

# Transition Finance | Case Study 8: JERA Co., Inc.

## Overview

### ■ Corporate Profile

Industry	Power generation
Location	Japan
Business	The <b>world largest thermal power generation company</b> which inherits its business from TEPCO and Chubu Electric Power Company and has the ability to generate <b>half of domestic output in thermal power generation</b> . It is the world largest fuel handling company and establishes a value chain from fuel upstream and procurement to power generation and electricity/gas wholesaling.

### 3<sup>rd</sup> Party Evaluation

- JERA has set “JERA Zero CO2 Emissions 2050” in October 2020. They have established a roadmap for domestic business and newly set “JERA Environmental Target 2030 for its Business in Japan” to execute plans accordingly to the roadmap.
- The strategy aims to realize zero CO2 emission by promoting CO2 reduction through various RD&Ds and implementation of technologies and facilities. Such projects are consistent with the philosophy of climate transition and is aligned with the Technology Roadmap for “Transition Finance” in Electricity Sector.
- To ensure transparency, we have confirmed that JERA will disclose general investment plan/amount in the future where possible.

### ■ Bond Outline

Planned Issue Date	• After April 2022
Planned Amount	• To be decided
Structuring Agency	• Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
Evaluation Agency	• DNV BUSINESS ASSURANCE JAPAN K.K.

### Candidate for Use of Proceeds

Eligibility Criteria	Project
The expenditures related to the demonstration projects of fossil fuels and ammonia/hydrogen co-firing	① Demonstration study of 20% ammonia co-firing in 1 million kW class coal-fired power plant
	② Demonstration study on actual equipment to establish technology for high ammonia co-firing rate at commercial thermal power plants
	③ Demonstration of high co-firing rate at thermal power station using ammonia single-fuel burners
	④ Technical verification of hydrogen co-firing power generation for the construction of large-scale hydrogen supply chain
The expenditures related to decommissions of inefficient thermal power plants, with the aim of replacement for high-efficiency thermal power plant	⑤ Demolition of existing power generation facilities at Goi thermal power station(LNG)
	⑤ Demolition of existing power generation facilities at Chita thermal power station(LNG) *Demolition plan is in preparation

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## Alignment with the Four Elements in Basic Guidelines on Climate Transition Finance

<p><b>Element 1</b> (Transition Strategy and Governance)</p> <ul style="list-style-type: none"> <li>Transition strategy: sets 2030 interim target and roadmap to achieve 2050 zero CO2 emission in "JERA Zero CO2 Emissions 2050".</li> <li>Governance: established organizational structure and framework to promote strategy at a management level.</li> </ul>	<p><b>Element 3</b> (Science based Targets &amp; Pathways)</p> <ul style="list-style-type: none"> <li>JERA's target refers an internationally approved scenario aligned with the Paris Agreement (IEA, SDS etc) and is thus aligned to the targets of the Paris Agreement.</li> <li>Aligned with the Technology Roadmap for "Transition Finance" in Power Sector formulated by METI.</li> </ul>
<p><b>Element 2</b> (Materiality)</p> <ul style="list-style-type: none"> <li>Transition strategy is for its core business, thermal power generation.</li> <li>Sets "Environment (climate change)" as one of its materiality using GRI, ISO26000, SASB, etc.</li> </ul>	<p><b>Element 4</b> (Transparency)</p> <ul style="list-style-type: none"> <li>To ensure transparency, confirmed that JERA will disclose general investment plan/amount in the future where possible.</li> </ul>

### Transition Strategy and Science-based Targets (Elements 1-3), Governance (Element 1)

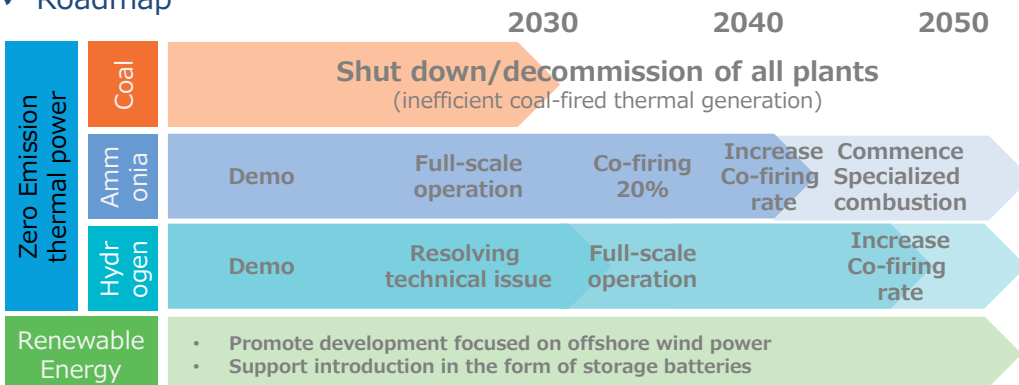
#### CO2 Reduction Targets

Year	Target	Benchmark
2030	<ul style="list-style-type: none"> <li>▲20% reduction of CO2 emission intensity</li> </ul>	<ul style="list-style-type: none"> <li>Emission intensity of Japan's thermal power plants based on Long-term Energy Supply and Demand Outlook for FY 2030 published by the government</li> </ul>
2050	<ul style="list-style-type: none"> <li>Zero CO2 emission</li> </ul>	<ul style="list-style-type: none"> <li>(-)</li> </ul>

#### OJERA Environmental Target 2030 for its Business in Japan(exclude targets)

- Shut down/decommission all inefficient power plant (supercritical or less)
- Demonstration of co-firing with ammonia in highly efficient power plant (ultra supercritical)
- Promotion of renewable energy centered on offshore wind power generation
- Further improvement in efficiency of LNG thermal power generation

#### Roadmap



#### Governance Structure

Diagram of Corporate Governance System

(as of August 31, 2021)

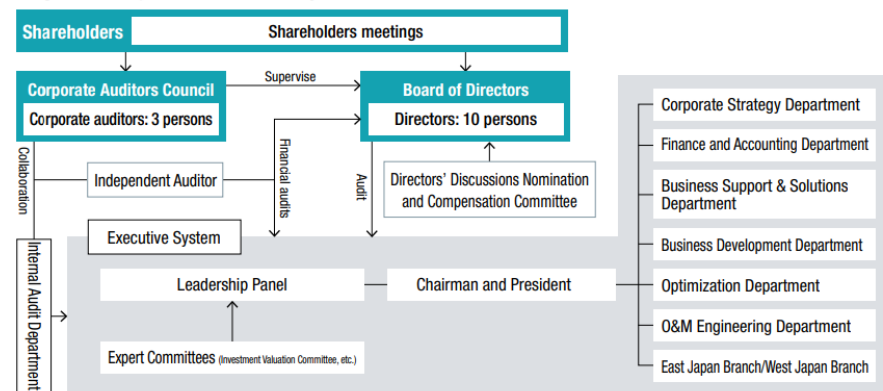


Diagram of Sustainability Management System

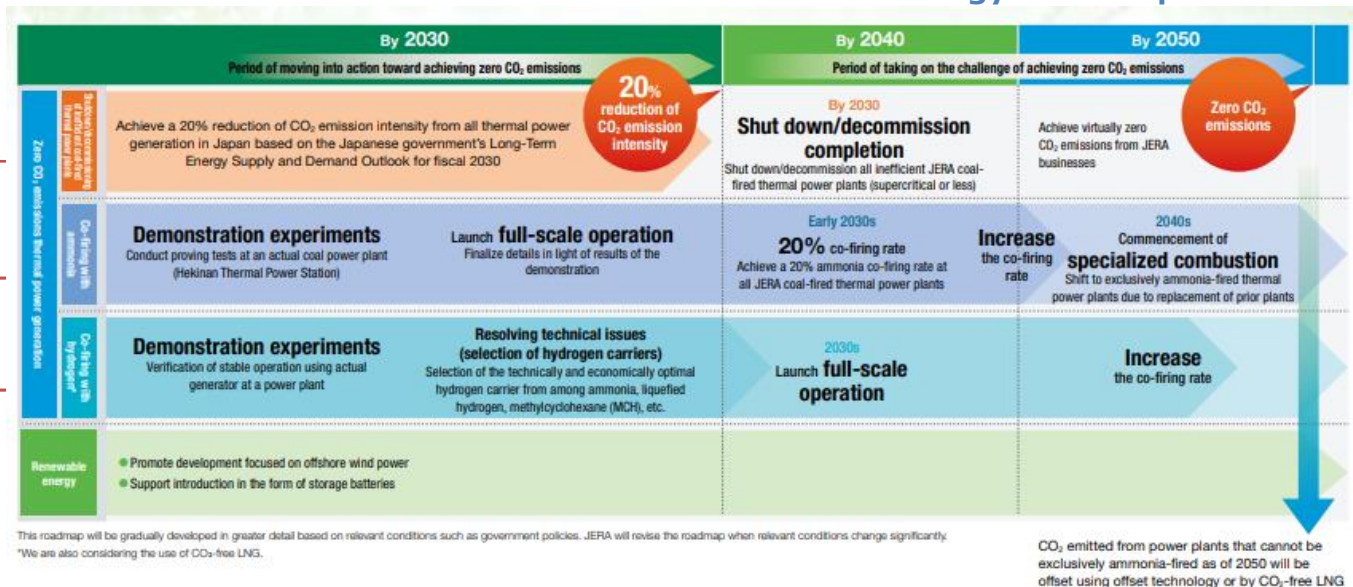
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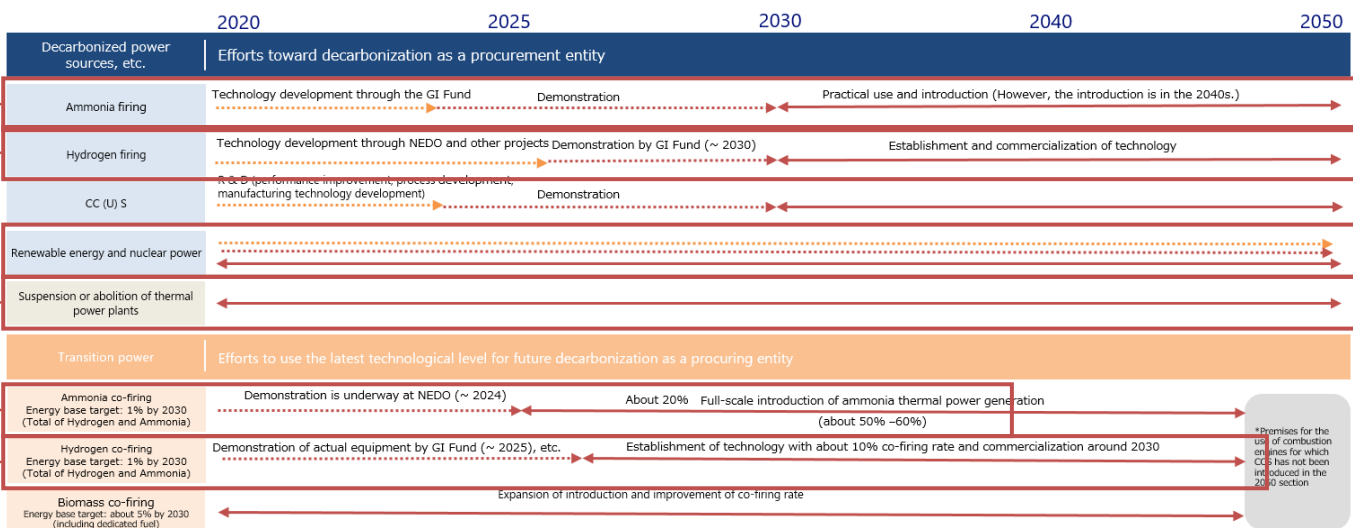
## Key Points in the Case Study (Element 1: Transition strategy, Use of Proceeds)

### JERA Zero CO2 Emissions 2050 and Technology Roadmap



## Key Points

- 2050 zero CO<sub>2</sub> emission and 2030 environmental targets have been set. These targets and strategies are aligned with Japan's energy policy and the Technology Roadmap in Electricity Sector.
- Alteration of targets and projects will be considered flexibly in accordance with the political circumstances.
- Demonstration of co-firing with ammonia/hydrogen, the Use of Proceeds in this bond, is an essential and representative project within the overall domestic industry (selected as Green Innovation Fund\*). Shut down/decommission of domestic thermal power plant is based on the concept of just transition.
- Some of the disclosure on qualitative impact of environment are difficult, but allocation of the proceeds and progress of each project is to be disclosed.



※ Herein after referred to as GI Fund

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## Key Points in the Case Study (Use of Proceeds, Reporting)

- Use of Proceeds are selected from those common in both the Technology Roadmap in Electricity Sector and “JERA Zero CO2 Emissions 2050”
  - demonstration of co-firing with ammonia/hydrogen
  - shut down/decommission of current inefficient thermal power plants (planning to replace for a highly efficient ones)
- Demonstration for hydrogen and ammonia’s technological development has been selected in GI funding and is a project to be promoted in collaboration with private and public sector

## The Relationship of JERA Zero CO2 Emissions 2050 and Use of Proceeds

Strategy	Project	Business Overview	Environmental impact (planned to be reported)	GI funding
Co-firing with ammonia	① Demonstration study of <b>ammonia co-firing</b> in coal-fired power plant at Hekinan Thermal Power Station Unit 4	✓ Development and demonstration test of technology to <b>convert 20% of fuel (calorific value ratio) to ammonia</b> in FY2024.	✓ The outline and the progress of the eligible project	
	② <b>Demonstration study on actual equipment to establish technology for high ammonia co-firing rate in coal-fired power plant</b> at 4 <sup>th</sup> or 5 <sup>th</sup> Hekinan thermal power plant	✓ Development of a new ammonia high-efficiency burner and study of the specifications of the equipment (to FY 2024), and demonstration tests to <b>convert more than 50% of the fuel (calorific value ratio) to ammonia</b> (to FY2028).	✓ The outline and the progress of the eligible project	✓
	③ Development of a new ammonia single-fuel burner for coal boiler and demonstration on real plant	✓ Development of a new ammonia single-fuel burner and study of the specifications of the equipment (to 2024), and conducting technology development and demonstration tests to convert more than 50% of the fuel to ammonia at two different boiler units (to FY2028).	✓ The outline and the progress of the eligible project	✓
Co-firing with hydrogen	④ Conducting demonstration tests at large-scale LNG-fired power plants in Japan to convert LNG into hydrogen for power generation	✓ Conducting demonstration tests to convert approximately 30% (by volume) of LNG into hydrogen for power generation (to FY2025).	✓ The outline and the progress of the eligible project	✓
Shut down/dec ommission of inefficient coal-fired thermal power	⑤ <b>Demolition of existing power generation facilities</b> at Goi thermal power station(LNG)		✓ The outline and the progress of the eligible project	
	⑥ <b>Demolition of existing power generation facilities</b> at Chita thermal power station(LNG)		✓ The outline and the progress of the eligible project	

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## Case Study: JERA CO., Inc. Transition Bond

### Modelability Review Results: Approval

The model is the first in the industry to include important technologies for transitioning to a decarbonized society and demolishing inefficient thermal power generation facilities as Use of Proceeds, thus appropriate as a model case

#### Main opinions

#### Transition strategy

- Has its transition strategy toward 2050 CO2 zero emission and 2030 interim target, which is aligned with the Technology Roadmap in Electricity Sector.
- For the future conversion to ammonia, the explanation to investors based on business perspective is important, such as utilizing the current strength in LNG procurement to blue ammonia.

#### Scientific basis

- Its mid / long term targets are aligned with Japan's target. In addition to carbon intensity, it also considers the decline of thermal power generation ratio (dismantle of inefficient thermal power, increase in renewable energy ratio etc.) due to 2030 energy composition.
- Confirmed its will to review its targets, if necessary, in regard to political circumstances as the international trend is for the decarbonization in thermal power generation in 2030s.

#### Other elements/others

- Appreciate the inclusion of important technologies to achieve the zero CO2 - emission thermal power generation, the core of its strategy, and demolish existing inefficient thermal power plant etc. in Use of Proceeds.
- The model plays an important role in promoting zero-emission thermal power, especially when international trend focuses on early decarbonization in this area.
- Part of the Use of Proceeds is dedicated to R&Ds, which makes it difficult for qualitative environmental impact disclosure. However, it is desirable that JERA reports the progress of facility demolition and demonstration, and allocation of the proceeds.

This document focuses on the contribution of transition finance to the realization of Japan's carbon neutrality by 2050 and the Paris Agreement, and does not cover any of the risks associated with transition finance as a financial instrument. It should be noted that even in the model case of this project, there are credit risks and other risks (in the case of bonds, price fluctuation risks, liquidity risks, etc.) as in ordinary financing.