

# Climate change initiatives

Group Target (KPI)	FY2023 Result	FY2024 Plan	FY2025 Target	FY2031 Target
Reduction in CO <sub>2</sub> emissions (Compared with FY2016; Scope 1 and 2 in Japan)	-25%	-27%	-30%	-50%

## ▶ Greenhouse Gas (GHG) Emissions

The Nichirei Group Environmental Policy and The Nichirei Group Biodiversity Policy  
<https://www.nichirei.co.jp/english/sustainability/environment/policy.html>

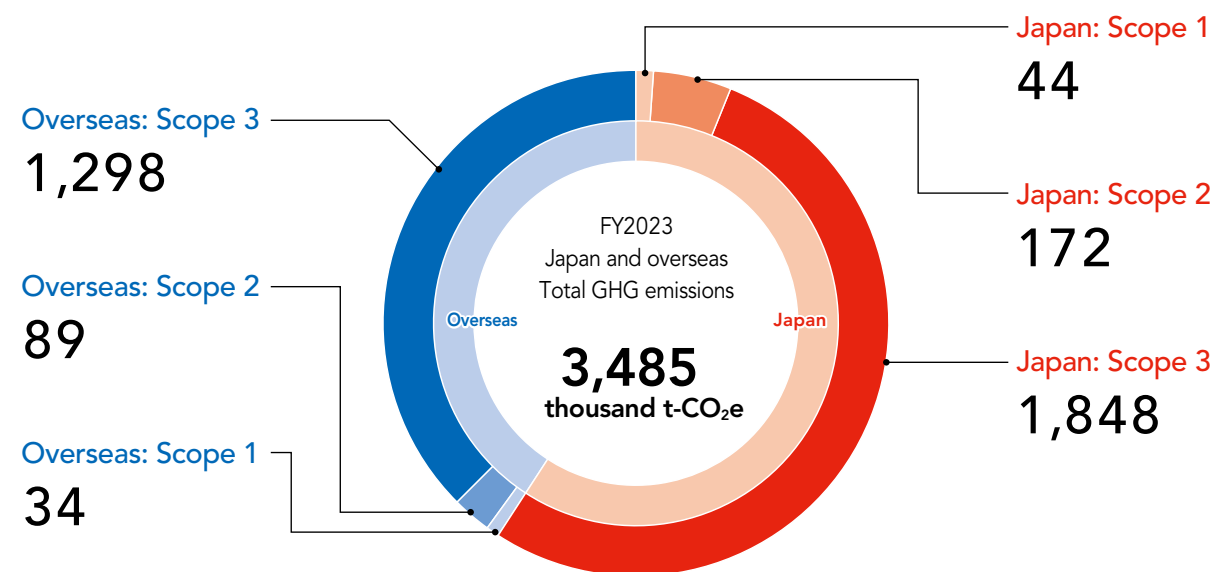
### 2050 Carbon Neutral Declaration

#### The Nichirei Group will achieve carbon neutrality by 2050

Committed to achieving carbon neutrality by 2050, the Nichirei Group will reduce Scope 1, 2 and 3 GHG emissions from its entire supply chain to zero to the extent possible, both in Japan and overseas. We will also implement programs to achieve carbon neutrality by absorbing or removing the GHG emissions we cannot reduce.

### ■ Nichirei Group Scope 1, 2 and 3 GHG Emissions in Japan and Overseas

The Nichirei Group's GHG emissions in FY2023 totaled 3,485 thousand tons-CO<sub>2</sub>e.



### ■ Nichirei Group Scope 3 Emissions by Category

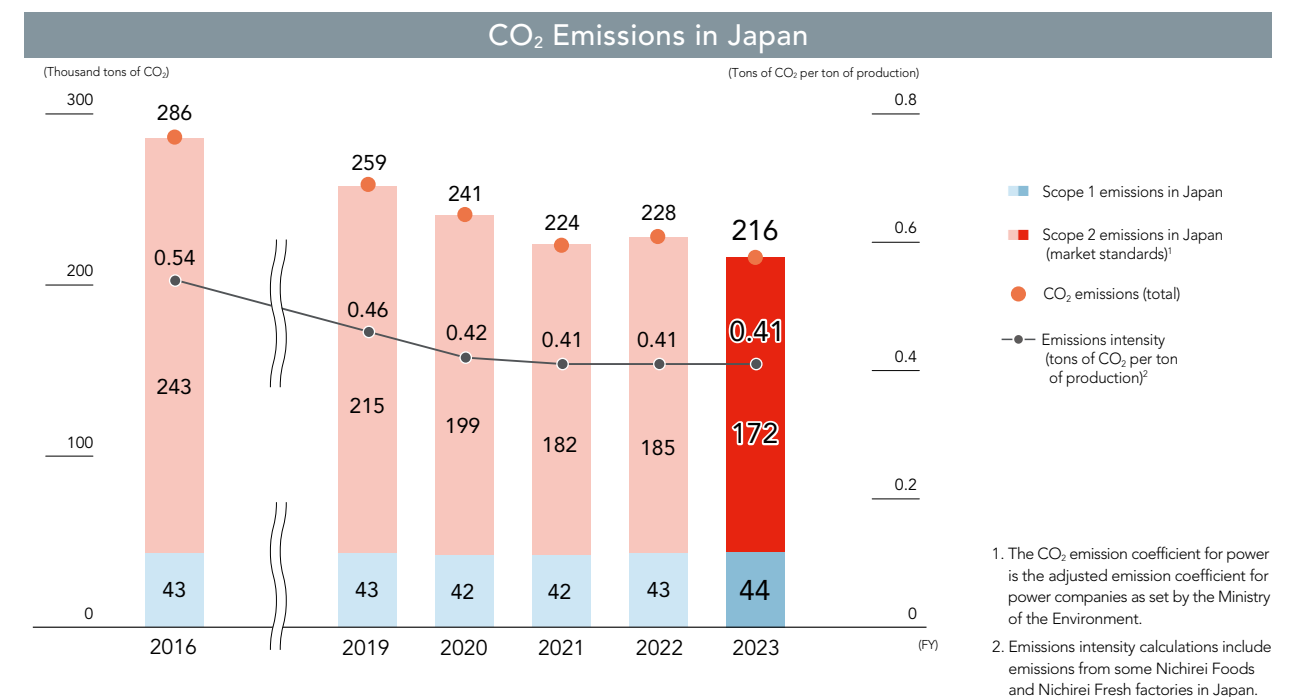
Scope 3 emissions account for approximately 90% of the Nichirei Group's total GHG emissions, and Category 1 accounts for approximately 89% of total Scope 3 emissions. We have confirmed that the main sources of emissions include procurement of raw materials and OEM products for use in processed foods, marine, meat and poultry products, and third-party logistics (3PL) transportation in the temperature-controlled logistics business.

Scope 3 Category		FY2022*	FY2023
No.	Description		
Category 1	Purchased goods and services	2,724,104	2,802,360
Category 2	Capital goods	113,938	101,503
Category 3	Fuel- and energy-related emissions from activities not included in Scope 1 or Scope 2	62,828	65,438
Category 4	Upstream transportation and distribution	98,016	95,991
Category 5	Waste generated in operations	2,527	2,197
Category 6	Business travel	505	1,563
Category 7	Employee commuting	2,400	2,541
Category 8	Upstream leased assets	0	0
Category 9	Downstream transportation and distribution	3,519	3,696
Category 10	Processing of sold products	33,833	37,563
Category 11	Use of sold products	9,902	11,160
Category 12	End-of-life treatment of sold products	16,431	15,519
Category 13	Downstream leased assets	6,582	6,418
Category 14	Franchises	N/A	N/A
Category 15	Investments	N/A	N/A
Total		3,074,586	3,145,951

\* Increase of approximately 61% compared to Scope 3 emissions for FY2022 presented in *Integrated Report 2022*. The main reason is that we expanded the scope of emissions included in Category 1.

### ■ Nichirei Group's Scope 1 and 2 CO<sub>2</sub> Emissions in Japan

In FY2023, we reduced our CO<sub>2</sub> emissions by 25% compared with FY2016.



1. The CO<sub>2</sub> emission coefficient for power is the adjusted emission coefficient for power companies as set by the Ministry of the Environment.  
 2. Emissions intensity calculations include emissions from some Nichirei Foods and Nichirei Fresh factories in Japan.

## ▶ GHG Emission Reduction Initiatives

### Increasing Energy Efficiency and Preventing Refrigerant Leaks

The Nichirei Group owns large-scale refrigerated distribution warehouses and food factories, and we are implementing a variety of initiatives to increase energy efficiency. In addition, we conduct rigorous inspections and management on a daily basis to prevent fluorocarbon leakage. We also introduced high-performance fluorocarbon detectors in FY2022, and conduct regular inspections to reduce refrigerant leakage.

Freezer upgrades	Appropriate renovation of compressors and coolers
Optimization of cooling tower settings	Suppression of freezer pressure level and reduction of cooling tower operating time
Prevention of warm air infiltration	Installation of warm air exhaust equipment and installation of appropriate dock shelters
Early detection and elimination of refrigerant leaks	Introduction of high-performance fluorocarbon detectors

### Switching Energy Sources

The Nichirei Group is switching over to energy sources with lower CO<sub>2</sub> emissions. While switching to electricity from renewable energy sources with zero CO<sub>2</sub> emissions, we will also move forward with initiatives to switch to fuels that produce low amounts of CO<sub>2</sub> to generate electricity or heat used for frying and baking on food factory production lines.

<b>Electrification</b>	The Nichirei Logistics Group began using three electric refrigerated trucks in the Kanto region in FY2023. We will put two more into service in the Tokai region in FY2024.
<b>Switching to Renewable Energy Sources for Generating Electricity</b>	The Nichirei Group is carrying out initiatives to procure renewable energy for generating electricity. This enabled us to increase our percentage of electricity generated from renewable energy sources by 4 points in FY2023 compared with FY2022.



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#### Targets for Electricity from Renewable Energy Sources (%)

FY2022 Result	FY2023 Result	FY2025	FY2031
5%	9%	15%	40%

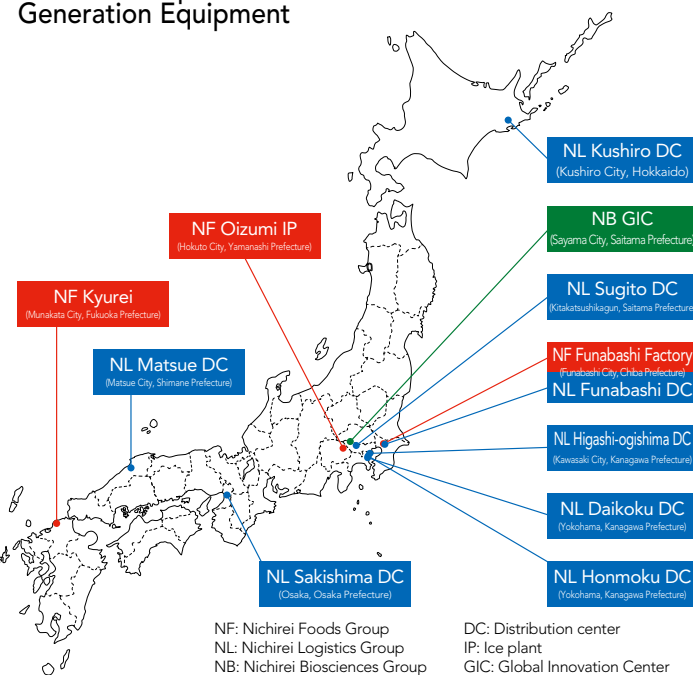
Note: Figures for Japan

### ■ Utilizing Electricity Generated from Solar Power

The Nichirei Group is installing solar power generation equipment on the premises of food plants and on the rooftops of refrigerated distribution warehouses. As of FY2023, 11 Nichirei Group facilities in Japan had installed solar power equipment, which generated 3,201 MWh of electricity and reduced CO<sub>2</sub> emissions by 1,429 tons in FY2023. We plan to install similar equipment at three more locations in FY2024.

In addition, through our intranet we are also sharing information such as locations that have installed solar panels and daily power generation volume to help increase employee interest in renewable energy and CO<sub>2</sub> emission reduction.

#### Nichirei Group Locations with Solar Power Generation Equipment



#### Solar Power Generation and CO<sub>2</sub> Emission Reduction

Year of installation	FY2020	FY2021	FY2022	FY2023
No. of locations where installed (Cumulative total)	8	9	10	11
Power generated (MWh)	2,068	2,149	2,974	3,201
CO <sub>2</sub> emission reduction (Tons)	1,003	986	1,408	1,429

### ■ Initiatives to Use 100% Renewable Energy Sources at Operating Locations – Carbon-Free Electricity

The Nichirei Group is also working to use 100% renewable energy for electricity at its operating locations. In FY2023, two of the Nichirei Logistics Group's operating locations that have solar power generation equipment achieved 100% carbon-free electricity, including the purchase of feed-in tariff (FIT) non-fossil fuel energy certificates.<sup>1</sup>

In FY2024, the Group will complement these initiatives in working to use 100% renewable energy electricity. We will install rooftop solar power generation equipment at the Nichirei Group's main campus in the Hinode area of Funabashi City, Chiba Prefecture. In addition, we will procure renewable energy through methods including Renewable Energy Certificates (RECs) and FIT non-fossil fuel energy certificates.

1. Certificates that enable trading in the environmental value of non-fossil fuel energy power sources such as renewable energy generated from solar, wind, hydro, geothermal, and biomass. Among these, FIT non-fossil fuel energy certificates represent electricity generated by FIT power sources.

### ■ Purchase of Green Energy<sup>2</sup>

Since March 2020, Nichirei Foods has been purchasing RECs and has switched to hydroelectric, biomass, and other sources of renewable energy for the electricity used to manufacture certain household-use frozen foods and for the total amount of electricity used at production facilities. Kyurei Inc.'s new plant, which opened in spring 2023, takes care of all of its electricity needs with its own solar power generation facilities as well as renewable energy power sources including biomass.

In addition, in FY2021, the Head Office building (Nichirei Higashi Ginza Bldg.) shifted to renewable energy (making use of RECs) for all of its power usage. Furthermore, we

employed RECs for all of the electricity used for the Nichirei Ladies professional golf tournament we hosted in June 2023.



#### Renewable Energy Initiatives at Nichirei Foods Factories

Plant	Funabashi Plant	Yamagata Plant	Kyurei
Renewable energy procurement	Application	All electricity used for producing <i>Honkaku-Itame-Chahan</i>	All electricity used at the plant
	Initiative	Purchase of RECs	Switch to renewable energy from hydropower generation
	Date initiated	March 2020 (ongoing)	February 2022 (ongoing)
Installation of solar panels	Yes	Yes	Yes

2. Power generated from renewable energy sources, such as biomass, solar and wind. The CO<sub>2</sub> emission reductions achieved through the use of power generated from renewable energy are traded in the form of RECs.

### Eliminating Chlorofluorocarbons (CFCs)

#### ■ Switching to Natural Refrigerants

The Nichirei Group's initiatives to counter climate change include systematically eliminating the use of fluorocarbons by switching to natural refrigerants for refrigeration equipment.

#### Target Natural Refrigerant Conversion Rates

	FY2023 Results	FY2024 Plan	FY2025 Targets	FY2031 Targets
Rate of conversion to natural refrigerants Production equipment (Japan)	56%	69%	80%	100%
Rate of conversion to natural refrigerants Logistics (Global)	58%	60%	62%	75%

## ► Addressing Climate Change (TCFD)

The effects of climate change are becoming increasingly serious and climate change is considered to be a contributing factor in the frequent abnormal weather patterns and natural disasters that we see currently. The Nichirei Group's business benefits from nature. Therefore, in addition to its importance as a social challenge, we see climate change as a potential threat to business continuity.

In June 2020, the Nichirei Group expressed its support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and announced its participation in the TCFD Consortium. The Group has positioned climate change initiatives as one of the material matters it identified for achieving its vision for 2030. As such, we are actively promoting initiatives to help resolve social issues related to climate change.

In addition to appropriately responding to risks posed by shifts in the external environment caused by climate change, we will consider several scenarios in which climate change could give rise to business opportunities, and conduct timely disclosure.



### 1 Governance

In April 2022, the Nichirei Group established the Group Sustainability Committee, which formulates sustainability strategies, including initiatives related to climate change, and manages the progress of those strategies. Chaired by the representative director and president of the holding company, the committee comprises the director and executive officer responsible for implementing climate change strategies, all other officers, including outside directors and outside Audit & Supervisory Board members, as well as relevant personnel from the strategic planning and sustainability divisions of each operating company. Climate change-related strategies and targets deliberated and reviewed by the committee are reported to the Board of Directors of the Nichirei Group by the director and executive officer responsible for climate change initiatives. Strategies, targets and plans are reviewed as appropriate.

Furthermore, in April 2022, to respond to a wider range of sustainability issues, including climate change, we established the Sustainability Management Division within the holding company.

The Group Sustainability Committee also deliberates the details of various scenario analyses that have been conducted since 2019. The latest disclosure includes content deliberated at a committee meeting held on July 25, 2023.

## 2 Strategy

In FY2021, we conducted scenario analyses that identified risks and opportunities by business and degree of importance. One scenario analysis was for shrimp procurement in FY2024.

### ■ Material Risks and Opportunities by Business and Scenarios Identified in FY2021

Business		Risks		
Foods Business	Chicken	Baseline scenario	General abnormal weather	<ul style="list-style-type: none"> <li>Soaring prices due to shrinking agricultural production</li> <li>Deterioration in the quality of raw materials</li> <li>Difficulty in obtaining raw materials and production delays due to logistics network disruptions</li> </ul>
	Rice			
	Shrimp			<ul style="list-style-type: none"> <li>Reductions in production efficiency and volume and submerged aquafarms</li> </ul>
	Vegetables, marine products, and meat and poultry products		Flooding, rising sea levels	<ul style="list-style-type: none"> <li>Submerged agriculture farms, aquafarms and processing factories</li> <li>Difficulty in obtaining raw materials and production delays due to supply chain disruptions</li> </ul>
	Common	1.5°C scenario	Low-carbon policies	<ul style="list-style-type: none"> <li>Increased cost for measures for converting to renewable energy and equipment electrification, reduction of emissions</li> </ul>
			Environmental countermeasures within the supply chain	<ul style="list-style-type: none"> <li>Curtailment of transactions; higher cost of measures such as the maintenance of global certifications</li> </ul>
Logistics Business		Baseline scenario	General abnormal weather	<ul style="list-style-type: none"> <li>Damage to refrigerated warehouses and logistics centers</li> <li>Difficulty securing human resources in disaster risk areas</li> </ul>
		1.5°C scenario	Low-carbon policies	<ul style="list-style-type: none"> <li>Increase of investment in natural refrigerants and opportunity loss caused by the slow adoption of technological platforms such as electrical and low-carbon vehicles</li> </ul>

Business		Opportunities		
Foods Business		Baseline scenario	Changes in weather patterns	<ul style="list-style-type: none"> <li>Increased demand for frozen and processed foods</li> </ul>
		1.5°C scenario	Strengthening of environmental countermeasures within the supply chain	<ul style="list-style-type: none"> <li>Increased demand for ethical products that are compliant with the Sedex platform and are created using globally certified raw materials</li> <li>Increased demand for the curtailment of food loss within the supply chain through the development of eco-friendly products and technological development</li> </ul>
			Increased environmental awareness	<ul style="list-style-type: none"> <li>Development and expansion of demand for products created using sustainable raw materials</li> </ul>
Logistics Business		Baseline scenario	General abnormal weather	<ul style="list-style-type: none"> <li>Increase in sales resulting from expanding customer base through strengthened disaster countermeasures and greater resilience</li> </ul>
		1.5°C scenario	Modal shift	<ul style="list-style-type: none"> <li>Cost reduction achieved through a modal shift that improves transportation efficiency</li> </ul>
			Increased environmental awareness	<ul style="list-style-type: none"> <li>Increase in number of business partners due to higher evaluations as a company that actively discloses information related to environmental countermeasures</li> </ul>

Note: The bioscience business is characteristically resistant to the impact of climate change. Accordingly, we have not currently identified any material factors in our bioscience business.

Climate change scenario analyses for the most recent three fiscal years are disclosed in the *Integrated Report*.

- Climate Change Scenario in FY2023** <https://www.nichirei.co.jp/sites/default/files/inline-images/english/ir/integrated/pdf/68-71.pdf>
- Climate Change Scenario in FY2022** [https://www.nichirei.co.jp/sites/default/files/inline-images/english/ir/integrated/pdf/nichirei\\_IntegratedReport2021\\_all.pdf](https://www.nichirei.co.jp/sites/default/files/inline-images/english/ir/integrated/pdf/nichirei_IntegratedReport2021_all.pdf) (Pages 58-61)
- Climate Change Scenario in FY2021** [https://www.nichirei.co.jp/sites/default/files/inline-images/english/ir/integrated/pdf/nichirei\\_IntegratedReport2020\\_all.pdf](https://www.nichirei.co.jp/sites/default/files/inline-images/english/ir/integrated/pdf/nichirei_IntegratedReport2020_all.pdf) (Pages 21-24)

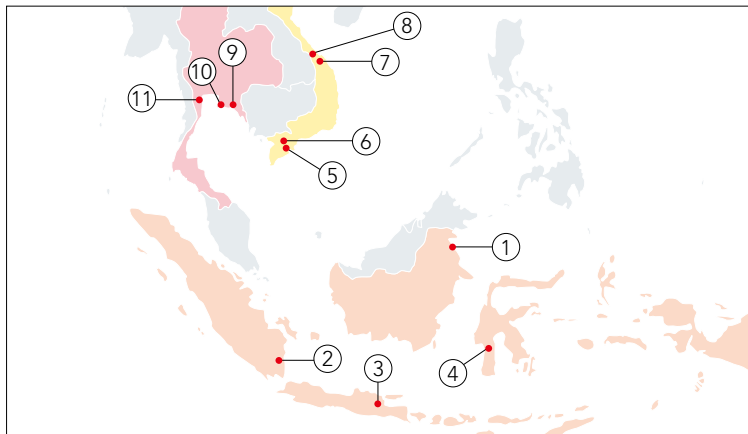


## Risk and Opportunity Analysis for Shrimp Procurement

### Items Assessed

Survival rate\* and body length (= weight) of adult shrimp in the main production areas (11 locations in total) in the top three countries from which Nichirei Fresh procures shrimp (Indonesia, Vietnam and Thailand).

### Areas Assessed



### Measurement Parameters

Climate change scenarios  
 RCP 4.5 (Rise in temperature between 2.0°C and 3.0°C),  
 RCP 8.5 (4.0°C rise in temperature)  
 Minimum spatial resolution  
 Seawater temperature: Approximately 50 km grid mesh  
 (Isotherms at approximately 0.5 degree intervals)  
 Temperature: Approximately 25 km grid mesh  
 (Isotherms at approximately 0.25 degree intervals)  
 Temporal cross-section  
 Annually from baseline year through 2090  
 Data used  
 Seawater temperature:  
 GBI (Global climate model provided by C3S)  
 Temperature: NEX-GDDP  
 (Global climate model provided by NASA)  
 Types of shrimp: Black Tiger (1), Whiteleg (2–11)

### Assessment Outcomes (Climate Change Scenario RCP 8.5)

	Risks	Opportunities
Impact of physical changes (Current scenario)	Survival rate of late stage larvae (juvenile shrimp) decreases by up to 30% compared with 2020	Shrimp body length increases by up to 30% compared with 2020
Impact in transition scenario	Increase in production and procurement costs due to carbon price transfers	Response to changes in consumer demand from a long-term perspective, procurement of certified sustainable raw materials, and support for producers

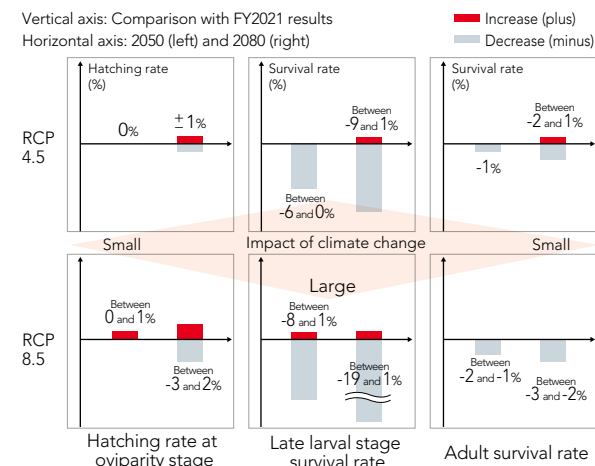
### Production Area Assessment (Climate Scenario RCP 8.5)

		Effect of the increased body length of adult shrimp			
		Extra large	Large	Medium	Small
Impact of decreasing survival rate	Large		① Indonesia Tarakan ③ Indonesia East Java ④ Indonesia South Sulawesi	⑪ Thailand Samut Songkhram Province	⑨ Thailand Chanthaburi Province
	Medium	② Indonesia Lampung		⑥ Vietnam Can Tho	⑤ Vietnam Soc Trang ⑩ Thailand Rayong Province
	Small	⑦ Vietnam Da Nang	⑧ Vietnam Hue		

The effect of increasing body length is higher at the main four production areas in Indonesia than in other areas. Although the impact of the decreasing survival rate is significant for late larval stage, the impact is considered to be limited because breeding is at indoor hatcheries with air-conditioning controls and other features.

### Survival Rates by Shrimp Growth Stage

Whiteleg shrimp growth stages and the impact of climate change

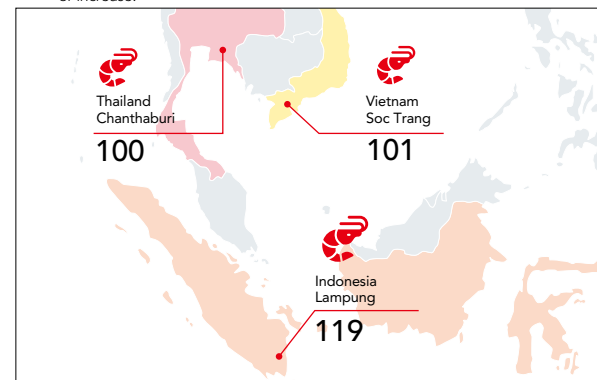


Note: Final survival rate is obtained by calculating (hatching rate at oviparity stage) x (late larval stage survival rate) x (adult stage survival rate)

### Adult Shrimp Body Length Prediction Map

2090 Whiteleg shrimp body length in RCP 8.5 (4.0°C rise in temperatures)  
 Prediction (Excerpt)  
 (Index: FY2021 = 100)

Note: Despite some differences among areas, body length tends to remain the same or increase.



## Financial Impact

We expect the financial impact on the shrimp business to include higher purchasing costs resulting from higher supplier costs, and various issues arising from market distribution of higher-priced products. Over the medium to long term, we expect that we will be able to effectively deliver social value by maintaining stable distribution of protein-rich shrimp.

Phenomena Confirmed	Assumed Financial Impact on Suppliers	Assumed Financial Impact on Nichirei	Measures to Address Financial Impact 1	Measures to Address Financial Impact 2
Decrease in late stage larvae survival rate	Decrease in final survival rate • Higher shipping costs • Higher energy costs due to increased use of air conditioning ↓ Reduced profit margins	Higher purchasing costs ↓ Current profit margin to slightly lower profit margin	• Develop new supplier relationships (Consider suppliers with little exposure to the impact of higher temperatures)	• Plant and strictly manage mangrove forests, which are a critical shrimp habitat
Increase in adult shrimp body length	Shorter breeding period • Reduced cultivation costs • Increased production capacity for high-margin products ↓ Increased profit margins	Impact of purchase costs ↓ Lower profit margin to slightly higher profit margin	• Base response on market trend toward price increases for lower-priced products • Control costs with seasoning processing technology • Create new product categories (For example, develop higher-priced products in sizes that do not currently exist)	• Cooperate financially with producers to offset the increased administrative expense component of annual purchasing costs

## 3 Risk Management

Nichirei ensures that appropriate divisions manage the impact that a variety of risks (including climate change-related risks) have on business management from a comprehensive standpoint employing both rational and optimal methods. The risks are also deliberated and reviewed by the Group Risk Management Committee, which is chaired by the representative director and president. The committee has been managing our responses to major risks related to business operations. However, due to the need to respond more quickly and accurately to various ESG-related issues, we established the Group Sustainability Committee in FY2023 as a separate entity to deal with ESG-specific risks and opportunities, including climate change.

The Group Sustainability Committee works with the strategic planning and sustainability divisions of each operating company to identify important ESG-related issues and risks. The most important themes are then deliberated by the committee. Specifically, the risk associated with climate change is positioned as a major risk for the Group. The committee deliberates and manages business risks and opportunities arising from scenario analyses.

## 4 Indicators and Targets

Nichirei Group Material Matters (Materiality)

### Realizing sustainable food procurement and a circular economy

Group Targets (KPIs)	Procurement ratio of sustainable marine products complying with the Nichirei Group Sustainable Marine Product Procurement Guidelines in marine products business	100% (FY2025 target, FY2031 target)
	Ratio of marine products in the above from fisheries with MSC, ASC or other global certification	32% (FY2025 target) 50% (FY2031 target)