

5.1 Management of Climate Change Risks and Opportunities

According to the “Global Risks Report” that the World Economic Forum (WEF) has been publishing on a yearly basis since 2005, environmental risks have emerged to become the dominant risk category in the world, with Climate Action Failure and Extreme Weather ranking first in the top-10 list for an extended period of time. Following the enactment of the Paris Agreement, which aims to control the global temperature increase within 1.5°C, governments around the world have followed up with their net zero targets and introduced new regulations in an attempt to mitigate the impact of climate change. The ongoing climate change has made global warming and extreme weather two of the most prominent issues for businesses. In 2021, Kaori voluntarily adopted the guidelines of the Task Force on Climate - related Financial Disclosures (TCFD) and followed the four core elements of “governance”, “strategy”, “risk management”, and “metrics and targets” recommended by the TCFD to identify significant risks and opportunities that climate change may have on Kaori Heat Treatment and propose response strategies.

In addition to closely monitoring climate change, Kaori has made climate change one of the major issues for sustainable development and taken the initiative to disclose relevant information according to the requirements of the report preparation guidelines mentioned above. Through inter-departmental communication, discussions are made on the possible scenarios, the likely impacts, and the timing of impacts on Kaori. Each of the scenarios identified is further evaluated to facilitate proper control and response to the associated risks and opportunities. By adopting a more pro-active governance approach toward climate change, Kaori takes pragmatic steps to fulfill its sustainability vision.

Procedures for Identifying Climate Change-Related Risks and Opportunities

Kaori devotes ongoing attention to the climate policies and action plans of various industries at home and abroad and conducts thorough surveys on possible impacts from a number of perspectives including extreme weather, regulations, and market requirements. By analyzing past experience, the timing and possibility of future occurrences, and the degree of impact on business operations, reputation, personnel, financial position, etc., the Company requires all responsible units to propose their own response strategies and make corresponding adjustments internally while maintaining open and transparent communication with all stakeholders. Kaori identifies risks and opportunities of climate change by constructing at least two scenarios and hosts studies and discussions on climate change in the form of workshops. Procedures for identifying climate change-related risks and opportunities are explained below:

A.



Set climate change scenarios

Two climate change scenarios have been constructed:
SSP5-8.5: temperature increased to 6°C
SSP1-2.6: temperature increased to 2°C

B.



Evaluate impacts on the operating environment

Evaluate how climate change affects and impacts the operating environment and stakeholders

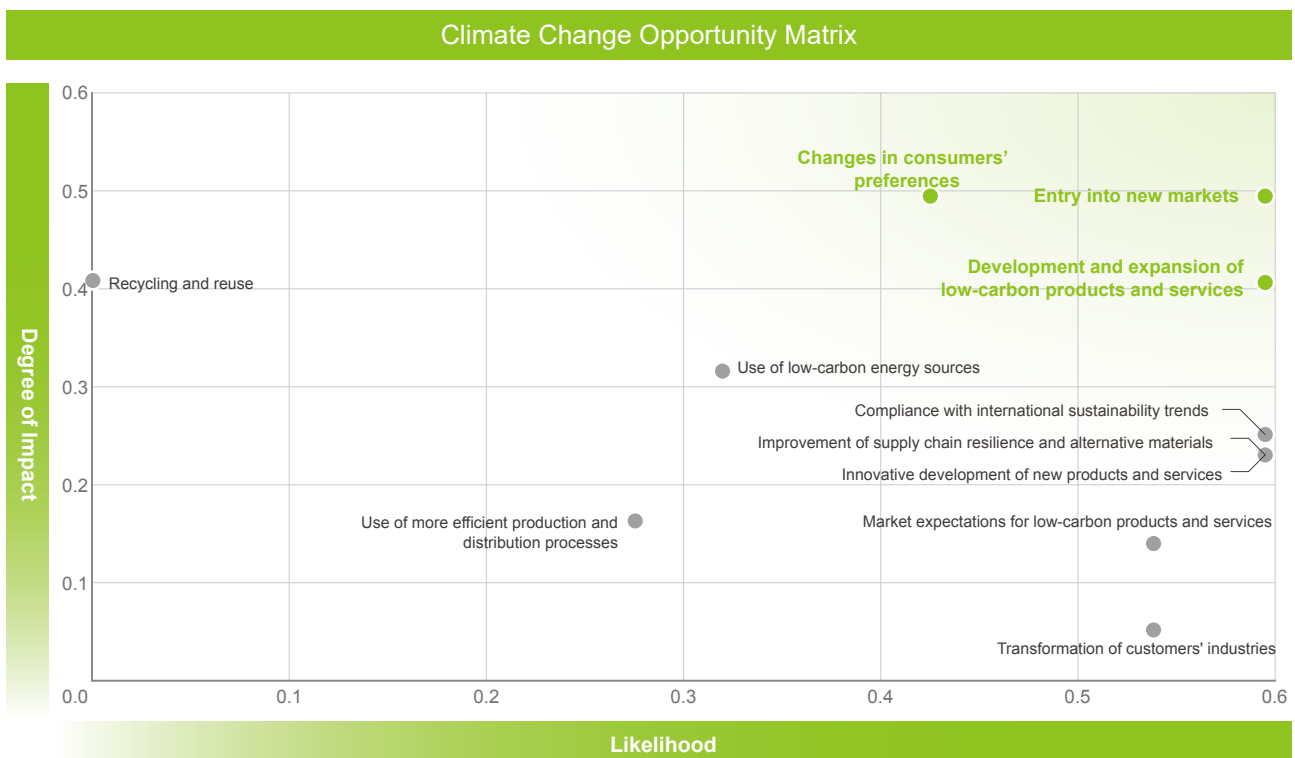
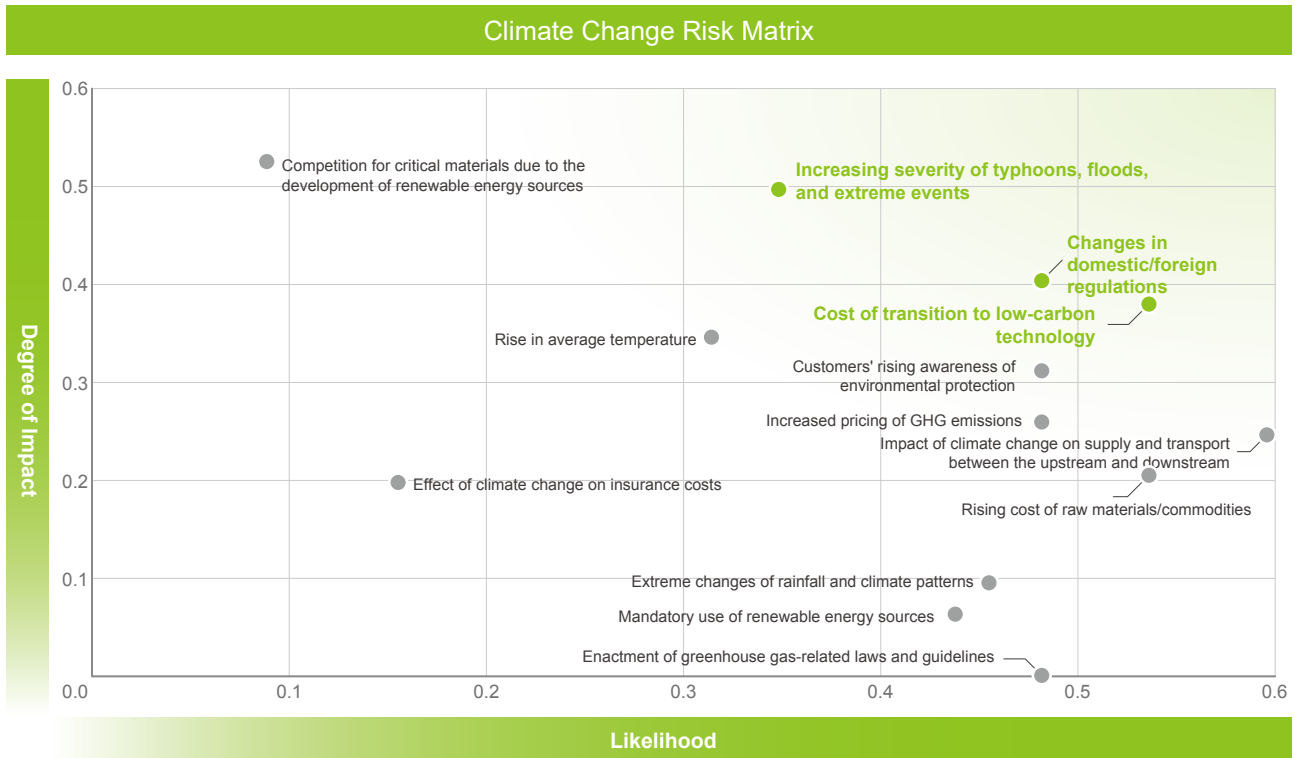
C.



Identify climate risks and opportunities

Create a risk and opportunity matrix and confirm climate change risks and opportunities

From the climate change risks and opportunities identified, Kaori further analyzed the “Likelihood” and “Degree of impact” and shortlisted three high-risk factors and three high-opportunity factors for 2022. Kaori’s climate change risk and opportunity matrix for 2022 is presented below:



Explanation of Climate Change-Related Risks

- List of identified climate change risks

Risk ranking	Risk No.	Risk category	Risk factor	Estimated time of occurrence
1	001	Transition risk - technology	Cost of transition to low-carbon technology	Medium-term
2	002	Transition risk - policies and regulations	Changes in domestic/foreign regulations	Medium-term
3	003	Physical risk - immediate	Increasing severity of typhoons, floods, and extreme events	Short-term

Note: Definition of timeframes: short-term: 2023-2024; medium-term: 2024-2026; long-term: 2026-2028

Risk 001 - Cost of transition to low-carbon technology

Impact scenario:

The Company will be required to develop products that feature lower carbon footprints to meet the market's demand, and the transition to lower carbon materials, production procedures, and technologies would require more resources, manpower, and time to be committed to research and development. Any attempt to transition to low-carbon products would incur additional investments of R&D resources or capital or give rise to uncertainties that ultimately increase product costs and reduce revenue.

Risk impact assessment	<ol style="list-style-type: none"> Uncertain access to raw materials: Kaori has plans to make use of low-carbon materials, but there are limitations associated with the development and access to low-carbon materials such as eco-friendly steel and copper. Any uncertainty in the supply would make product delivery timelines more difficult to control. Low-carbon transformation increases costs: In an attempt to conform with low-carbon requirements, the Company will have to commit R&D personnel and capital to low-carbon products, which in turn increases the costs and compromises the competitiveness of the Company's products.
Evaluation of financial impact	Increased operating costs and reduced revenue

Risk 002 - Changes in domestic/foreign regulations

Impact scenario:

The Company is compelled to acquire new machinery and equipment that conforms with the low-carbon and environmental protection requirements that governments have enforced through policies and regulations, and it therefore has to renew existing equipment prematurely. A drastic change of policy or law would have to be met with additional capital expenditure and incur additional costs on equipment acquisition and employee training, thereby increasing the costs of the Company.

Risk impact assessment	<ol style="list-style-type: none"> Domestic and foreign carbon taxes: Carbon pricing systems are taking shape at increasing rates at home and abroad. The Company may incur additional carbon taxes and see costs rise over time. Energy management requirements: New energy regulations demand higher energy efficiency from production equipment, for which the Company is required to invest in energy conservation and carbon reduction equipment, and the additional expenditures incurred on fixed assets, talent development, or certification will ultimately increase product costs.
Evaluation of financial impact	Increase in operating costs

Risk 003 - Increasing severity of typhoons, floods, and extreme events

Impact scenario:

Increasing severity of extreme weather causes weather conditions such as typhoons to occur at stronger intensities, which results in prolonged floods and power outages that affect factory operations. Bad weather has the potential to disrupt production activities, reduce capacity, damage equipment, hinder transportation, disrupt raw material supply, decrease revenue, and increase costs.

Risk impact assessment	Delayed delivery: Extreme weather affects factory operations and causes disruptions to production activities, raw material supply, and transportation. Delivery may be delayed by several days to one week. Impacts to the upstream and downstream: Extreme weather affects the number of parts delivered by suppliers and causes Kaori to underdeliver and delay shipments of goods to customers. Customers' production activities may be halted as a result.
Evaluation of financial impact	Increased operating costs, reduced revenue, loss of credibility

Explanation of Climate Change-Related Opportunities

- List of identified climate change opportunities

Opportunity ranking	Opportunity No.	Opportunity category	Opportunity factor	Estimated time of occurrence
1	001	Opportunities - Markets	Entry into new markets	Short-term
2	002	Opportunities - Products and services	Development and expansion of low-carbon products and services	Medium-term
3	003	Opportunities - Products and services	Changes in consumers' preferences	Short-term

Opportunity 001- Entry into new markets

Impact scenario:

The need to meet energy and carbon reduction requirements presents the Company with exposure to new markets and different customers, such as the application of fuel cells on ships, hydrogen generation and energy storage for thermal reactors, and recycling of residual hydrogen for power generation. Kaori will actively explore the potential of the new markets and expand the range of products offered as well as customers served for improved revenue and reputation.

Opportunity impact assessment	<ol style="list-style-type: none"> Access to new opportunities: In light of the carbon reduction trends around the world, Kaori will engage customers in greater depth to expand the applications of plate heat exchangers, such as in heat pumps. Exposure to new customers and new markets offers the potential for increased revenue and improved reputation. Entry into the hydrogen power market: Kaori invests persistently into the development of hydrogen power products and has been assisting customers with their entry into the hydrogen power market. In light of customers' needs for hydrogen power products, the Company has assigned its Fuel Cell Business to work with customers on the development of production procedures for SOECs, hydrogen power solutions, and fuel cells for ships, and to make samples as deemed necessary. Given the significant increase in shipments and revenue, Kaori is optimistic about the prospect of hydrogen power. Development of immersion cooling modules/systems: As servers/data centers draw more power, liquid cooling presents a viable solution over the long term. Kaori's immersion cooling modules/systems offer the potential to increase energy efficiency, and their persistent development efforts have increased the level of sophistication of the products, bringing them closer to mass production, which will benefit new markets and customers.
Financial impact assessment	Increased revenue and new collaborative opportunities

Opportunity 002 - Development and expansion of low-carbon products and services

Impact scenario:

The Company continues to expand its low-carbon product lines to include new products such as SOFCs, carbon capture solutions, and new fuel cells in line with carbon reduction trends around the world. This additional offering of low-carbon products will improve market competitiveness, increase market share, and raise revenue in the future.

Opportunity impact assessment	<ol style="list-style-type: none"> 1. Exploration of low-carbon opportunities: Kaori's heat exchanger and fuel cell businesses have begun introducing low-carbon products to the market, whereas other businesses are also actively developing new products and new green solutions for customers. 2. Development of low-carbon technology: Introducing green design into production procedures and technologies helps lower carbon footprints and increase market competitiveness. 3. New investment opportunities: Some of the hydrogen power technologies have matured and are ready for mass production. Given their high relevance to green energy and international trends, these technologies are very likely to attract capital from the banking sector and government agencies.
Financial impact assessment	Cost reduction, increased revenue, and attraction of capital

Opportunity 003 - Changes in consumers' preferences

Impact scenario:

The escalating energy crisis and carbon reduction requirements have increased consumers' preference for energy conservation products, such as heat pumps. This change in market trend and consumers' preference increases demand for the Company's products, which ultimately contributes to revenue and business growth.

Opportunity impact assessment	<p>Increased product demand:</p> <p>Carbon reduction trends around the world have turned the market's attention to energy conservation solutions. Kaori is in a good position to capitalize on the increasing demand due to the energy and carbon reduction potential of the products offered and due to the early market advantage it has secured to date.</p>
Financial impact assessment	Increased revenue

Response Strategies to Climate Change Risks and Opportunities

Risk Response Strategies

- Response strategies for the cost of transitioning to low-carbon technology:
 - » Diversity of suppliers:
Kaori maintains relationships with several suppliers to reduce uncertainties associated with the cost of and access to low-carbon materials.
 - » Acquisition of green loans/financing:
Kaori will negotiate with banks and source green financing at preferential rates to lower operating costs.
 - » Cover risky businesses with consistent product revenue:
If Kaori's low-carbon products fail, other departments that generate consistent revenue from OEM services, such as the Fuel Cell Business, will try to increase revenue in an attempt to cover the potential loss of revenue associated with transition risks.
- Response strategies to changes in domestic/foreign regulations:
 - » Monitoring of regulations and trends:
A dedicated team will be assembled to keep track of new product regulations and trends on a regular basis. Regular training will be organized to discuss current trends and to evaluate the needs for product re-modification and re-certification.
 - » Introduction of energy-saving equipment:
A comprehensive energy management system will be developed to monitor equipment energy efficiency, so as to facilitate the replacement of energy-intensive equipment. Additional investments will also be made for the installation of green power generation and storage equipment at plant sites and offices. Furthermore, the Company will introduce automated production equipment as a way to improve production and energy efficiency, which in turn will reduce the frequency of equipment renewal and allow digital solutions to be used for the optimization of production procedures.
 - » Termination of high-carbon emission production processes and services:
Kaori sold two pieces of energy-intensive copper brazing equipment in the 4th quarter of 2022 and expects to move the equipment out of plant site before the 1st quarter of 2023.
- Response and strategy to increasing severity of typhoons, floods, and extreme events:
 - » Reducing the risk of supply chain disruption:
Kaori engages a diversified group of suppliers to secure the sources of its raw materials and the consistency of supply. Negotiations are made to have suppliers increase the level of inventory and turnover and store inventory near customers' locations to minimize the risk of transport disruption.
 - » Compensating production capacity with efficiency:
If work is suspended due to typhoons, Kaori will evaluate the extent of the delay and ask suppliers to increase production efficiency to make up for capacity shortfall, thereby averting production halt due to supply disruption.

Cost of Risk Response

- ✓ Increased operating costs
- ✓ Adjustment to capital expenditure and capital allocation

Execution Strategies for Opportunities

- Execution strategies for entry into new markets:
 - » Development of exclusive products:
Exclusive products will be developed for heat pumps to capitalize on the current market trend and increase market share, whereas exclusive heat exchangers for air dryers will be developed to expand product lines and engage customers in broader, more frequent interactions.
 - » Development of hydrogen power:
Kaori continues to develop hydrogen power products and engage technology partners in various innovations to bring technologies to broader applications, thereby satisfying the needs of customers and markets.
 - » Ongoing development of immersion cooling modules/systems:
Kaori continues to make modular designs and obtain technological certification for its liquid cooling and immersion products, while at the same time maintaining the flexibility needed to customize products according to the needs of different markets. By accumulating data on product design, the Company aims to stay competitive in the market.
- Execution strategies for development and expansion of low-carbon products and services:
 - » Developing products with low carbon footprints:
Kaori will improve production procedures by incorporating green designs such as the use of low-carbon materials, designs with low material requirements, adoption of product recycling mechanisms, reuse of raw materials or parts, and adoption of low-carbon transport and packaging materials to lower product carbon footprints.
 - » Development of new low-carbon solutions:
Hydrogen power technology will be incorporated into carbon neutral solutions and new forms of fuel will be developed to capitalize on new opportunities associated with climate mediation.
 - » Investment into the circular economy:
Technologies relating to the circular economy, such as treatment of waste organic solvents and reuse of waste/residual hydrogen from production activities, will be developed in the future.
- Execution strategies for changes in consumers' preferences:
 - » Establishment of marketing plans:
Plans will be made to have business units engage existing as well as new customers on a regular basis to ensure that product features do satisfy customers' requirements and are adjusted at appropriate times. Attention will also be directed toward exploring new markets and customers, such as tier-A customers in Europe.
 - » Consistent supply in response to the market's needs:
Kaori will increase the number of stamped plate and stainless steel suppliers for capacity expansion. An ERP system will be used to monitor all stages of the production process for improved product quality and delivery timing.

Cost of Opportunity Response

- ✓ Increased operating costs
- ✓ Adjustment to capital expenditure and capital allocation

Goals and Indicators

Kaori conducted a greenhouse gas inventory covering all plant sites in Taiwan in 2022 according to the ISO 14064-1:2018 standard and was able to obtain third-party validation for the inventory outcome. The Company plans to conduct greenhouse gas inventories on a yearly basis going forward to keep track of emissions and trends. Details of the greenhouse gas emissions for 2021 and 2022 are disclosed in section [5.2 Environmental and Energy Management](#). Aside from exploring ways to reduce carbon emissions, Kaori also plans to include its subsidiary in Ningbo, China, into the inventory starting from 2023 for a more comprehensive understanding of greenhouse gas emissions, so that short-/medium-/long-term reduction goals can be set to guide reduction efforts.

Kaori expects to complete its first product carbon footprint (ISO 14067) survey in 2023, through which it intends to gather data that is useful for carbon footprint reduction plans. The Company also plans to survey carbon footprints for a wider range of products in the future. By learning the level of emissions at various stages of product life cycles, the Company will be able to better respond to carbon reduction trends and needs of the market and the rest of the world. Kaori will continue committing resources and manpower to the research of low-carbon products and new technologies, while taking the initiative to increase the percentage of low-carbon products offered for greater market exposure and improved competitiveness.

5.2 Environmental and Energy Management

Climate change has emerged to become one of the most critical issues in the 21st century. Extreme weather, floods, and droughts in recent years have prompted government agencies, businesses, and private organizations to undertake more active mitigations of the risks. Meanwhile, Kaori contributes its part to environmental protection and social values by enforcing energy management throughout its operations and by investing into the research and development of new materials and production procedures. A Carbon Management Committee has also been assembled to oversee GHG reduction, energy/resource conservation, water conservation, waste recycling, and mitigation of environmental impact. At the same time, Kaori continues to invest into environmental protection facilities and incorporate green management and energy conservation practices into business activities for sustainable growth.

