

Outlook of Japan's current Offshore Wind Industry

REvision 2023, March 8th 2023

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JERA'S Company Overview and Value Chain



Mission

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

Vision

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

Total Assets Approx. JPY 8.7 trillion

LNG Transaction Volume (Annual) 1

Approx. 37 MTPA Among the largest in the world

Sales Approx. JPY 4.4 trillion 1 Current as of March 31, 2022

- FY2021
- Represents the number of countries that imported LNG to LNG receiving terminals of JERA.
- Includes jointly operated terminals in Chita and Yokkaichi area.
- Includes capacity under construction. Excludes joint thermal power in Japan.

Upstream Development **Fuel Procurement**



LNG Receiving and Storage Terminals

Domestic and Overseas Power Generation





- Upstream Investment
- **5** Projects
- LNG Procurement from
- 16 countries 1,2



 LNG Fleet Carriers 19 ships



 LNG Tank Capacity in Japan 6.65 million kL 3

- Equivalent to Approx. 30% of LNG tank capacity in Japan
- LNG Receiving Terminals in

11 terminals 3



Domestic Power Generation

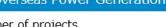
- Thermal Power Plants 26 plants 4
- Power Generation Capacity Approx. 66 GW 4 The Largest in Japan
- Power Generation Output Approx. 255 TWh 1,4 Equivalent to approx. 30% of power generation in Japan 5



Overseas Power Generation

- Number of projects In more than 10 Countries Approx. 30 Projects
- Power Generation Capacity Approx. 10.6 GW 4 (Output Corresponding to Equity)
- Renewables Development Capacity Approx. 1.7 GW

(Included Power Generation Capacity)

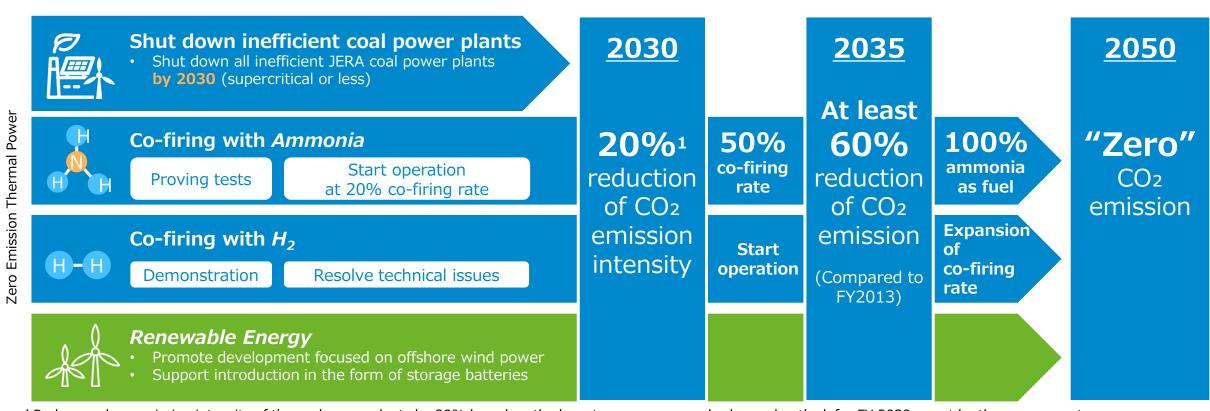




"JERA Zero CO2 Emissions 2050: Roadmap for its Business in Japan"



- ·Complementary Approach·
- Compromise of 4 simultaneous initiatives to meet national demand.
- Renewable Energy Aim: to increase our renewable energy assets 1.2GW \rightarrow 5GW by 2025.

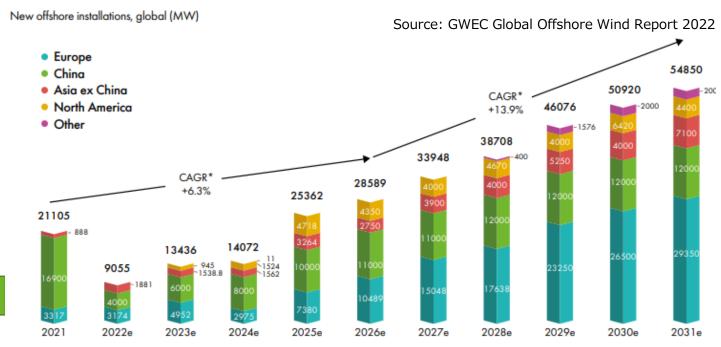


¹ Reduce carbon emission intensity of thermal power plants by 20% based on the long-term energy supply-demand outlook for FY 2030 as set by the government

Offshore Industry: 2021 Global Market Status and promising look for growth



- New offshore wind capacity: 21.1GW (3 times than 2020)
- •Cumulative offshore wind power capacity: 56 GW
- ■China contributed 80% of new offshore installation (due to FiT cut-off)
- •UN Energy Compact 2021 Target: 380 GW by 2030, require 70 GW of installation per year (current annual level 20 GW)
- Share of new offshore installation of global wind installation is set to rise from 23% to 30% by 2031.
- Technological Advancement
 Eg) increase in rotor size and power rating
- Urgency to achieve energy independence and stability
- Global commitment to zero emissions



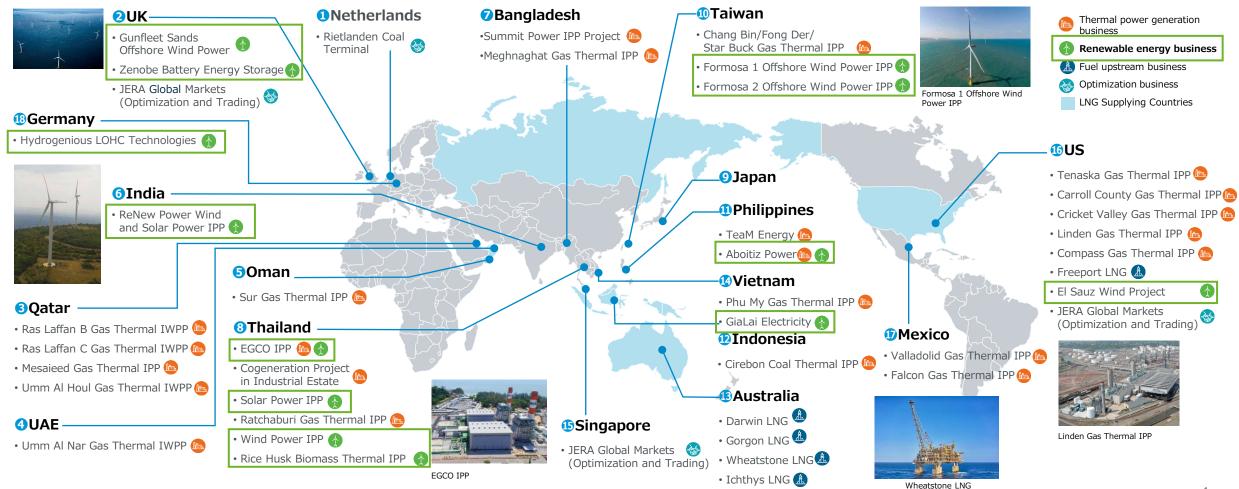
Promising Global Offshore Market Outlook

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JERA's Overseas Business (as of March 31, 2022)



■ JERA participates in various energy businesses around the world, from upstream development to power generation.



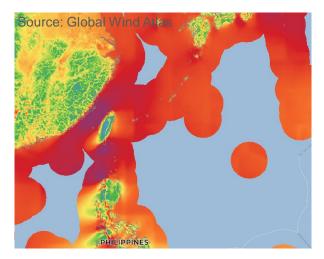
JERA's Overseas Offshore Wind Project: Formosa 2 (Taiwan)



	Formosa 2
Position	Taiwan Miaoli County 4~ 10km Offshore
Area	Around 70km²
Power Capacity	376MW
Wind Turbine Generator	8MW×47 Units
Foundation	Jacket
Current Situation	Complete WTG installation
Developer	JERA 49% Macquarie's Green Investment Group (26%) Synera Renewable Energy (25%)







Challenges JERA encountered

- Language and cultural business practice differences
- --> Hiring of personnel or firms familiar with Taiwanese and its business practices
- Permits and processes
- --> Close relation with Taiwanese government and local partners
- Lack of JERA's experience
- --> Gaining continual experience and knowledge by joining Formosa 1 and Formosa 2



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Japan's challenges and the direction Japan should take



Challenges	Direction Japan should take
High investment cost and risk	 To implement centralized model managed by government as early as possible, like the case in Europe. Knowledge gathering, co survey work with potential competitor before tender may be required to minimize the cost and effort (case like Yuza Project).
Low-capacity projects, inefficiency Not appealing to overseas developers.	 More ambitious target by the Government to expand the renewable energy, as European countries announced. Larger projects (ideally over 1GW) to gain more leverage from the major Europe WTG companies
No supply chain for stable power supply Overseas dependency on infrastructure development	 Encourage more investment for the offshore wind supply chain from overseas and domestic companies. To accumulate more development capacity in total and shorten the development period, so as Japanese market looks more attractive for suppliers.
Long development timeline	 Maximize time reduction by working with stakeholders and building relationship with local communities and partners to smoothen approvals and permits as our experience in Taiwan.
Lack of human resources (as offshore wind is a new sector in the industry)	 Partnerships with overseas experts to gain a know-hows Assigning personnel to overseas projects to gain experience

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Jefa Cara Energy for a New Era Thank you.