

# Special Feature Response to the TCFD Recommendations



## Basic Approach

As a global enterprise that solves energy problems not only in Japan but also around the world, JERA considers climate change measures to be a priority issue and specifies them in its Materiality. For the purpose of appropriately evaluating climate-change-related risks and opportunities and sustainably enhancing corporate value, we have summarized our climate-change-related systems and businesses in general and the efforts represented by the “3 approaches” set forth in “JERA Zero CO<sub>2</sub> Emissions 2050” into 4 elements (governance and risk management, strategy, metrics, and targets) in line with the TCFD\*<sup>1</sup> recommendations. In September 2021, JERA endorsed the TCFD Recommendations and joined the TCFD Consortium\*<sup>2</sup>.

We will continue to promote disclosure based on the TCFD recommendations in the Integrated Report to further enhance communication with stakeholders including investors.

\*1 TCFD (Task Force on Climate-related Financial Disclosures): The task force established by the Financial Stability Board (FSB) in response to the wishes of the G20 Finance Ministers and Central Bank Governors meeting to stabilize the financial system due to climate change. It published a framework and recommendations for disclosure on climate change-related risks and opportunities for companies, etc.



\*2 The TCFD Consortium was established as a forum where companies and financial institutions that support the TCFD recommendations work together to promote initiatives and discuss effective corporate disclosure and efforts to link disclosed information to appropriate investment decisions by financial institutions. In order to further enhance corporate disclosure level in line with the TCFD recommendations by companies and to promote constructive dialogue (engagement) between investors and companies, the consortium actively publishes various guidance and holds the TCFD Summit as a forum where companies and financial institutions from around the world gather together.



## Governance and Risk Management

### Governance

Important policies, targets, and reviews related to climate change measures are determined by the Board of Directors or the Leadership Panel under the corporate governance system.

In addition, for the purpose of advancing ESG management, we have established the Sustainability Promotion Committee, which is chaired by the President and under the direct control of the Board of Directors, to oversee sustainability across department throughout the company. The Environmental Subcommittee reports on annual action plans and performance for all environment-related activities, including climate change measures.

Furthermore, Directors exchange opinions with outside experts, sharing the latest information and findings at Leadership Panel or other meetings. In addition, we have held “Sustainability Seminars” for managers as appropriate. By continuously deepening the knowledge and understanding of trends in ESG management, including climate change, from directors to employees, we will proactively work to further improve our ESG activities.

### Risk Management

In order to gain a proper understanding of and mitigate risks associated with corporate activities, we have established a risk management system with the President as the highest decision maker and conduct Integrated Risk Management that classifies risk into operational risk, market risk, and credit risk. With regard to climate-change-related risks, we identify risks based on the recognition that they may affect these areas. In particular, risks that should be managed by directors are selected as “important risks to be managed by management.” The Risk Management Committee, chaired by the president, reviews and deliberates on the management status of these risks and response policies for them and brings those for discussion and reports them to the Board of Directors, both on a regular basis and as needed.



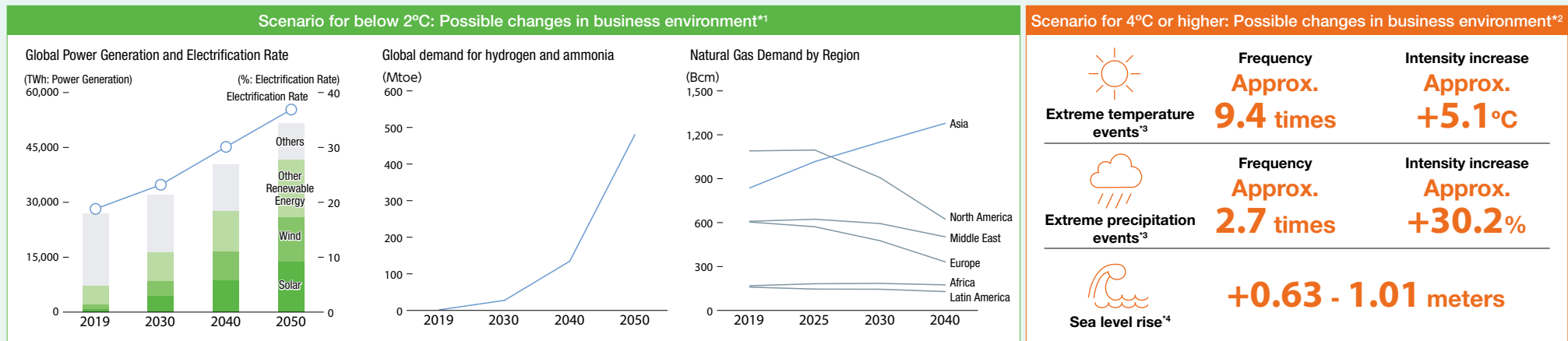
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### Strategy - Setting up analysis targets and scenarios -

- Selection of analysis targets** We conduct scenario analysis to identify and analyze risk opportunities throughout our business value chain. The analysis covers not only the short-term, but also the medium-term (to 2030) and long-term (to 2050).
- Selection of scenarios** The following two scenarios have been established with reference to the information published by the International Energy Agency and the Intergovernmental Panel on Climate Change.

Configuration Scenarios	Scenario for below 2°C	Scenario for 4°C or higher
Assumed business environment	<p>Bold policies and technological innovations will be implemented to achieve sustainable development by limiting the increase in global average temperature by the end of this century to 1.5 to below 2°C compared to pre-industrial levels.</p> <ul style="list-style-type: none"> <li>Global power generation increases due to economic growth and electrification. In particular, the amount of electricity generated by renewable energy, particularly solar and wind power, increases significantly.</li> <li>Fossil fuel consumption decreases and demand for green fuels such as hydrogen and ammonia increases. On the other hand, natural gas continues to play an important role as an energy source in Asia and other regions where the increase in energy demand is remarkable.</li> </ul>	<p>Although national policies (new policies) are implemented, such as Nationally Determined Contributions made in line with the Paris Agreement, the average global temperature by the end of this century will increase by more than 4°C compared to the pre-industrial levels.</p> <ul style="list-style-type: none"> <li>Increase frequencies and intensities of extreme temperature and precipitation events.</li> <li>Sea level chronically rises. Combined with the occurrence of river flooding due to storm surges and extreme precipitation, the risk of flooding will be increased, especially in coastal cities.</li> </ul>
Reference scenario	<ul style="list-style-type: none"> <li>IEA: “Sustainable Development Scenario (SDS)”</li> <li>Working Group I contribution to the Sixth Assessment Report of the IPCC: “SSP1-1.9, SSP1 -2.6”</li> </ul>	<ul style="list-style-type: none"> <li>IEA: “Stated Policies Scenario (STEPS)”</li> <li>Working Group I contribution to the Sixth Assessment Report of the IPCC: “SSP3-7.0, SSP5-8.5”</li> </ul>



\*1 Based on IEA “World Energy Outlook 2020” and “Sustainable Development Scenarios (SDS)” in Energy Technology Perspectives 2020.

\*2 Prepared on the basis of the Working Group I contribution to the Sixth Assessment Report of the IPCC. All values are compared with the values assumed before the Industrial Revolution.

\*3 Estimated value at 4°C rise. “Extreme” refers to a weather phenomenon that can occur only once in 10 years.

\*4 Assumed values for 2100 for the SSP5-8.5 scenario.

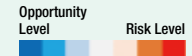
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### Strategy: Impact assessment on JERA's business

Business opportunities and risks in JERA related to climate change were analyzed based on the scenario set up on the previous page.

As a result, it was reconfirmed that various initiatives and measures such as our "JERA Zero CO<sub>2</sub> Emissions 2050" contribute to business opportunities as well as business risk reduction.



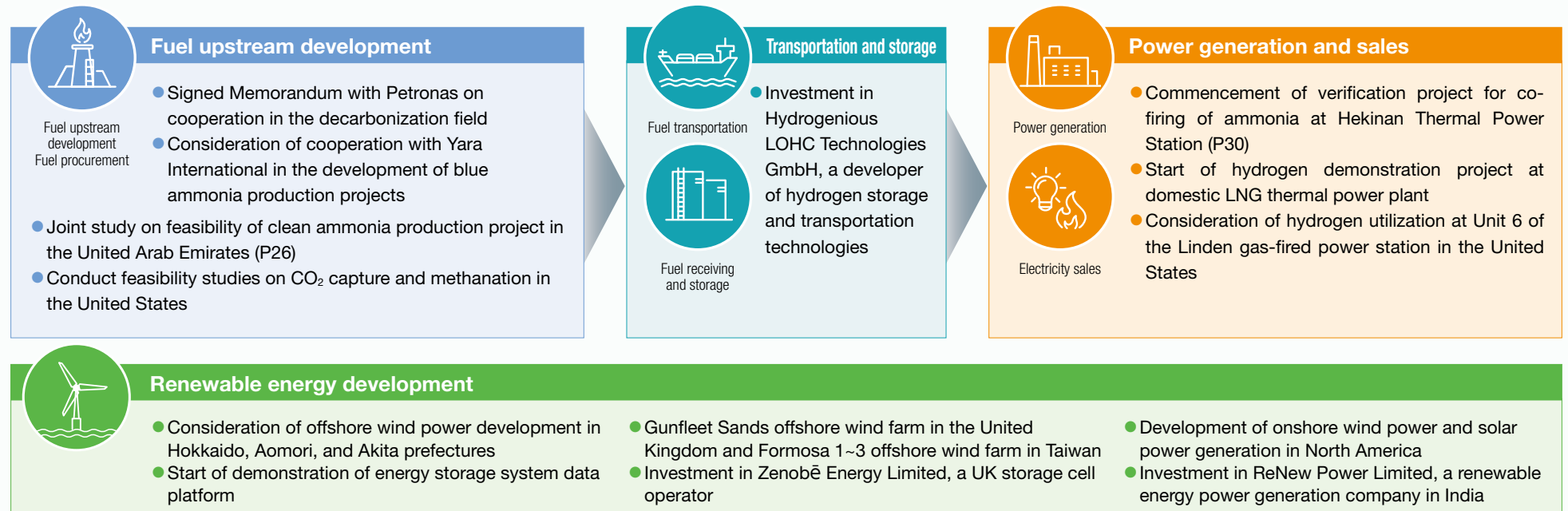
Category	Changes in the business environment	Assessing the impact (risk/opportunity) on JERA	Timeline			JERA's response to changes		
			Present	2030	2050			
Scenario for below 2°C	Policy and Legal 	Tightening regulation of fossil fuel use <ul style="list-style-type: none"> <li>● Introduction of carbon pricing</li> <li>● Restrictions on carbon emissions</li> <li>● Tightening energy conservation regulations</li> </ul>	<ul style="list-style-type: none"> <li>● Increased operating costs</li> <li>● Operating limits for owned power supplies</li> </ul>	[Red bar indicating high risk]			<p><b>Steady promotion of "JERA Zero CO<sub>2</sub> Emissions 2050"</b></p> <p>We will steadily implement measures based on the roadmap on p.16, focusing on "Zero CO<sub>2</sub> emission thermal power generation" and "renewable energy."</p> <p><b>Strengthening the LNG Value Chain</b></p> <p>We will maintain and expand the scale of LNG procurement through replacing domestic power generation to more efficient power generation and expanding overseas power generation. We will also aim to increase profitability throughout the value chain by connecting this scale to the expansion of trading and participation in upstream businesses.</p> <p><b>Actively disseminate information to stakeholders</b></p> <p>We will provide stakeholders, including electricity users and investors, with appropriate information on our company's measures toward zero CO<sub>2</sub> emissions, thereby expanding green power and diversifying financing.</p> <p><b>Improving disaster resilience</b></p> <p>In preparation for the occurrence of natural disaster risks, including acute and chronic risks, we are developing emergency disaster response rules and manuals, conducting regular disaster drills, and upgrading the JERA version of the BCP and BCM. We will also diversify our sources of power and fuel to enhance our resilience against disasters.</p>	
		<ul style="list-style-type: none"> <li>● Increasing needs for energy transport and consumption efficiency</li> </ul>	[Blue bar indicating opportunity]					
	Technology 	Changes in energy supply structure through the development and introduction of non-fossil energy technologies <ul style="list-style-type: none"> <li>● Reduced cost of technology development and green fuel</li> <li>● Reduction of renewable energy and storage battery technology costs</li> <li>● Grid distribution</li> </ul>	<ul style="list-style-type: none"> <li>● Expanding opportunities to develop and introduce hydrogen and ammonia fuels</li> </ul>	[Blue bar indicating opportunity]				
			<ul style="list-style-type: none"> <li>● Reduced utilization rate of owned power supplies</li> <li>● Expanding business opportunities with renewable energy and storage batteries</li> </ul>	[Blue bar indicating opportunity]				
	Market and Service 	Expansion of the electricity market <ul style="list-style-type: none"> <li>● Increased electricity demand due to economic growth and electrification</li> </ul>	<ul style="list-style-type: none"> <li>● Expanding power supply opportunities</li> <li>● Increased importance of natural gas as bridging energy</li> </ul>	[Blue bar indicating opportunity]				
			Growing global awareness of climate change <ul style="list-style-type: none"> <li>● Improving customer needs for green products and services</li> <li>● Investor divestment and engagement</li> </ul>	<ul style="list-style-type: none"> <li>● Expanding business opportunities with green power and fuel</li> </ul>	[Blue bar indicating opportunity]			
				<ul style="list-style-type: none"> <li>● Financial constraints resulting from curbing or withdrawing investment in the fossil fuel business</li> <li>● Expanding opportunities to utilize transition green finance</li> </ul>	[Blue bar indicating opportunity]			
Reputation 	Acceleration of global warming countermeasures and direct connection of corporate evaluation <ul style="list-style-type: none"> <li>● Damage to reputation due to slow or delayed efforts</li> <li>● Achieving ambitious goals to improve reputation</li> </ul>	[Blue bar indicating opportunity]						
Scenario for 4°C or higher		Increased acute risk 	<ul style="list-style-type: none"> <li>● Increased disaster response costs</li> <li>● Increased equipment damage and recovery costs</li> <li>● Changes in renewable energy power generation</li> <li>● Increasing need for stable energy supply</li> </ul>	[Orange bar indicating risk]				
	Increased chronic risk 		<ul style="list-style-type: none"> <li>● Sea level and tsunami height rise</li> <li>● Increased disaster response costs</li> </ul>	[Orange bar indicating risk]				
		<ul style="list-style-type: none"> <li>● Changes in climate patterns, such as sustained high temperatures</li> <li>● Decreased power generation efficiency</li> <li>● Electric demand fluctuations</li> </ul>	[Orange bar indicating risk]					

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### Efforts to Achieve Zero Emissions in JERA's Value Chain

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

#### JERA's Value Chain



### Metrics and Targets

We have positioned “JERA Zero CO<sub>2</sub> Emissions 2050” as a long-term goal and have established a roadmap for achieving this goal as well as an interim target for CO<sub>2</sub> emissions in 2030. In addition, we are continuously calculating and evaluating actual results to manage progress every year.

<b>Target</b>	● JERA Zero CO <sub>2</sub> Emissions 2050: Roadmap for its Business in Japan (P16)	<b>Actual result</b>	● Environmental Data (P46)
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