



Outlook of Japan's current Offshore Wind Industry

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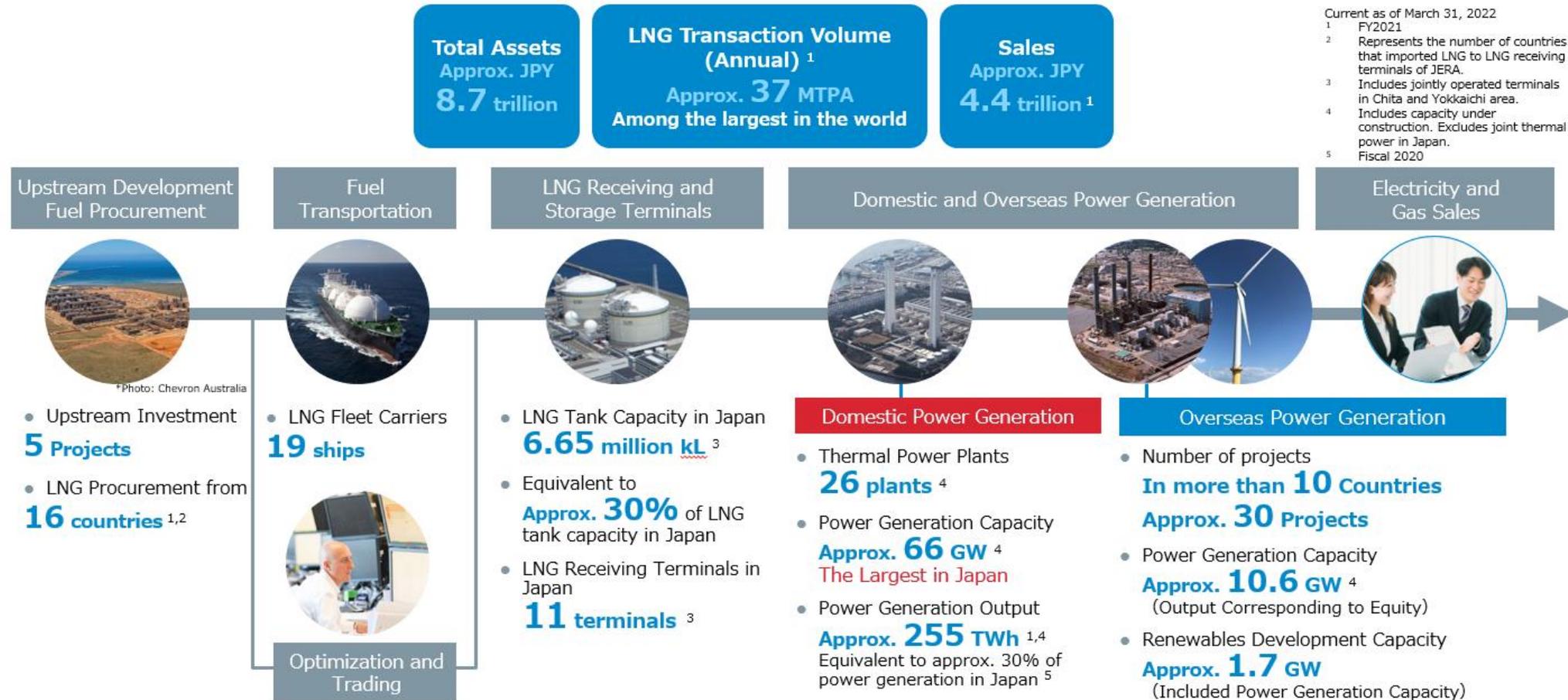
JERA'S Company Overview and Value Chain

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

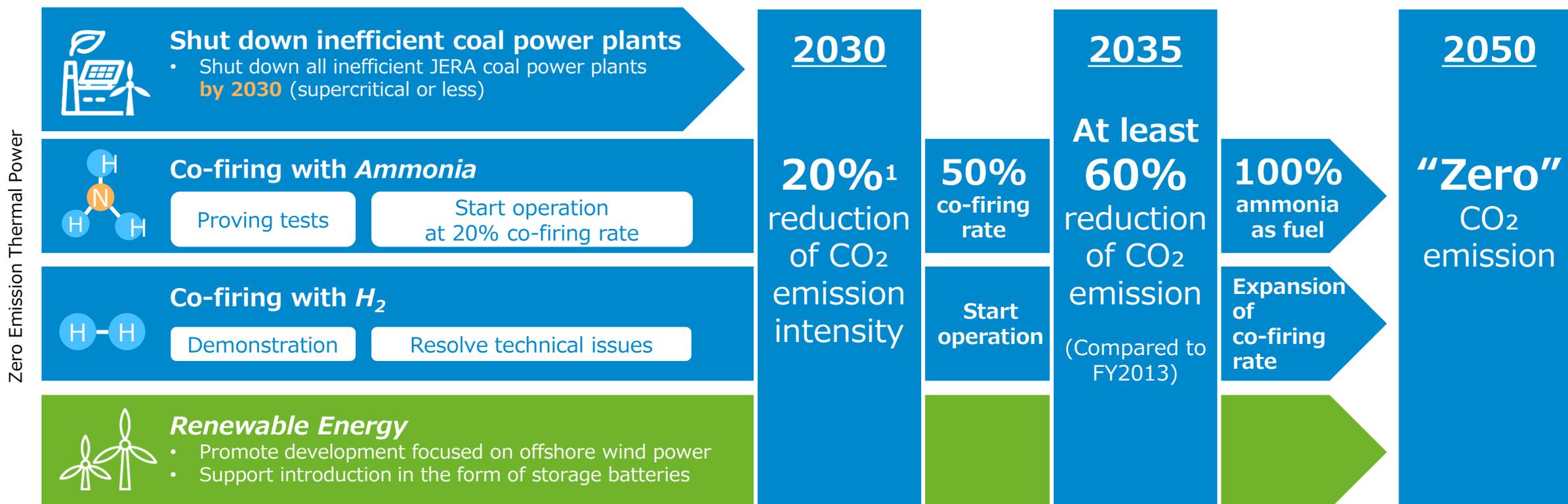




“JERA Zero CO₂ Emissions 2050: Roadmap for its Business in Japan”

- Complementary Approach •

- Compromise of 4 simultaneous initiatives to meet national demand.
- Renewable Energy Aim: to increase our renewable energy assets 1.2GW → 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.

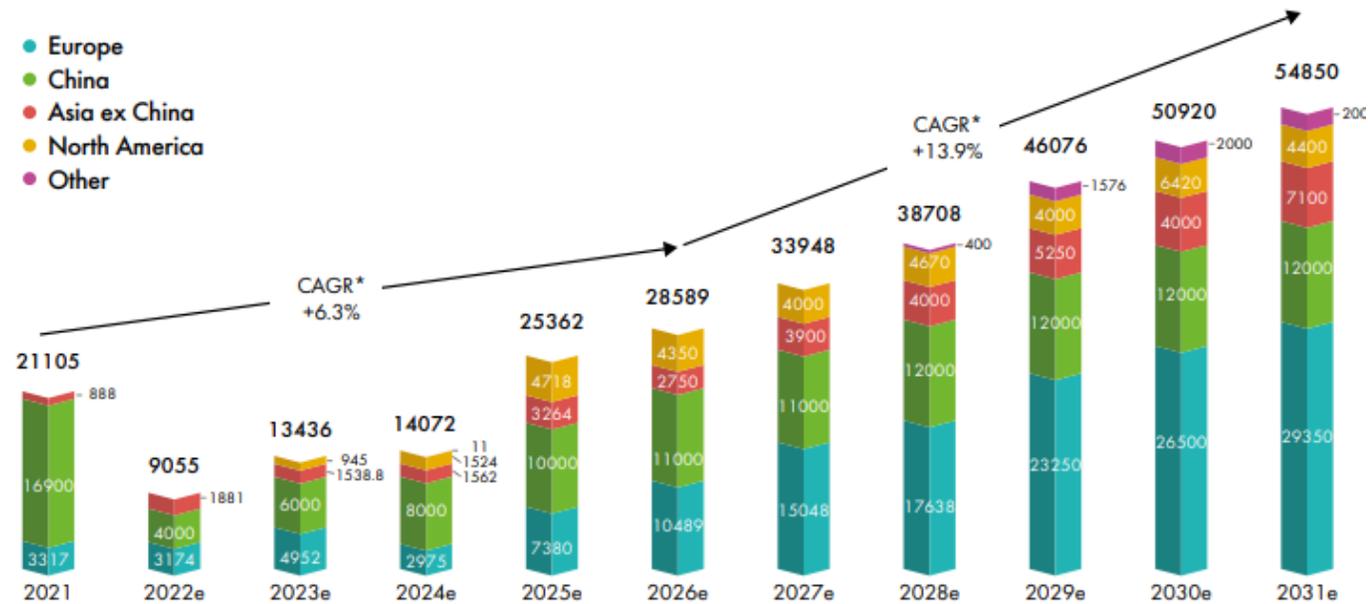
- Technological Advancement
Eg) increase in rotor size and power rating
- Urgency to achieve energy independence and stability
- Global commitment to zero emissions



Promising Global Offshore Market Outlook

New offshore installations, global (MW)

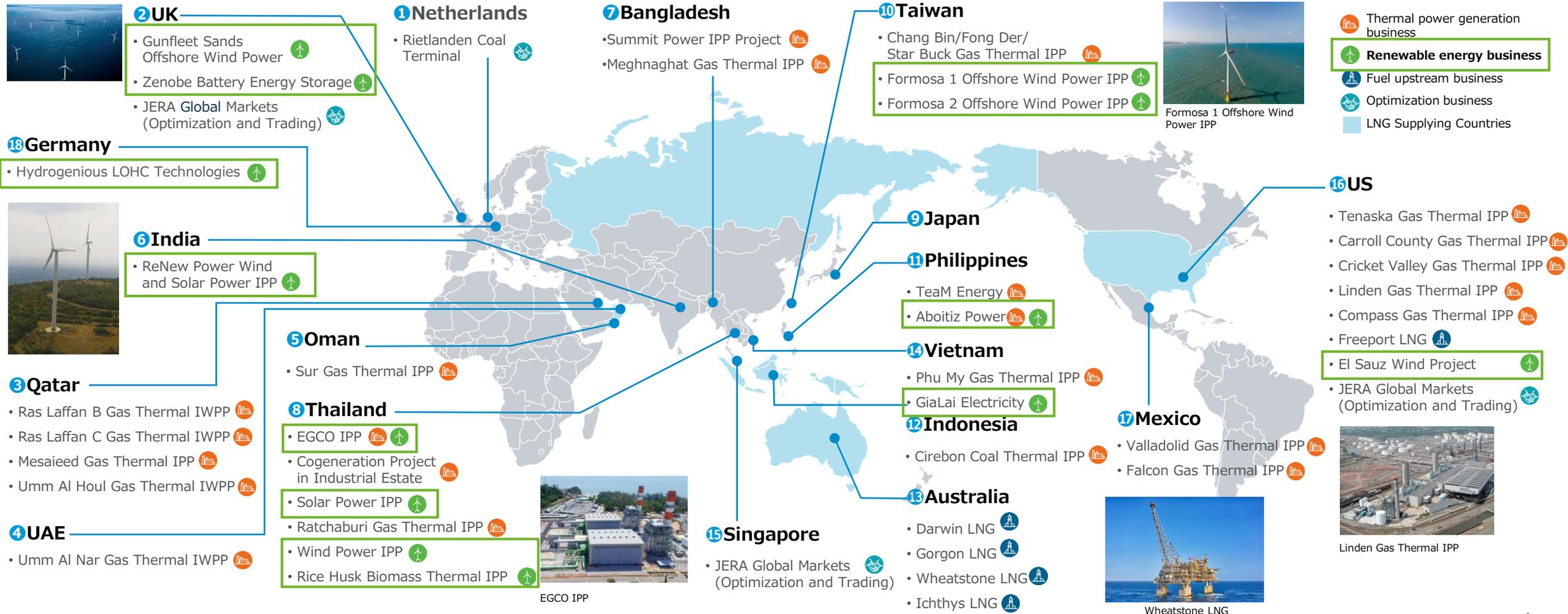
Source: GWEC Global Offshore Wind Report 2022





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

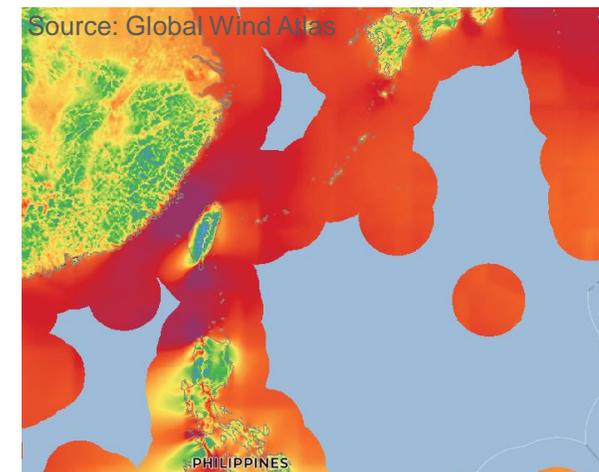
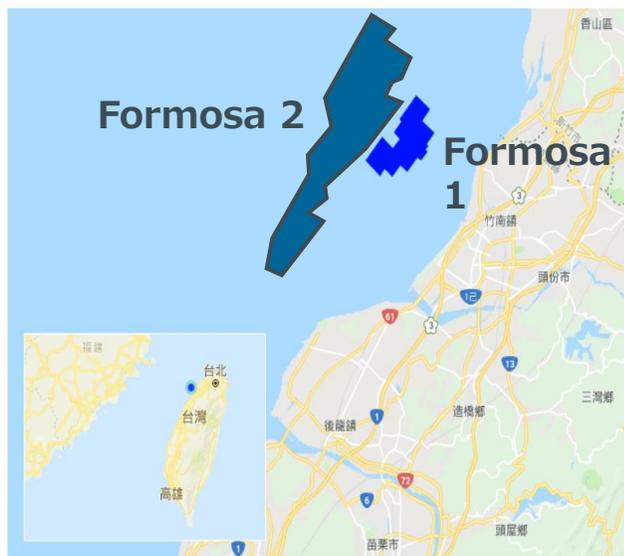
JERA participates in various energy businesses around the world, from upstream development to power generation.





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

Formosa 2	
Position	Taiwan Miaoli County 4~ 10km Offshore
Area	Around 70km ²
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

Sources : Formosa2 HP <https://formosa2windpower.com>

Japan's challenges and the direction Japan should take



Challenges

High investment cost and risk

Low-capacity projects, inefficiency

Not appealing to overseas developers.

No supply chain for stable power supply

Overseas dependency on infrastructure development

Long development timeline

Lack of human resources

(as offshore wind is a new sector in the industry)

Direction Japan should take

- 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).
- 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
- 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.
- 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.
- Partnerships with overseas experts to gain a know-hows
- Assigning personnel to overseas projects to gain experience

Jera

Energy for a New Era

Thank you.