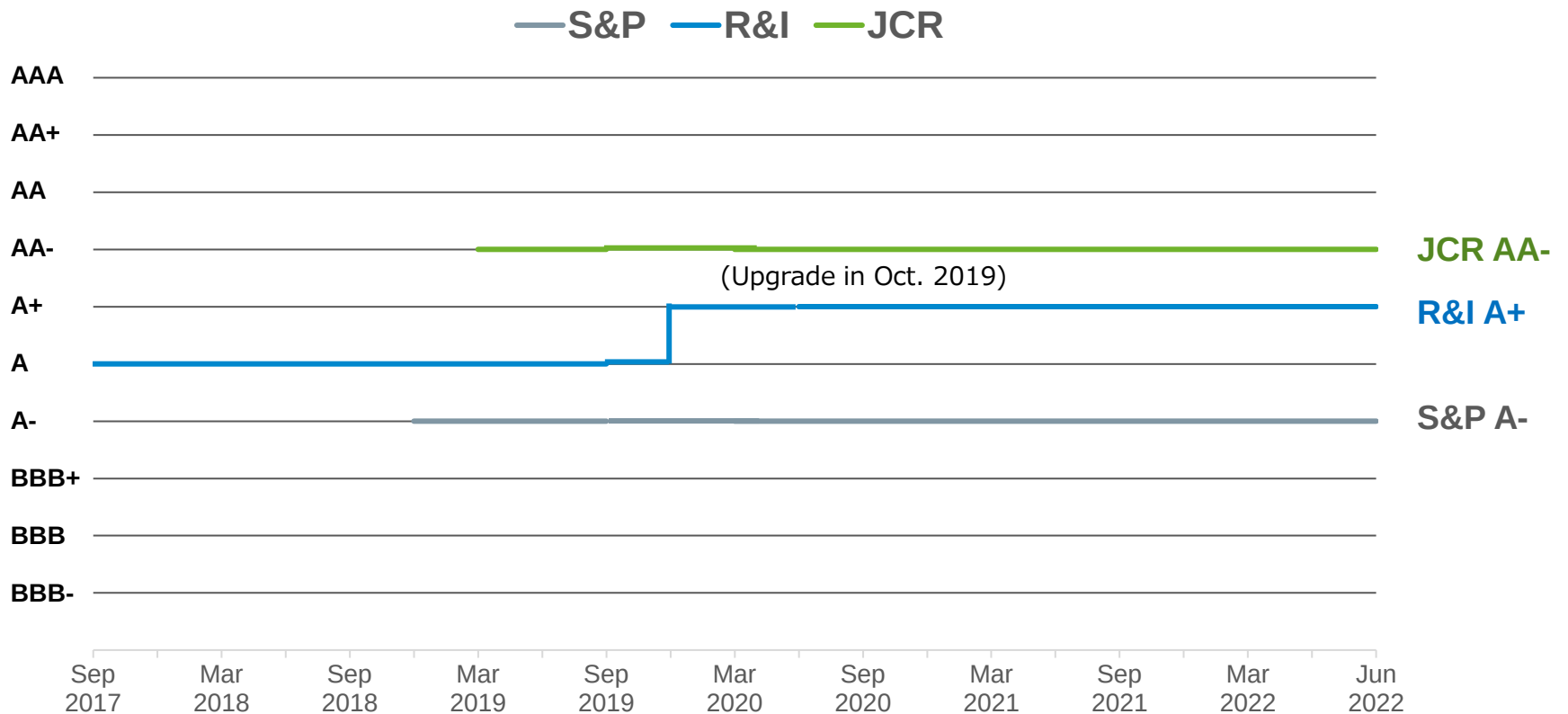
【Electrical Power Generated(TWh)】

		Apr to Jun	Jul to Sep	Oct to Dec	Jan to Mar	Total
FY2022		52.8				52.8
	LNG	41.7 (79%)				41.7 (79%)
	Coal	11.2 (21%)				11.2 (21%)
	Others	0 (0%)				0 (0%)
FY2021		53.4	61.7	62.3	69.9	247.3
	LNG	41.2 (77%)	46.8 (76%)	48.4 (78%)	55.8 (80%)	192.3 (78%)
	Coal	12.2 (23%)	14.9 (24%)	13.8 (22%)	14.1 (20%)	55.0 (22%)
	Others	0 (0%)	0 (0%)	0 (0%)	0% (0%)	0 (0%)

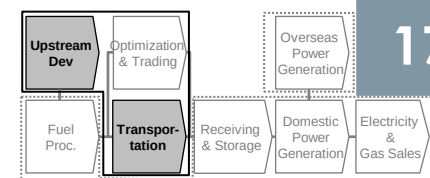
*The total may not match due to rounding.

Credit Ratings

【 Issuer Credit ratings history 】



Reference:
**Overview and topics of
each segment**



[Fuel Upstream / Fuel Transportation Business]

- By leveraging the world's largest LNG transaction volume (FY2021: Approximately 37 million tons*) and participating in LNG upstream projects, we acquire Equity LNG and information that contributes to procurement and trading. Additionally, our ownership of upstream interests and fuel carriers contributes to our highly consistent, flexible, and competitive fuel supply.

*JERA Group as a whole

Upstream Project

Project Name	Address	LNG production / liquefaction capability	Our company Investment ratio *1
Darwin LNG Project	Australia	Approx. 3.7 million t/year	6.132%
Gorgon LNG Project	Australia	Approx. 15.6 million t/year	0.417%
Ichthys LNG Project	Australia	Approx. 8.9 million t/year	0.735%
Wheatstone LNG Project	Australia	Approx. 8.9 million t/year	Gas field: 10%, LNG plant: 8%
Freeport LNG Project(Train1)	United States	Approx. 5.15 million t/year	25%
Freeport LNG Development, L.P.*2	United States	Approx. 15.45 million t/year*3 for all three lines	25.7%

*1 The ratio of Wheatstone LNG Project represents the ratio of shares held through PE Wheatstone, in which we holds an equity stake

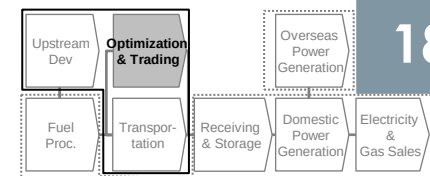
*2 Freeport LNG Project Management Company

*3 Including 5.15 million t/year from Train 1

- Additionally, we invested in the following project.
- The project is brownfield projects and development risks are limited. We will strive to secure and stable supply competitive LNG by leveraging full use of the knowledge and expertise we has accumulated through our LNG value chain business.

Project Name	Address	LNG production / liquefaction capability	Our company Investment ratio
Barossa gas field Project	Australia	LNG production and liquefaction capacity is the same scale as Darwin LNG Project.	12.5%

Fuel-related Business: Trading Business

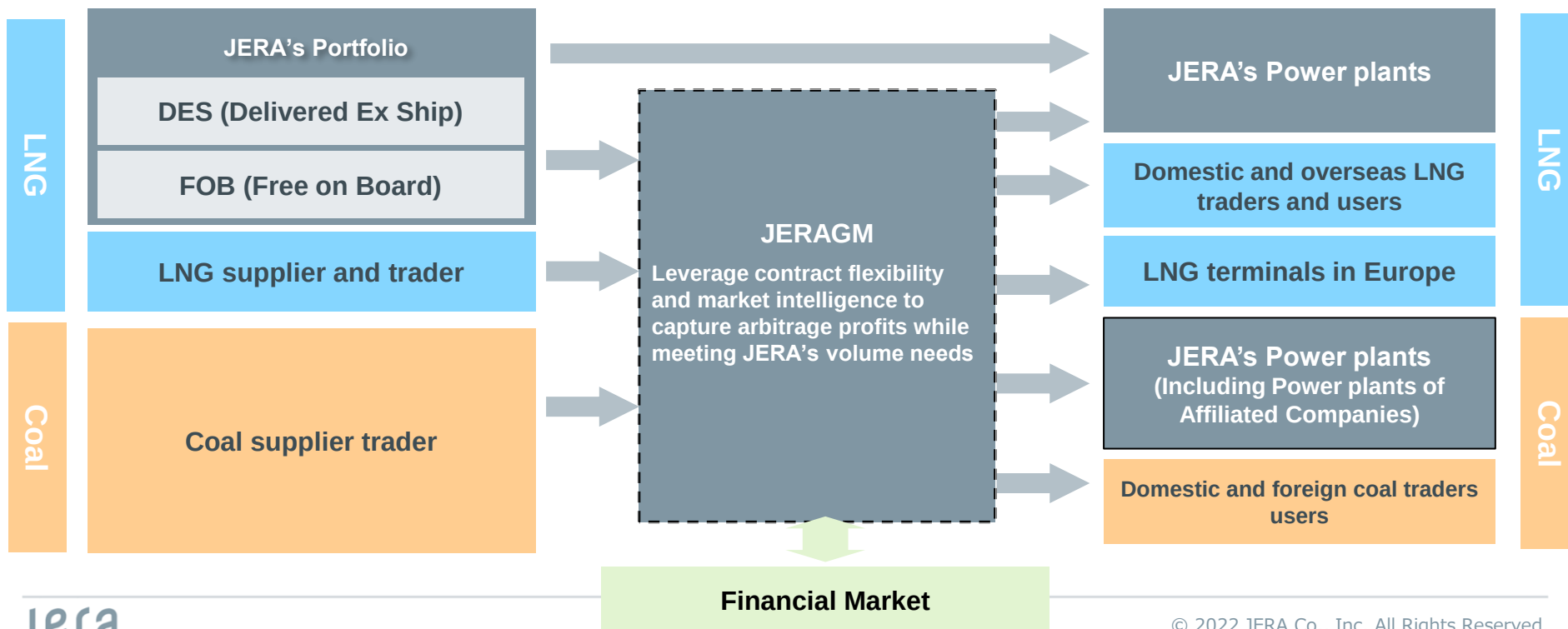


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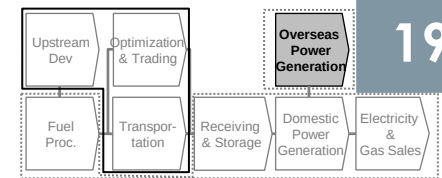
- In addition to the Singapore headquarters, JERAGM has offices in the United Kingdom, the Netherlands, the United States, and Japan, and approximately 300 employees engage in asset-backed trading.
- Utilizing a global trading network, JERAGM meets the world's largest demand for LNG and coal in JERA's 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 and by expanding the scale of transactions.
(FY2022 1Q : Net income 52.6 billion yen)
- JERAGM trades within the limited volume under the governance of the Board of Directors elected by shareholders.

Procurement contract

Sales contract



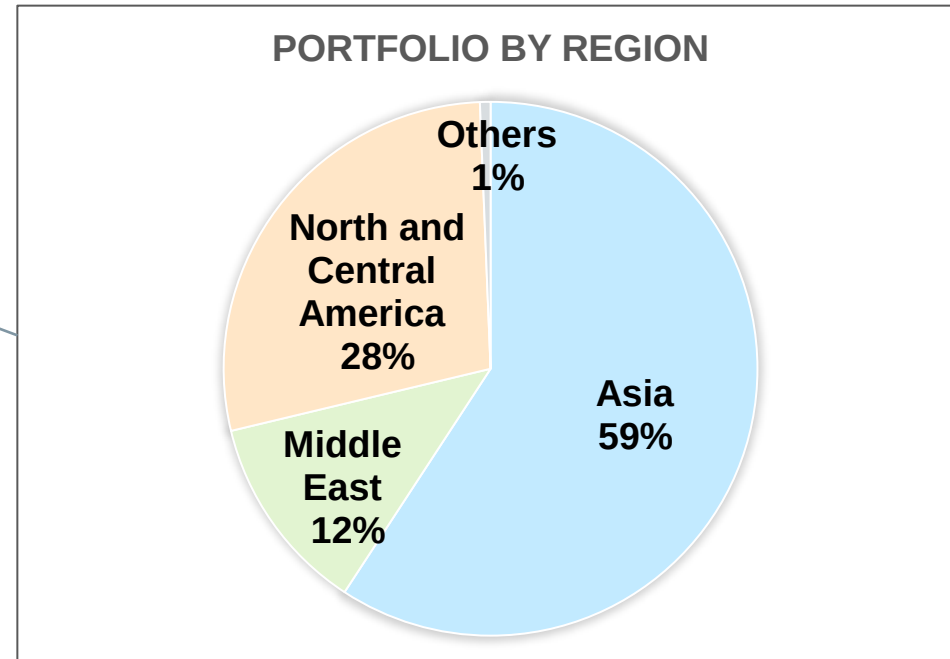
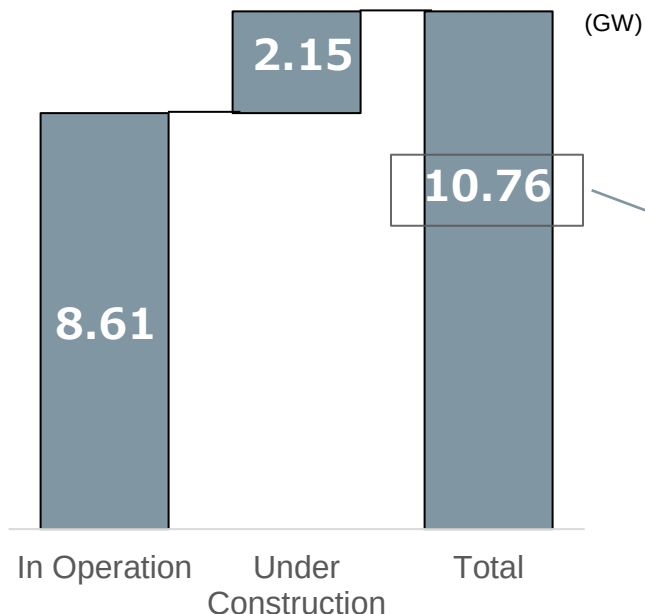
Overseas Power Generation Business: Portfolio of Overseas Power Generation Business



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- JERA is expanding its businesses across the world through the experience gained from existing projects around the world. Total capacity of power generation in overseas projects is 10.76 GW (including under construction).
- JERA plans to sell shares in Falcon Gas Thermal Power Co. in Mexico. JERA will change the portfolio through the sale and reinvestment of assets, aiming to achieve an optimal asset structure in line with changes in the business environment and expand earnings.
- In April 2022, JERA concluded a MOU with Summit Power International Limited, the largest independent power producer in Bangladesh, to collaborate on the development of a decarbonization roadmap for Summit Power and to explore other decarbonization related opportunities. Going forward, the two companies will explore projects that create opportunities to utilize hydrogen and ammonia in ways that contribute to achieving targets of the Paris Agreement and that support the introduction of renewable energy such as storage batteries.

< Power generation capacity (As of June 30, 2022) >

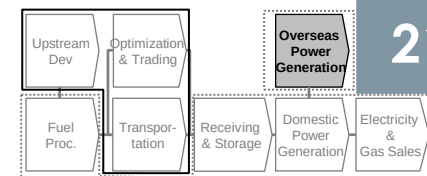


(As of June 30, 2022)

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/Gas	
Philippines	Aboitiz Power Corporation	27%	4,573 MW	Coal/Oil/Renewable	Including under construction
Thailand	EGCO Corporation	12.3%	5,959 MW	Coal/Gas/Renewable	Including under construction
India	ReNew Company	6.7%	12,405 MW	Solar Power/Wind Power/Hydro power	Including under construction
Bangladesh	Summit Power IPP	22.0%	2,418 MW	Gas	Including under construction
United Kingdom	Zenobe Battery Storage	9.9%	73 MW	-	
IPP Projects (1/2)					
Taiwan	Chang Bin/Fong Der/Star Buck Gas Thermal IPP	19.5%~22.7%	3,060 MW	Gas	Including under construction
Taiwan	Formosa 1 Offshore Wind IPP	32.5%	128 MW	Offshore Wind	
Taiwan	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	Under construction
Thailand	AT Biopower Rice Husk Biomass Thermal IPP	34.0%	20 MW	Biomass	
Thailand	Ratchaburi Gas Power Thermal IPP	15.0%	1,400 MW	Gas	

Overseas Power Generation Business:

List of overseas power generation projects (2)



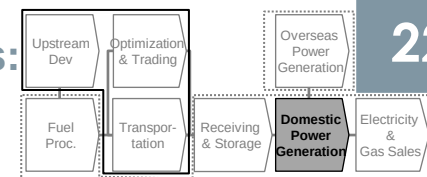
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(As of June 30, 2022)

IPP Projects (2/2)

Country	Project Name	Investment ratio	Capacity	Fuel type	Notes
Thailand	Solar Power IPP	49.0%	31 MW	Solar Power	
Thailand	Wind Power IPP	5.0%	180 MW	Wind Power	
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	
Qatar	Ras Laffan C Gas Thermal IWPP	5.0%	2,730 MW	Gas	
Qatar	Mesaieed Gas Thermal IPP	10.0%	2,007 MW	Gas	
Qatar	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	
Mexico	Falcon Gas Thermal IPP	20.0%	2,233 MW	Gas	Scheduled to be sold
United States	Tenaska Gas Thermal IPP	11.1%~17.5%	2,950 MW	Gas	
United States	Carroll County Gas Thermal IPP	20.0%	702 MW	Gas	
United States	Cricket Valley Gas Thermal IPP	38.0%	1,100 MW	Gas	
United States	Linden Gas Thermal IPP	50.0%	972 MW	Gas	
United States	Compass Gas Thermal IPP	50.0%	1,123 MW	Gas	
United States	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	

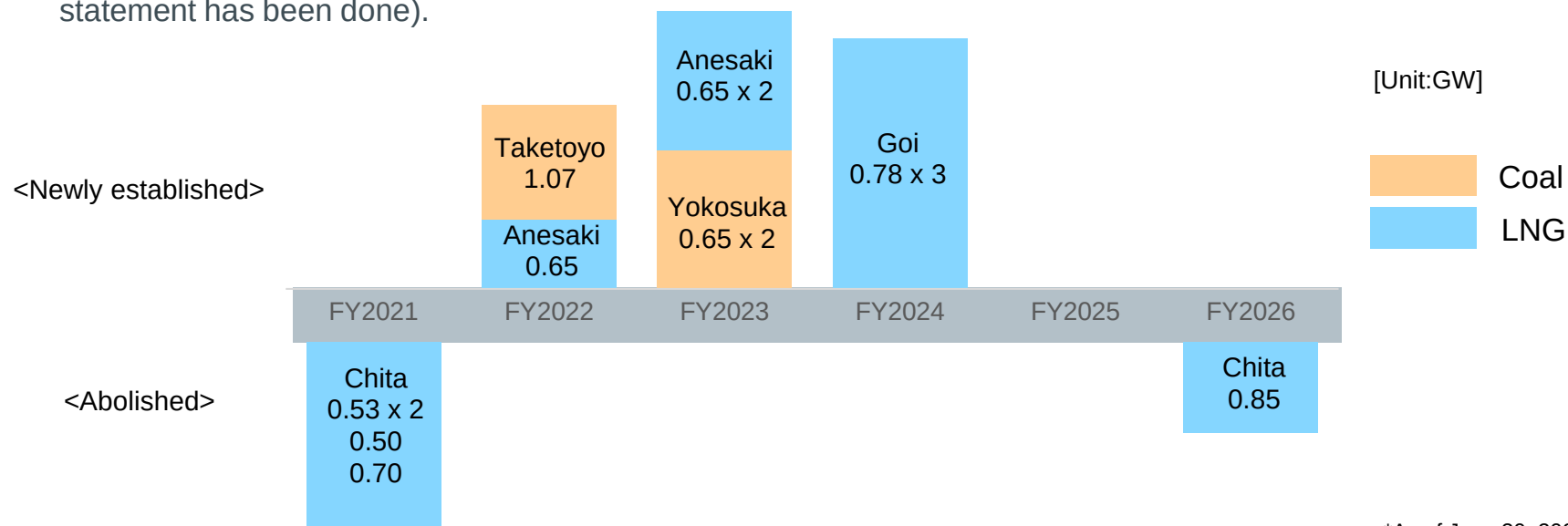
Domestic Thermal Power Generation and Gas Supply Business: Progress of Replacement of Thermal Power Plants in Japan



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Replacement Plan

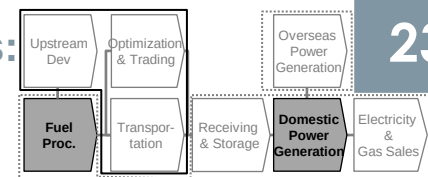
- Shifting to the latest high-efficiency thermal power generation facilities at four locations: Anesaki, Taketoyo, Yokosuka and Goi.
- Unit 1 to 4 of Chita Thermal Power Station were abolished in FY2021 and Unit 5 is planned to be abolished in FY2026. Construction of Unit 7 and 8 is under consideration (Process of environmental impact assessment statement has been done).



*As of June 30, 2022

Development point	Status of development
Anesaki	Full-scale construction started in February 2020. Construction progress rate of 83%
Yokosuka	Full-scale construction started in August 2019. Construction progress rate of 77%
Goi	Full-scale construction started in April 2021. Construction progress rate of 43%
Taketoyo	Full-scale construction started in April 2018. Construction progress rate of 99%

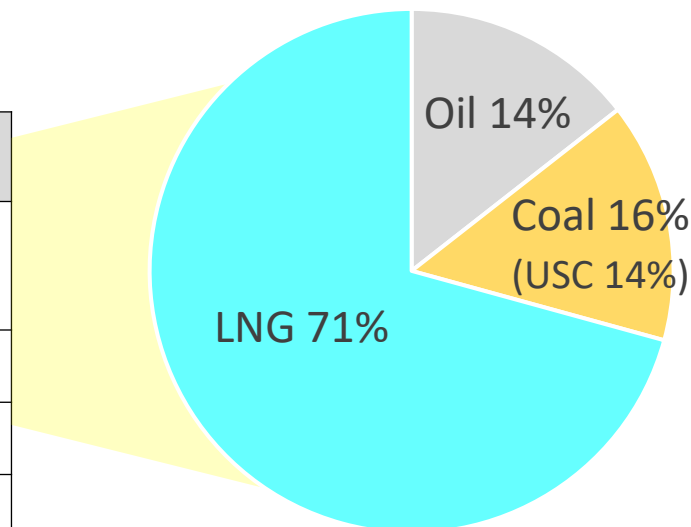
Composition of Power Sources



- Our power generation composition is characterized by a large share of LNG, which emits less CO₂.
- In coal, ultra super critical power generation system (USC), which emits comparatively small CO₂, 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	9.00 GW
Total	65.76 GW



*¹ Press release on October 13, 2020 “Towards Zero CO₂ Emissions in 2050”

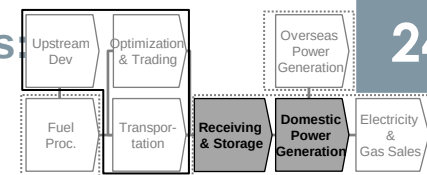
https://www.jera.co.jp/english/information/20201013_539

*² As of June 30, 2022. Includes capacity under construction.
Excludes capacity of affiliates.

*³ Includes LPG and City Gas.

Domestic Thermal Power Generation and Gas Supply Business

Domestic Thermal Power Plants

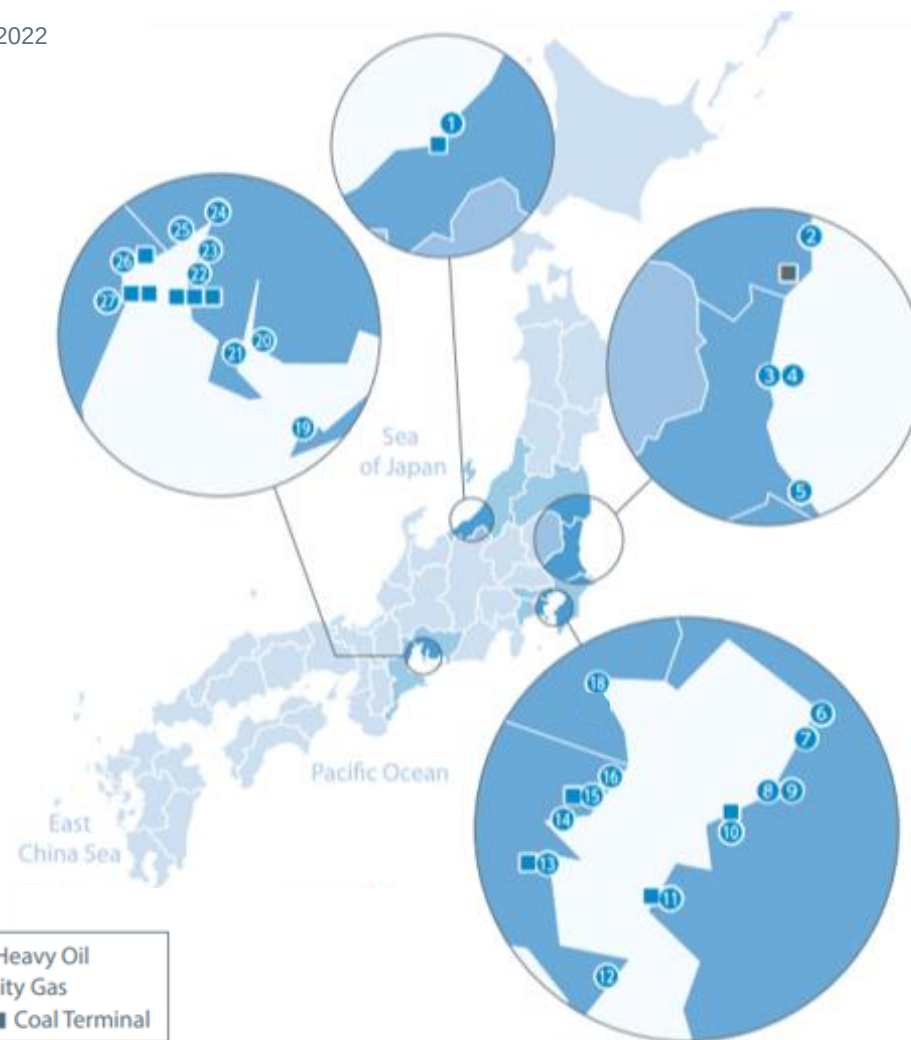


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List of Thermal Power Plants in Japan¹ (Total output and fuel type listed for each thermal power plant)

As of June 30, 2022

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	5.66 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 FY2023	1.941 GW	◆
⑩ Sodegaura	3.60 GW	◆
⑪ Futtsu	5.16 GW	◆
⑫ Yokosuka <JERA Power YOKOSUKA> *Scheduled to start operation in FY2023	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> *Scheduled to start operation in FY2022	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	◆



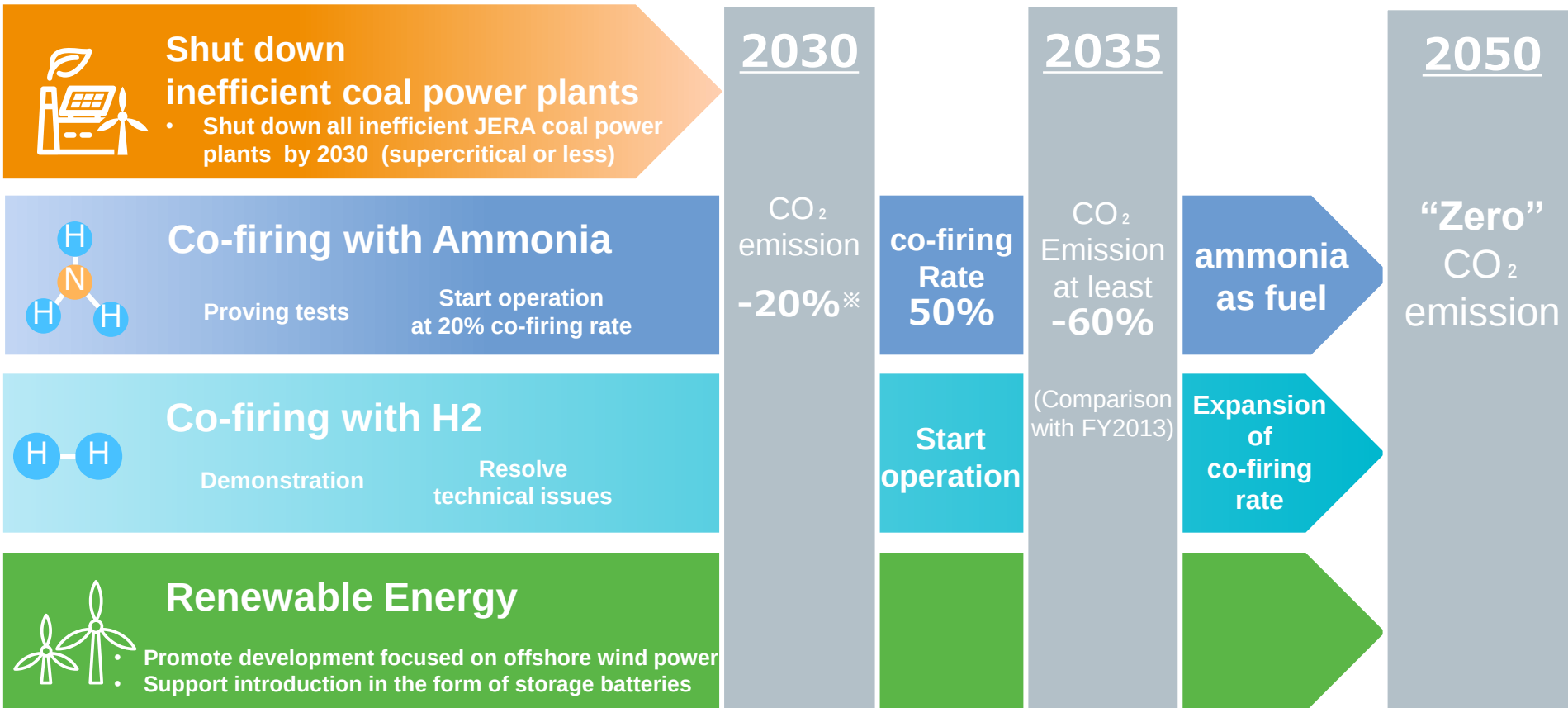
1 Power plant's name <Operator's name>

2 Includes jointly operated terminals in the Chita and Yokkaichi areas

**Reference:
Progress of
JERA Zero CO₂ Emissions 2050**

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

- JERA established “JERA Zero CO₂ 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.



Fuel upstream development

Fuel upstream development Fuel

- Collaborate with leading companies in Japan and overseas to build supply chains for ammonia and hydrogen (Details on page 30)
- Conduct feasibility studies on CO₂ capture and methanation in the United States
- Research and development of innovative ammonia synthesis catalysts to support establishment of fuel ammonia supply chains
- Conduct international competitive bidding for procurement of fuel ammonia



Transportation and storage

Fuel transportation



Fuel receiving and storage

- Investment in Hydrogenious LOHC Technologies GmbH, a developer of hydrogen storage and transportation technologies



Power generation and sales

Power generation



Electricity sales

- Study of demonstration project for ammonia co-firing and co-firing rate improvement technology at Hekinan thermal power station
- Study of development and demonstration project for ammonia combustion burner suitable for coal boilers
- Study of hydrogen demonstration project at domestic LNG thermal power plant
- Study of hydrogen utilization at Unit 6 of the Linden gas-fired power station in the United States
- Development and demonstration of large-scale CO₂ separation and capture technology from exhaust of gas-fired power generation



Renewable energy development

- Consideration of offshore wind power development in Hokkaido, Aomori, Yamagata and Akita prefectures
- Participation in Gunfleet Sands offshore wind farm in the United Kingdom and Formosa 1~3 offshore wind farm in Taiwan
- Adoption of technology verification project for reducing cost of floating offshore wind power generation using TLP system
- Investment in ReNew Power Limited, a renewable energy power generation company in India
- Development of onshore wind power and solar power generation in North America
- Participation in US El Sauz Wind Power Project in the United States
- Final agreement on business alliance with West Holdings Corporation
- Investment in Zenobē Energy Limited, a UK storage cell operator
- Demonstration of energy storage system data platform
- Development and demonstration of a low environmental impact recycling process for electric vehicle lithium-ion batteries

JERA Zero CO₂ Emissions 2050:

Efforts towards Zero CO₂ Emissions Thermal Power Generation (1)

Initiatives for Ammonia Co-firing

- The following projects have been adopted by NEDO and are currently being implemented. The timing of implementation of 20% co-firing of ammonia is going to be moved forward in FY2023 from FY2024.

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 has been 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-fired 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 started evaluation of operational and environmental characteristics for hydrogen utilization at existing LNG thermal power plants in Japan from October 2021 to March 2026.
- Consideration of modifying the existing gas turbine at Unit 6 of Linden Gas Thermal Power plant in the United States for co-firing with hydrogen. We will proceed with remodeling of existing gas turbines, aiming of completing construction around 2022.

JERA Zero CO₂ Emissions 2050: Efforts towards Zero CO₂ Emissions Thermal Power Generation (2)

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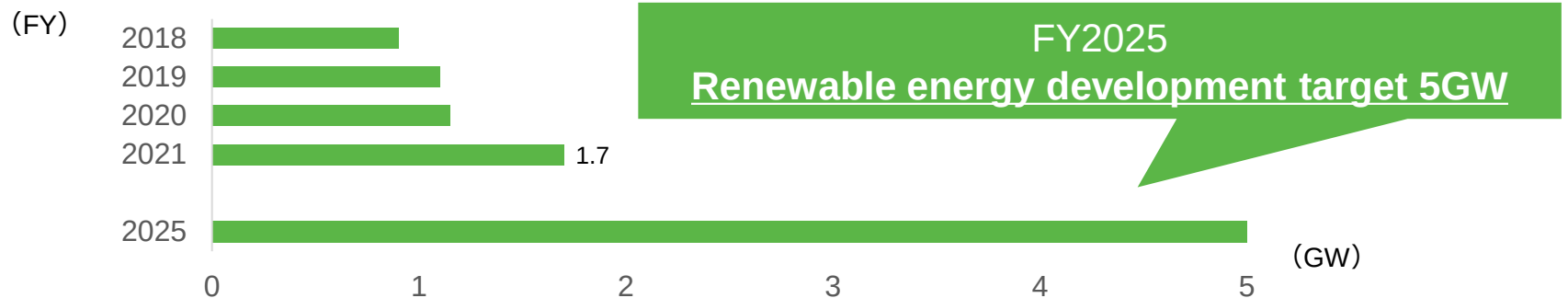
Building hydrogen and ammonia supply chain

- To build supply chains for ammonia and hydrogen, collaborating with leading companies in Japan and overseas.

Business Partners *Including partially owned companies	Contents
Idemitsu Kosan Co., Ltd. (Japan)	Concluded MOU stipulating that the two companies will jointly consider establishing a hydrogen supply chain based in the Ise Bay area (June 2022).
ENEOS Corporation (Japan) JFE Holdings, Inc. (Japan)	Concluded MOU and begun to discuss in detail the possibility of establishing a hydrogen and ammonia receiving and supply base, and developing a supply project at the Keihin Waterfront Area in Kanagawa Prefecture (April 2022).
Kyushu Electric Power Co., Inc. (Japan) Chugoku Electric Power Co., Inc. (Japan)	Concluded MOU to consider collaboration aimed at the adoption of hydrogen and ammonia as fuel for power generation (April 2022).
Yara International ASA (Norway) Idemitsu Kosan Co., Ltd. (Japan)	Concluded MOU with a view to building a domestic logistics network based at Idemitsu Kosan's Tokuyama factory and collaborating in the ammonia bunkering business there(October 2021) .
Hydrogenious LOHC Technologies GmbH (Germany)	Invested as lead investor in Hydrogenius, which has developed hydrogen storage and transportation technologies and has unique technologies for liquid organic hydrogen carriers (September 2021).
Yara International ASA (Norway)	Concluded MOU for development, etc. of blue ammonia production project (May 2021) .
Petroleum Nasional Berhad (Petronas) (Malaysia)	Concluded MOU on cooperation in the decarbonization area (February 2021) .

JERA Zero CO₂ Emissions 2050: Target of Wind and Renewable Energy Development and Topics

Status and Targets of Renewable Energy Development

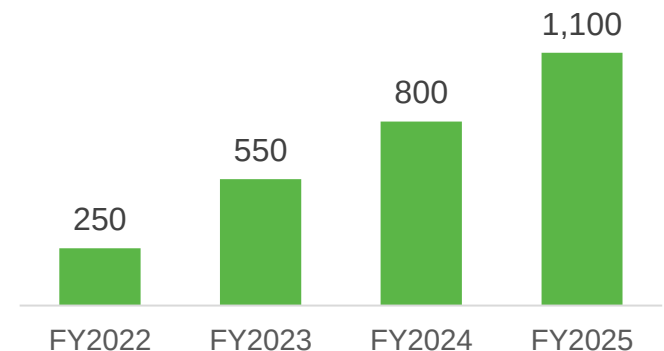


Topics : Final Agreement on Business Alliance with West HD

- Concluded final agreement on a business alliance with West Holdings Corporation for developing solar power generation projects in Japan. The contents are shown below.

- Both companies will develop solar power projects for JERA at new sites and at former JERA power plant sites in Japan (at least 1 GW over 4 years through the end of FY2025)
- JERA acquires approximately 2.3% of West HD's outstanding shares
- Both companies will explore joint solar power generation business opportunities for third parties in Japan and overseas

Forecast of Development Capacity through the Business Alliance Over Time (MW)



JERA Zero CO₂ Emissions 2050: Renewable Energy Development

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Status of Offshore Wind Development

- The Akita Office is base of operations, which is currently implementing initiatives for domestic offshore wind development at the following locations and more.

Development sites	Power generation output	Status of development
Off Yuza in Yamagata Prefecture	Maximum 450 MW	• In the procedures for environmental impact assessment (Scoping Document)
Off the coast of Ishikari Bay, Hokkaido	Maximum 520 MW	• In the procedures for environmental impact assessment (Consideration Document)
Off the Happou town and city of Noshiro, Akita Prefecture	Maximum 356 MW	• In the procedures for environmental impact assessment (Consideration Document)
Off the city of southern Tsugaru, Aomori Prefecture	Maximum 600 MW	• In the procedures for environmental impact assessment (Consideration Document)

- JERA participates in three offshore wind projects at different stages and accumulating know-how in Taiwan, an advanced country in offshore wind power in Asia.

	Capacity	No. of generators	Commercial operation	Business partner
Formosa 1	128 MW	22 units	December 2019 *1	Orsted, Macquarie and Swankor
Formosa 2	376 MW	47 units	2022	Macquarie and Swankor
Formosa 3	2,004 MW *2	Undecided	2026 to 2030 (Target)	Macquarie and EnBW



*1 2 units (8 MW) started operation in April 2017 *2 Scheduled output

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