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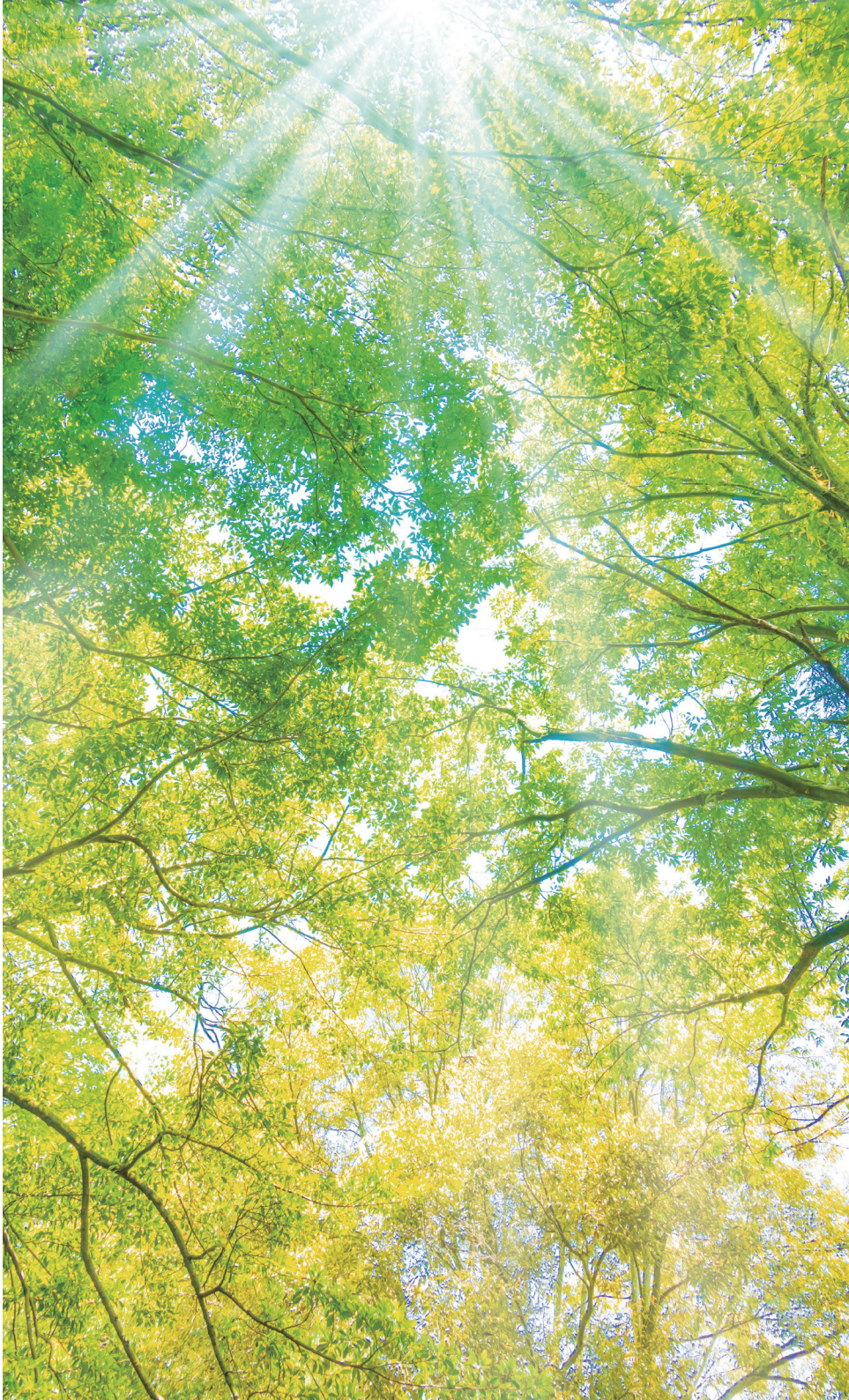
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Strategy | Assessment of Dependencies and Impacts



[1] Climate/Nature-related Dependencies and Impacts

1. Dependencies and impacts on climate and nature in insurance underwriting and investment/loan activities

Non-life insurance supports people's daily lives and business activities by compensating for losses arising from accidents and disasters. Life insurance, through the payment of insurance claims and benefits, helps reduce the financial burden of medical expenses and supports individuals and families in the event of disability or death. An increase in the risks of

disasters, accidents, and health issues leads to higher financial risks for the MS&AD Group and makes our management more vulnerable. Therefore, it is important for us to understand, from a medium- to long-term perspective, how changes in climate and nature influence these risks to loss and human health.

In addition, insurance, through its financial functions, underpins the economic activities of a wide range of clients. While the degree may vary, these activities exert some form of impact on climate and nature. Accordingly, the Group recognizes that its insurance business must take such indirect impacts into account as well.

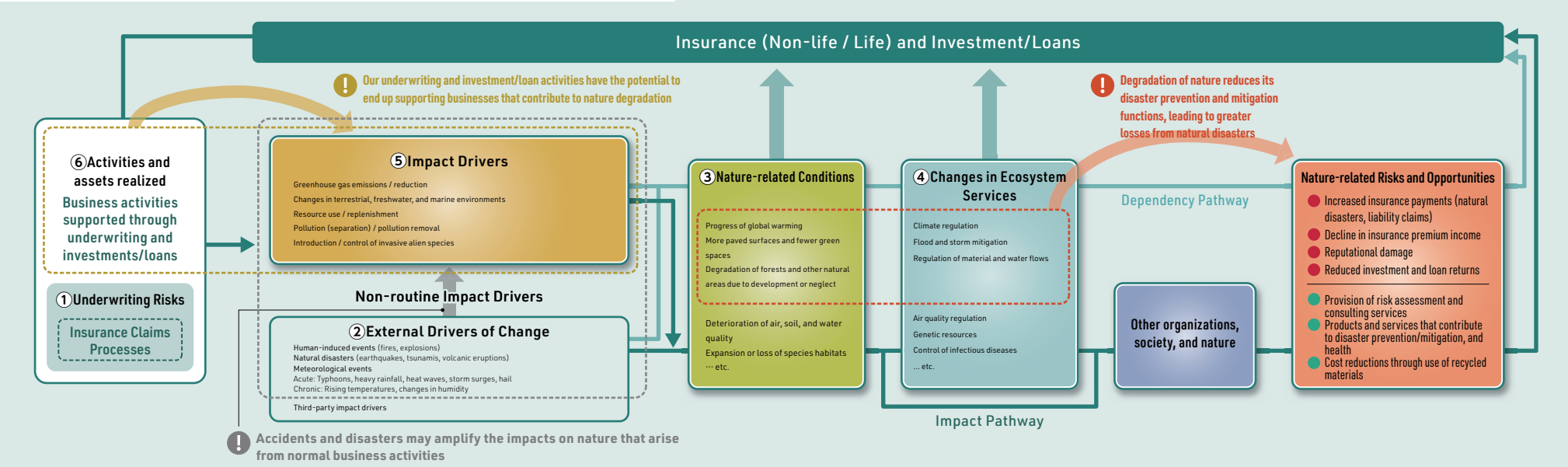
(i) Pathways of dependencies and impacts on climate and nature

To accurately understand the Group's nature-related risks and opportunities, we used the dependency and impact pathway framework outlined in the TNFD disclosure recommendations to analyze our business activities in terms of their dependencies and impacts on nature.

Key findings of our analysis

- In the non-life insurance business, the degradation of nature and the resulting decline in its disaster prevention and mitigation functions directly increase financial risk through the expansion of natural disaster losses.
- Businesses supported through insurance underwriting and investment/loans may, in turn, contribute to the degradation of nature, thereby amplifying the aforementioned financial risks.
- Accidents and natural disasters can amplify the environmental impacts of ordinary business activities, potentially leading to reputational damage or weaker performance at affected companies, which in turn may become business risks for the Group.

Pathways of Nature Dependencies and Impacts in the MS&AD Group's Businesses



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■ Understanding the pathways leading to the Group’s own risks

All business activities, in some form, rely on natural resources and the functions provided by nature (ecosystem services). In other words, they are dependent on nature, while also exerting impacts on nature. These dependencies and impacts alter state of nature-related conditions and degrade ecosystem services. Meanwhile, external factors unrelated to our own business activities can also affect nature-related conditions and ecosystem services. The diagram illustrates how such internal and external dependencies and impacts on nature interact in complex ways and ultimately lead to opportunities and risks for the Group.

■ Transforming into positive feedback loops

Because both internal and external dependencies and negative impacts lead to risks in business activities, companies must transform these pathways from negative feedback loops into positive ones to enhance the sustainability of their businesses.

■ Analysis in two key areas: insurance underwriting and investment/loans

We re-examined our non-life insurance business using this pathway framework, integrating not only nature but also climate considerations into our analysis. Environmental impacts arising directly from operational activities – such as daily business activities and sales or damage inspections conducted using company vehicles – are limited in the non-life insurance business. The vast majority of dependencies and impacts related to climate and nature occur downstream in the value chain, through insurance underwriting and investment/financing activities. Accordingly, our analysis focuses on these two activity areas.

(ii) Dependencies on climate and nature

In non-life insurance, compensation is provided for losses or damages to the insured assets and business activities [in figure: 1 underwriting risks] ➡ when they are affected by fires or natural disasters like earthquakes and typhoons [in figure: 2 external drivers of change] ➡.

■ Expansion of losses due to degradation of ecosystem services

The extent of these damages and losses varies greatly depending not only on external drivers of change but also on the disaster prevention and mitigation functions [in figure: 4 changes in ecosystem services] ➡ inherent in nature itself [in figure: 3 nature-related conditions] ➡.

> Expansion of fire damage

For example, when abnormally hot and dry weather [in figure: 2 external drivers of change] ➡ occurs in an unmanaged forest where dead trees and dry grass have accumulated [in figure: 3 nature-related conditions] ➡, any small fire outbreak will continue to grow [in figure: 4 changes in ecosystem services] ➡, likely resulting in a major forest fire.

> Intensification of water damage

Similarly, when a short period of heavy rainfall [in figure: 2 external drivers of change] ➡ occurs in a dense residential area developed on low-lying land [in figure: 3 nature-related conditions] ➡, the

ground is unable to absorb the sudden influx of rainwater [in figure: 4 changes in ecosystem services] ➡, leading to flooding with greater severity.

> Impact on Financial Risk

When climate-related external factors worsen due to climate change and the nature-related conditions deteriorate, the usual functions for natural disaster prevention and mitigation weaken, resulting in greater damage from natural disasters and higher insurance claim payouts.

■ Health risks due to degradation of ecosystem services

Human health also depends on ecosystem services, including climate regulation, protection from hazards, and disease control. These are functions that directly reduce health risks and support physical and mental well-being through clean water, nutritious food, and access to nature for recreation. In addition, disease treatment relies on natural resources for pharmaceuticals and raw materials. The deterioration of nature and ecosystem services therefore heightens these health risks.

> Increase in heatstroke and infectious diseases

In particular, the increase in heatstroke cases caused by the combined effects of heat waves and urbanization, and the spread of infectious diseases resulting from human encroachment into wildlife habitats, have significant implications for the financial risks of life insurance companies.

■ Contributing to Risk Hedging for Society as a Whole

In conclusion, the insurance industry, particularly the non-life insurance sector, is heavily dependent on ecosystem services that help prevent disasters, in addition to changes in external factors due to the impacts of climate change. Most people and businesses live their lives without particularly noticing the "degradation of ecosystem services," but the effects of this degradation are exposed through sudden events such as natural disasters. Currently, much of the economic damage and losses caused by natural disasters are covered by insurance, and insurance companies contribute to risk hedging for society as a whole by taking on such financial risks.

■ Enhancing sustainability by considering ecosystem services

Therefore, in order to enhance the sustainability of our business, the MS&AD Group recognizes the need not only to monitor risk events that trigger insurance payouts, but also to pay close attention to the ecosystem services that influence the scale of losses.

■ Decline in investment returns

Businesses that receive our investing or loans are also affected by climate risks and depend on specific ecosystem services. As the climate becomes more unstable and nature degrades business earnings may decline, leading to lower investment returns.

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(iii) On the Impact of Climate and Nature

The Group’s insurance services, as well as our investments and loans made possible by premiums paid by customers, enable a variety of business and societal activities **[in figure: 6 activities and assets realized]** . These activities inherently contain drivers of impact on climate and nature **[in figure: 5 impact drivers]** , which in turn affect the state of nature and ecosystem services.

■ Routine and non-routine impacts

In addition to ongoing (routine) impacts, human-induced events such as fires or explosions, and natural phenomena such as earthquakes or weather disasters, can cause sudden (non-routine) impacts—such as emissions of greenhouse gases or hazardous substances. Some of these non-routine impacts can be covered by environmental liability insurance, while others, such as widespread pollution, cannot. Either way, both can have significant effects on the state of nature and ecosystem services.

■ Significant effects on insurance profitability

Insurers are not directly affected in terms of revenue by most of these routine or non-routine impacts (except in cases involving environmental liability insurance). However, as noted in section (ii) above, changes in the state of nature and in ecosystem services—particularly those related to disaster prevention and mitigation—have a major influence on insurance profitability. For example, the progression of climate change caused by greenhouse gas emissions from business activities intensifies weather-related external factors such as flood risks from heavy rainfall. Improper forest management practices can trigger landslides, while larger paved surface areas due to land development prevent water from quickly penetrating into the ground, increasing the risk of inland flooding.

■ Impacts from businesses supported by insurance and investment/loans

While our insurance and investment/loan activities support various businesses and social activities, we are well aware that the resulting impacts on climate and nature can degrade the state of nature and ecosystem services, increasing physical risks related to natural disasters and human health.

■ Impacts during recovery and repair processes

Impacts can also occur during the claims payment process related to property damage, during process of emergency response for restoration, parts replacement, repair, and disposal. Depending on the methods used for emergency response, restoration, or cleanup, it is possible to reduce the environmental impact. For example, rather than replacing all parts with new ones, repairing still-functional components or using recycled parts can help reduce impacts on nature. Likewise, recovered damaged items should not only be properly disposed of but also reused wherever possible.

■ Simultaneous realization of impact driver reduction and value creation

In other words, in restoring assets damaged by unforeseen accidents or natural disasters, non-life insurance can create a positive feedback loop for both business as well as the climate and nature by incorporating circular economy principles. This means reducing impact drivers while enhancing the value provided to customers.




■ Analysis from an integrated, medium- to long-term perspective

Therefore, it is essential for the Group to analyze, from an integrated, medium- to long-term and perspective, how changes in climate and nature will affect society and the economy. We must also anticipate potential events and trends, and consider not only individual underwriting and investment/loan decisions but also the overall business model.

2. Insurance products and services that mitigate impacts on climate and nature

The MS&AD Group offers insurance products and services that help mitigate the impacts of specific business activities on climate and nature. In the event of accidents or disasters, various impacts may arise. Therefore, we aim to prevent such occurrences by analyzing these risk factors and promoting loss prevention measures. Moreover, as noted above, we also advance initiatives to reduce the environmental impact of the claims payment process, such as the use of recycled parts, cleaning, and repairs. We have developed a range of insurance policy riders that enable replacement with more environmentally efficient

options during recovery. In this way, we help advance “Building Back Better” efforts, which uses the recovery from accidents or disasters as an opportunity to reduce environmental impact drivers in ordinary business operations. By focusing on dependencies and impacts within the claims payment process and sharing value with our clients, we recognize that actively mitigating negative impacts is a key role of an insurance company. Furthermore, these initiatives not only provide positive feedback to climate and nature but also improve insurance financial performance, thereby contributing to the sustainability of insurance itself.

Insurance Type	Individual and Corporate Business Activities	Negative Impact on Nature	The Group's Insurance Products and Services That Mitigate Negative Impacts on Nature
<div>Automobile</div> <div></div>	<div>• Vehicular travel</div>	<div>(i) Times of normalcy (no accidents):</div> <div>● GHG emissions ● Air pollution</div> <div>● Land use change (ecosystem fragmentation by roads) ● Noise, light pollution</div> <div>(ii) In the event of an accident:</div> <div>● Pollution due to accident or damage</div> <div>(iii) After an accident:</div> <div>● Utilization of resources for repairs ● Pollution due to waste generation, GHG emissions</div>	<div>(i) Times of normalcy (no accidents):</div> <div>○ Reduction of GHG emissions through promotion of safe driving by using Telematics technology such as dashcams</div> <div>○ Prevention of roadkill with animal attention alert function</div> <div>(ii) In the event of an accident:</div> <div>Nothing in particular</div> <div>(iii) After an accident:</div> <div>○ Resource conservation through utilizing recycled parts for repairs</div>
<div>Fire / Facility owners (managers) Liability / Erection All Risks</div> <div></div>	<div>• Operation of business bases</div> <div>• Residence</div> <div>• Construction</div>	<div>(i) Times of normalcy (no accidents):</div> <div>● GHG emissions ● Air pollution, water pollution / ocean pollution</div> <div>● Use change of land, Ocean, freshwater area ● Utilization of resources</div> <div>(ii) In the event of an accident:</div> <div>● Air pollution, water pollution ● Ocean pollution</div> <div>● Pollution due to disaster-related waste generation</div> <div>(iii) After an accident:</div> <div>● Utilization of resources for repairs</div> <div>● Pollution due to waste generation, GHG emissions</div>	<div>(i) Times of normalcy (no accidents):</div> <div>○ Reduction in GHG emissions through support for carbon- neutral initiatives</div> <div>○ Mitigation of pollution and utilization of resources by proposing accident prevention measures</div> <div>○ Water resources conservation through basic evaluation service for water-related risks</div> <div>○ Conservation of biodiversity through biodiversity-conscious land-use consulting</div> <div>(ii) In the event of an accident:</div> <div>○ Preservation and restoration of ecosystems such as forest resources through rapid forest rehabilitation under the “Forest Keeper,” Endorsement for forestry business operators, which covers reforestation costs</div> <div>○ Endorsement for Extended Compensation for Pollution Damage for facility owners (managers) Liability Insurance</div> <div>(iii) After an accident:</div> <div>○ Resource conservation through utilizing recycled parts and rebuilding</div> <div>○ Reduction in GHG emissions through offering the Carbon Neutral Support Endorsement</div>
<div>Hull/Cargo</div> <div></div>	<div>• Land and ship transportation of cargo</div>	<div>(i) Times of normalcy (no accidents):</div> <div>● GHG emissions ● Air pollution, water pollution ● Ocean pollution</div> <div>● Introduction of alien species ● Undersea noise, light pollution</div> <div>(ii) In the event of an accident:</div> <div>● Pollution due to accident or damage</div> <div>(iii) After an accident:</div> <div>● Utilization of resources for repairs</div> <div>● Pollution due to waste generation, GHG emissions</div>	<div>(i) Times of normalcy (no accidents):</div> <div>○ Mitigation of pollution and utilization of resources by proposing accident prevention measures</div> <div>(ii) In the event of an accident:</div> <div>○ Preservation and restoration of ecosystems through early removal of ocean pollution under Special Expense Clause for Ocean Pollution</div> <div>(iii) After an accident:</div> <div>○ Waste and GHG emissions reduction through the Food Loss Reduction Endorsement for food-product businesses</div>

We conducted LEAP analysis of the shipping industry. Please also refer to this information. [For details, see page 55.](#)

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[2] Customer Dependencies and Impacts on Climate and Nature by Industry

1. Industry-specific heat maps

Underwriting

Investment/Loan

As an insurance group, we consider it important not just to evaluate our own direct operations but also to analyze the extent to which our clients (underwriting and investment/loan portfolio companies) depend on and impact nature. To visualize this, we have created two types of industry-specific heat maps showing both these dependencies and impacts, along with the underwriting and investment/loan ownership ratios.

Dependencies and impacts organized and analyzed using a five-level heat map

Key findings of our analysis

- Many industries show a high dependence on water resources, including both groundwater and surface water, and depletion of these resources poses business risks for numerous companies.
- Among impacts on nature, greenhouse gas emissions are the largest and most common across all industries, serving as a major driver of global warming.
- Ecosystem services such as climate regulation and flood/storm damage prevention are directly linked to natural disaster risks, making it important to address ecosystem degradation.

We classified dependencies on ecosystem services and the impacts of various impact drivers*1 into five levels: Very High (VH), High (H), Medium (M), Low (L), Very Low (VL). This process allowed us to deepen our understanding of industry-specific dependence and impact on nature, as well as the relationship between associated risks and opportunities.

*1: Factors that exert impacts on nature

Analysis results

Through the heat mapping process, we found that a number of industries depend on ecosystem services such as climate regulation*2 “flood/storm prevention,” “groundwater,” and “surface water,” which exerted significant impacts on “utilization of terrestrial ecosystems,” “water use,” and “GHG emissions.” In particular, water resources, which include “groundwater” and “surface water,” represent the highest overall dependence, and the depletion of water resources may lead to business risks for many companies. Furthermore, GHG emissions, which have the greatest impact, accelerate global warming, increase changes in the frequency and amount of precipitation and snowfall, and adversely affect the water resource control functions of forests and rivers.

*2: A function that regulates the environment and atmosphere on earth’s surface and maintains climate conditions in a state suitable for human and biological activities

Method for analyzing nature-related dependencies and impacts by industry regarding insurance policyholders and investment/loan clients

Using the latest data, this year we again updated the Dependency Heat Map and Impact Heat Map based on the analysis methodology described below.

Dependency Heat Map It has become clear that there is a high dependence on water resources, and the depletion of water resources may lead to business risks for many companies.

GICS Sector Code	GICS Sector	GICS Sector		Regulating & maintenance services											Cultural services
		Water resources	Other resources	Decontamination	Noise attenuation	Mediation of sensory impacts	Water flow regulation	Climate regulation	Flood and storm mitigation	Soil and sediment retention	Soil quality regulation	Pollination	Nursery population and habitat maintenance	Biological control	
10	Energy	H	L	VH	VL	L	H	H	VH	H	-	-	-	VL	-
15	Materials	H	L	VH	VL	L	H	H	VH	H	-	-	-	VL	VH
20	Industrials	H	M	VH	VL	VL	H	M	VH	H	-	L	ND	VL	VH
25	Consumer Discretionary	VH	VH	VH	M	M	VH	VH	VH	VH	VH	VH	VH	H	VH
30	Consumer Staples	VH	VH	VH	VL	VL	VH	VH	VH	VH	VH	VH	VH	H	VH
35	Health Care	H	H	VH	VL	VL	H	L	H	M	-	L	-	L	VH
40	Financials	VL	ND	ND	-	-	L	L	M	L	-	-	-	ND	VH
45	Information Technology	M	-	M	VL	VL	M	L	M	L	-	-	-	VL	-
50	Communication Services	L	ND	L	VL	VL	L	L	M	M	-	-	-	VL	VH
55	Utilities	VH	H	M	M	-	VH	VH	VH	VH	-	-	-	-	-
60	Real Estate	M	VL	M	VL	VL	M	M	VH	H	-	-	-	ND	VH

VH:Very High
H:High
M:Medium
L:Low
VL:Very Low

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Impact Heat Map "It was found that many companies were affecting 'GHG emissions,' as well as 'soil and water pollutants' and 'disturbance.'"

GICS Sector Code	GICS Sector	Land/ freshwater/ ocean use change			Climate change	Resource use/ replenishment		Pollution/pollution removal				Invasive alien species
		Land use change	Freshwater use change	Ocean use change	GHG emissions	Water use	Other resource extraction	Waste generation and disposal	Non-GHG air pollutants	Soil/water pollutants	Disturbances	Introduction of invasive alien species
10	Energy	M	VH	VH	VH	M	H	H	H	VH	VH	L
15	Materials	M	VH	VH	H	H	VH	VH	H	VH	VH	L
20	Industrials	M	M	M	H	M	VL	M	VH	VH	VH	VH
25	Consumer Discretionary	VH	H	H	H	VH	VH	VH	H	VH	VH	VH
30	Consumer Staples	VH	H	H	H	VH	VH	VH	H	VH	VH	VH
35	Health Care	M	ND	VL	M	M	VL	M	H	M	M	L
40	Financials	M	-	-	L	L	-	VL	VL	L	L	L
45	Information Technology	M	-	VL	M	M	-	L	H	H	M	ND
50	Communication Services	M	L	M	L	L	-	L	L	L	M	-
55	Utilities	H	H	M	VH	M	M	H	VH	VH	VH	-
60	Real Estate	L	M	M	H	L	-	M	L	H	VH	L

VH:Very High
H:High
M:Medium
L:Low
VL:Very Low

In the heat maps, we organized dependencies and impacts on nature, utilizing "ENCORE"^{*1} and "SBTN Sectorial Materiality Tool for Step 1a."^{*2} (For terms, see Appendix: Terms in Heat Maps, on page 66.

- Based on the ENCORE analysis results (as of March 2024), we have identified business activities that depend on ecosystem services.
- Based on the results of analysis using SBTN Sectorial Materiality Tool for Step 1a, we have identified business activities that have a significant impact on natural capital.
- Insurance retentions cover 84.1% of premiums written on corporate policies^{*3} as of March 31, 2024.
- The percentages of investments and loans held covers listed stocks, corporate bonds, and corporate loans in the investment and loan portfolios as of the end of March 31, 2024.

*1: Nature-related risk management analysis tools provided by Natural Capital Finance Alliance and others
*2: A tool provided by SBTs for Nature to screen, by industry, degrees of environmental impact
*3: Corporate policies for automobile insurance, fire insurance, miscellaneous (excluding construction insurance), cargo insurance, hull insurance, and aviation insurance

Awareness and determination based on analysis

For the Group, given the significant increase in the occurrence of water-related disasters, partly due to climate change, we recognize the need to consider addressing the degradation of ecosystem services for “flood and storm prevention.” In addition, the Group carefully determines the conduction of a transaction with any industry that exerts major impact on nature due to modification of land and/or water areas (agriculture, forestry, and fisheries involving hydroelectric power generation and large-scale new development) and for business activities in areas that are rich in biodiversity (UNESCO World Natural Heritage Sites and Ramsar Convention-registered wetlands, etc.), based on environmental considerations, etc. of our underwriting and investment/loan portfolio companies.

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2. Identifying the Group's key industries

Underwriting

Investment/Loan

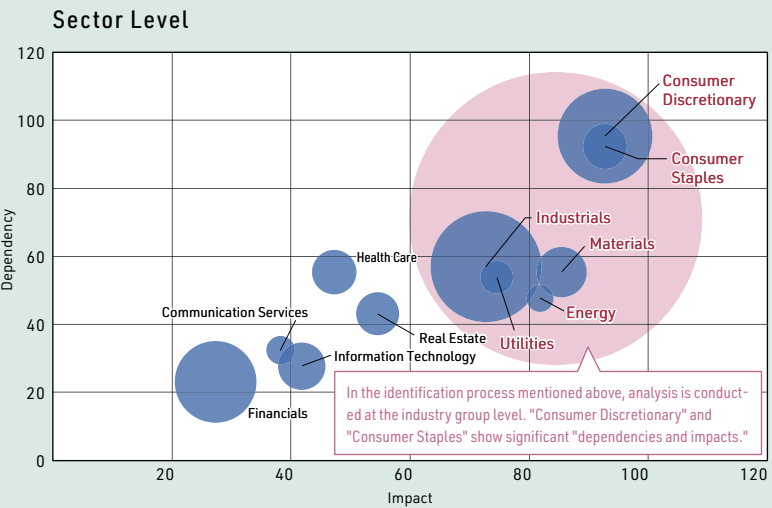
The impact of climate/nature-related physical risks, such as heat waves and water resource depletion, varies greatly depending on the industry. Transition risks, including technological innovations and changes in policies, laws and regulations, also involve industry-specific societal changes. Therefore, industry-specific analysis is crucial for properly assessing climate/ nature-related risks. For this reason, the Group has identified six key industry sectors, based on the degree of dependencies and impact of our business partners on climate and nature, as well as the percentage of the Group's underwriting and investments/loans held by these industries. In the chapter "Climate/Nature-Related Risks/Opportunities" (page 60) we analyzed the risks and opportunities for these six key industries. To identify these targets in fiscal 2025, we expanded from the sector-level analysis conducted in fiscal 2024 to a more detailed analysis that further classified sectors into industry groups.

Page 60 "Risks and Opportunities in Six Industries" ▶

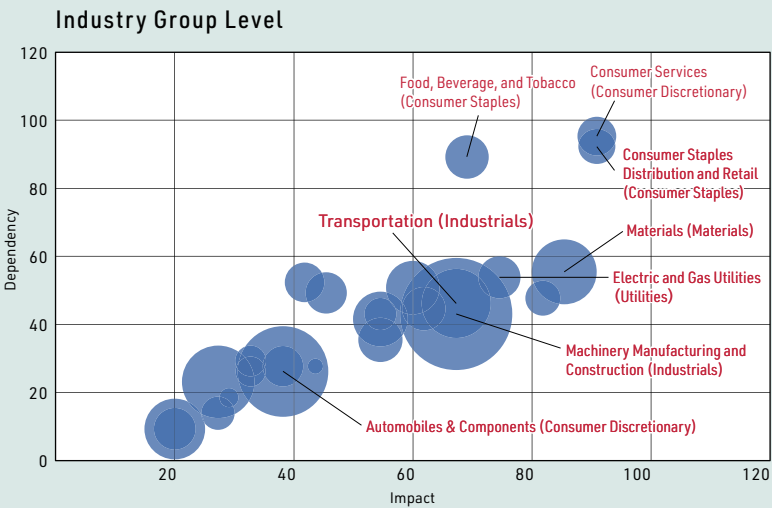
FY2024	FY2025	
Sector	Sector	Industry Group (subcategory of sector)*
Industrials	Industrials	Transportation
Consumer Discretionary	Consumer Discretionary	Automobiles & Components
Materials	Materials	Materials (Petrochemicals)
Consumer Staples	Consumer Staples	Food & Beverage & Tobacco
Information Technology	Industrials	Machinery Manufacturing and Construction (including semiconductors used in manufacturing)
Utilities	Utilities	Electric and Gas Utilities

* Industry group under the Global Industry Classification Standard (GICS)

Identification of Key Industries



- Extract business activities that depend on ecosystem services and those that have a major large impact on natural capital, and then aggregate add up the evaluations for each item of dependencies and impact (with the impact of GHG emissions impact are calculated with double weighting of other items)
- Combine the percentage of insurance that accounts for 73% of premiums written for contracts with corporates as of March 31, 2024 with the percentage of investments



and loans in force covering domestic and foreign listed stocks, domestic and foreign corporate bonds, and domestic and foreign corporate investments/loans as of March 31, 2024.

- Multiply the two combined values to identify the top 6 industries

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3. LEAP analysis for selected industries

Among the six key industries identified on the previous page, analyses were conducted for the renewable energy business within the electric and gas utilities industry group and the marine transportation business within the transportation industry group, in accordance with the LEAP approach recommended by the TNFD.

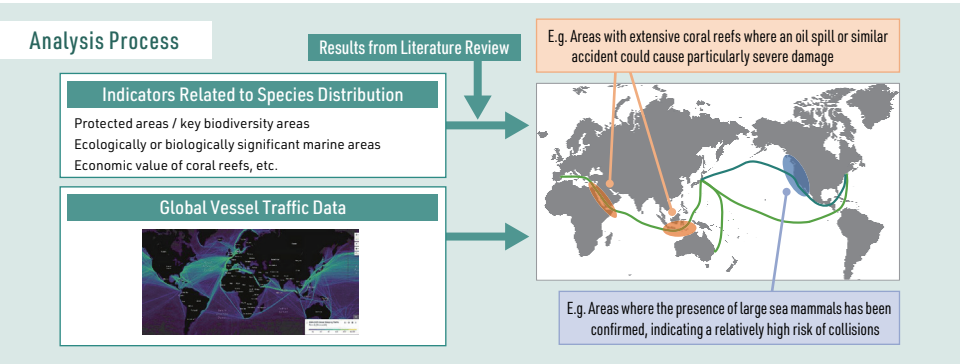
The LEAP approach is a framework for companies to identify and assess nature-related risks and opportunities. It comprises four steps: Locate (identifying interfaces with nature), Evaluate (assessing dependencies and impacts), Assess (evaluating material risks and opportunities), and Prepare (preparing for response and disclosure). It aims to support strategic decision-making by analyzing company's dependencies and impacts on natural capital.

(i) Analysis of the marine transportation industry

The marine transportation industry represents a significant share of the MS&AD Group's insurance underwriting, investment and loan portfolios, making it an important sector. It depends on the ecosystem services of the world's oceans while also exerting multifaceted impacts on nature through shipping operations and logistics. The Group recognizes that deepening our understanding of the interrelationship between the marine transportation industry and nature is essential to achieving sustainable growth alongside this industry. Within the TNFD framework, the marine transportation industry has been identified as a priority sector due to its significant interface with nature, and sector-specific guidance was published in 2023. The Group participated in the discussions leading to the development of this guidance and conducted the recent LEAP analysis reflecting the insights gained through that process.

Key findings of our analysis

- While the industry relies broadly on the ocean's climate regulation function during vessel navigation, attention must also be given to more localized ecosystem services, such as the flood mitigation functions of wetlands and rivers around ports.
- Some major shipping routes traverse areas of high biodiversity. In addition to pollution risks from accidents, issues such as the introduction of invasive species and physical damage to ecosystems from ship hulls were identified as key areas requiring attention.
- Building on this analysis, the Group intends to deepen shared understanding with the industry, enhance the quality of analysis, and pursue mutual value creation through continued dialogue.



On the Impact on Nature

In addition to the continuous use of marine areas along shipping routes, the industry exerts significant impacts through the emission of greenhouse gases, air pollutants, and hazardous substances. It also contributes to the spread of invasive species via biofouling on ship hulls, and to the destruction of coastal ecosystems through accidents such as collisions with large marine animals or vessel groundings.

Impacts on biodiversity

In assessing detailed impacts, we identified affected species through a literature review and overlaid areas of high biodiversity and protected zones with shipping traffic intensity data to identify marine areas vulnerable to negative impacts. Key regions were found to be those with high vessel traffic located near protected areas or habitats of endangered species, where the impacts of marine use, pollution, and the introduction of invasive species are pronounced. These include waters around Japan, the Caribbean Sea, and the coasts of Northern Europe. Coral reef areas were noted as being particularly susceptible to the impacts of ship groundings, while seagrass and seaweed habitats are quite vulnerable to the arrival of invasive species. Furthermore, in highly trafficked areas where pollution is a particular concern, key impacts include oil spills and container losses affecting coral and habitats of endangered fish and reptiles. They also include light pollution* and oil contamination affecting bird habitats, as well as ship strikes harming sea mammals and other species and their habitats.

*Light pollution refers to the phenomenon in which excessive artificial light disrupts natural ecosystems and the behaviors of flora and fauna.

Dependencies

For activities such as port entry, vessel berthing, and cargo loading and unloading, the industry depends on the natural functions of mangroves, coral reefs, and similar ecosystems, including flood mitigation and control, storm moderation, and rainfall-pattern regulation. For vessel navigation, the industry depends on global natural systems that help keep ocean climates stable, maintain water quality, and regulate the flow of currents. These ecosystem services are also relevant to the insurance industry. For example, cargo insurance depends on natural flood and storm mitigation functions that help prevent damage to goods, while marine insurance relies heavily on natural climate regulation functions that help prevent vessel accidents.

Improving the quality our analysis going forward

The Group has long recognized marine pollution caused by vessel accidents and natural disasters as a critical issue and has offered insurance products such as the Special Expense Clause for Ocean Pollution," which covers the cost of timely cleanup of pollutants after an accident. Through this analysis, we have deepened our understanding of the interrelationship between the marine transportation industry and nature, as well as the implications for the insurance business. However, quantitative assessments and analyses of financial impacts remain at a developmental stage. Going forward, the Group will further refine its evaluations of dependencies and impacts on nature, and enhance dialogue with the industry. We will also leverage these insights to advance existing products and services, improve information provision, and strengthen our ability to respond to nature-related risks.

For details, see page 55.

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(ii) Analysis of the renewable energy business

Transitioning to a decarbonized society requires the large-scale adoption of renewable energy (renewables), but such expansion must be pursued with due consideration for the natural environment and local communities.

Since fiscal 2023, the Group has included renewable energy projects in its environmental and social risk assessments conducted during insurance underwriting. Beginning in fiscal 2024, we also enhanced the quality of our risk assessment for onshore wind power projects through collaboration with the Nature Conservation Society of Japan (NACS-J). This report presents the results of a LEAP analysis (Locate, Evaluate, Assess, and Prepare) conducted for onshore wind power projects. It identifies issues such as cumulative impacts on ecosystems and local communities and the growing risks of future natural disasters,

while also highlighting advanced initiatives undertaken by project developers and identifying the limitations of environmental impact assessments. Going forward, the Group will use the insights gained from this assessment to make solution proposals to underwriting clients and promote collaboration with local communities, thereby contributing to the realization of net zero and nature positive outcomes and to enhancing the resilience of society as a whole.

For details, see page 56.

Key findings of our analysis

- Many of the onshore wind power projects underwritten by the Group are located near areas of high biodiversity importance.
- These projects rely heavily on ecosystem services such as climate regulation, flood control, and soil retention, while also exerting impacts through land alteration, noise and vibration, as well as bird strikes and disturbance.
- Although potential risks such as future landslides and flooding due to soil and vegetation loss exist, proactive efforts with developers to ensure sufficient consideration for the natural environment and local communities can help mitigate both reputational and disaster-related risks.

Column

Case Study on Cumulative Impacts of Onshore Wind Power

Looking at the Hibaritaira Wind Power Project located on the Shimokita Peninsula in Aomori Prefecture, the MS&AD Group examined potentially significant dependencies and impacts, taking into account the project's specific characteristics. As the final Environmental Impact Assessment (EIA) report was not available for review, the analysis referenced information based on project location as well as comments and recommendations contained in interim documents such as the "Document on Environmental Considerations in the Planning Stage," "Scoping Document for Environmental Impact Assessment," and "Draft Environmental Impact Assessment Report."

The area surrounding the project site hosts numerous completed and planned wind farms, including some for which the Group provides insurance coverage (see Figure 1). According to the avian sensitivity map provided by Japan's Environmental Impact Assessment Database System (EADAS), the project site is classified as "Alert Level A2" for bird-strike risk. Nearby sensitive locations include "Sanriku coast and Matsumaekojima," designated as a Marine Important Bird and Biodiversity Area (Marine IBA), and the wetlands of Shimokita, a Key Biodiversity Area (KBA). There is also the Ogawara Lake wetlands, identified as wetlands of high importance for biodiversity. (See Figures 2 and 3).

While the project raises concerns over potential negative aspects, such as impacts on wetlands and rare raptors, there are also many positive aspects, including the project developer's bird-strike mitigation measures and the establishment of a post-operation monitoring framework. Nevertheless, cumulative impacts are beyond the capacity of individual developers to fully address, underscoring the necessity of integrated, area-wide risk management through public-private collaboration.

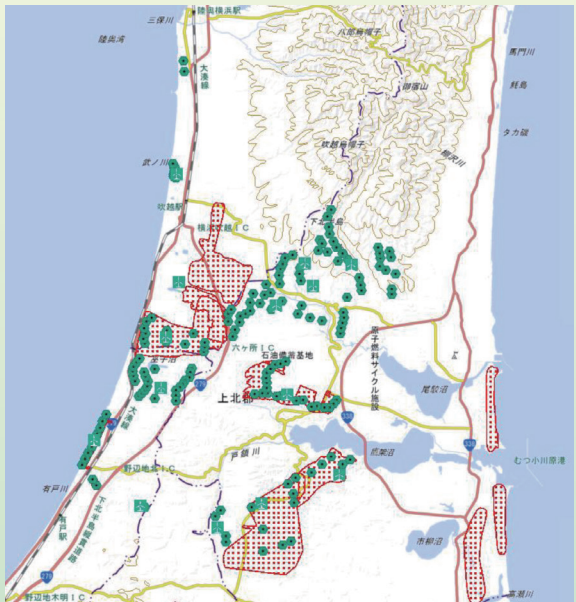
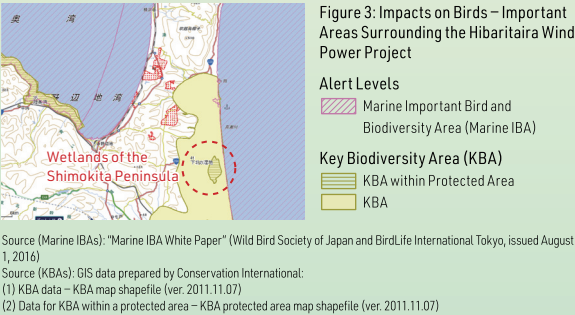
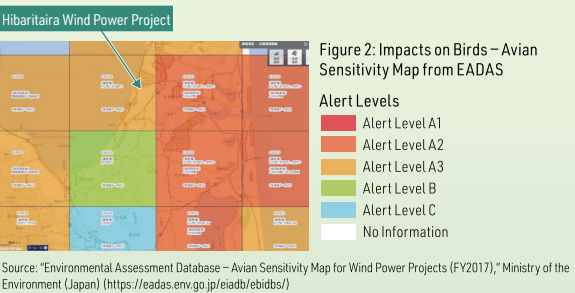


Figure 1: Existing Wind Power Plants and Facilities in the Vicinity of the Hibaritaira Wind Power Project (Source: EADAS)

Sources (Power Plant Locations):
1. Created by the Group based on "National Land Numerical Information (Power Generation Facilities) FY2013"; Ministry of Land, Infrastructure, Transport and Tourism (Japan)
2. "Cumulative installed capacity of Wind Power in Japan" (as of December 31, 2023); Japan Wind Power Association (JWPA)
Sources (Turbine Locations):
1. Aerial photographs, satellite images, and topographic maps (as of December 31, 2024)
2. "Cumulative installed capacity of Wind Power in Japan" (as of December 31, 2023); Japan Wind Power Association (JWPA)



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[3] Interface with Sensitive Locations Based on TNFD

Under the recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD), companies are urged to analyze and disclose their interface with sensitive locations along their value chains. Sensitive locations refer to areas such as those rich in biodiversity that are experiencing or at risk of ecological degradation, those highly dependent on natural capital such as water resources, and those vulnerable to natural disasters. Because these locations are most susceptible to climate- and nature-related risks, the MS&AD Group has assessed the extent to which our investment and loan portfolio as well as our own business sites are connected to such locations.

1. Assessment of TNFD sensitive locations among our top 500 investment/loan portfolio companies

Investment/Loan

The Group's two main sources of revenue are insurance underwriting and asset management. We invest and manage funds entrusted by our customers to generate returns, which are then used, among other things, to pay insurance claims. To understand climate- and nature-related risks within these asset management activities, it is essential to grasp how each investment/loan portfolio company depends on and impacts nature. Based on the TNFD additional guidance for financial institutions, we evaluated the extent to which the direct operational sites of our top 500 investment/loan portfolio companies overlap with sensitive locations—areas considered significant in terms of nature-related issues—using location data for their direct operational facilities.

Key findings of our analysis

- To understand climate- and nature-related risks affecting investment returns, we identified the degree of dependence and impact on nature at the direct operational sites of investment/loan portfolio companies, and conducted an analysis focusing on flood inundation risk in sensitive locations.
- Analysis of the distribution of sites located in areas with a flood inundation risk index of four or higher (corresponding to an inundation depth of over one meter) revealed that, in Japan, the Group's investment/loan portfolio company sites are particularly concentrated in high flood-risk areas along the Arakawa and Yodo River basins.

(i) "Importance of Biodiversity" × "Integrity of Ecosystem"

When our value chain companies are located in areas that score highly in terms of biodiversity importance (which assesses proximity to protected areas) and ecosystem integrity (which measures the completeness and health of ecosystems), operations that could have a significant negative impact are more likely to face risks such as business suspension following an accident or reputational damage arising from consumer boycotts. We conducted an assessment based on this understanding.

Distribution by sector

On average by sector, the proportion of business sites located in regions with high biodiversity importance or ecosystem integrity was slightly above 2% even for the most affected sectors. The sectors showing relatively higher ratios were Communication Services, Consumer Discretionary, Consumer Staples, Industrials, and Financials.

(ii) Importance of ecosystem service provision

In areas where ecosystem service provision is highly important, local communities often both support and depend on these ecosystem functions. Businesses operating in such areas should therefore be mindful of potential conflicts with local residents and place importance on coexisting harmoniously with regional stakeholders.

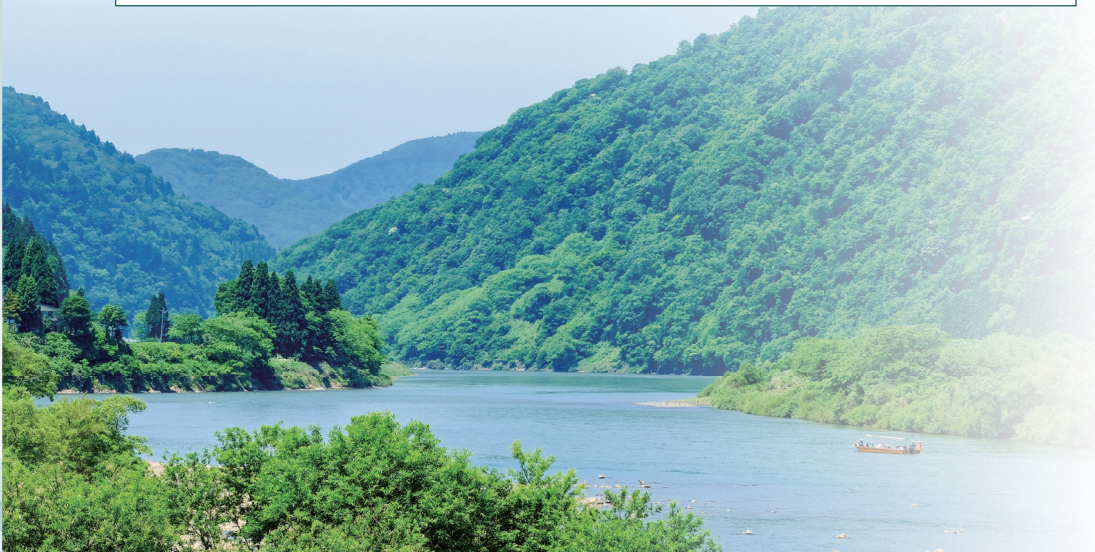
Distribution by sector

Our analysis showed that the Energy sector, due to its extensive land use and reliance on natural resources, and the Financials sector, with operations spread globally, tended to have higher ratios of sites located in such areas.

(iii) Water-related physical risks

Since more than 20% of business sites across all sectors are located in sensitive locations, this issue was identified as a high priority.

Given the significant increase in water-related disasters in recent years, the Group considers it important to conduct a deeper analysis of flood inundation risk, as it is a key component of physical water risk in sensitive locations. Accordingly, we typically assess locations at risk of severe flooding by estimating the depth of water from a 1-in-100-year flooding event using a high-resolution 500 by 500 meter grid. This fiscal year, rather than analyzing each investment/loan portfolio company's location individually within sensitive locations, we assessed the distribution of investment/loan portfolio company sites where the flood inundation risk index was four or higher (corresponding to an inundation depth of one meter or more). A concentration of such sites indicates higher potential risk in the event of an actual flood.



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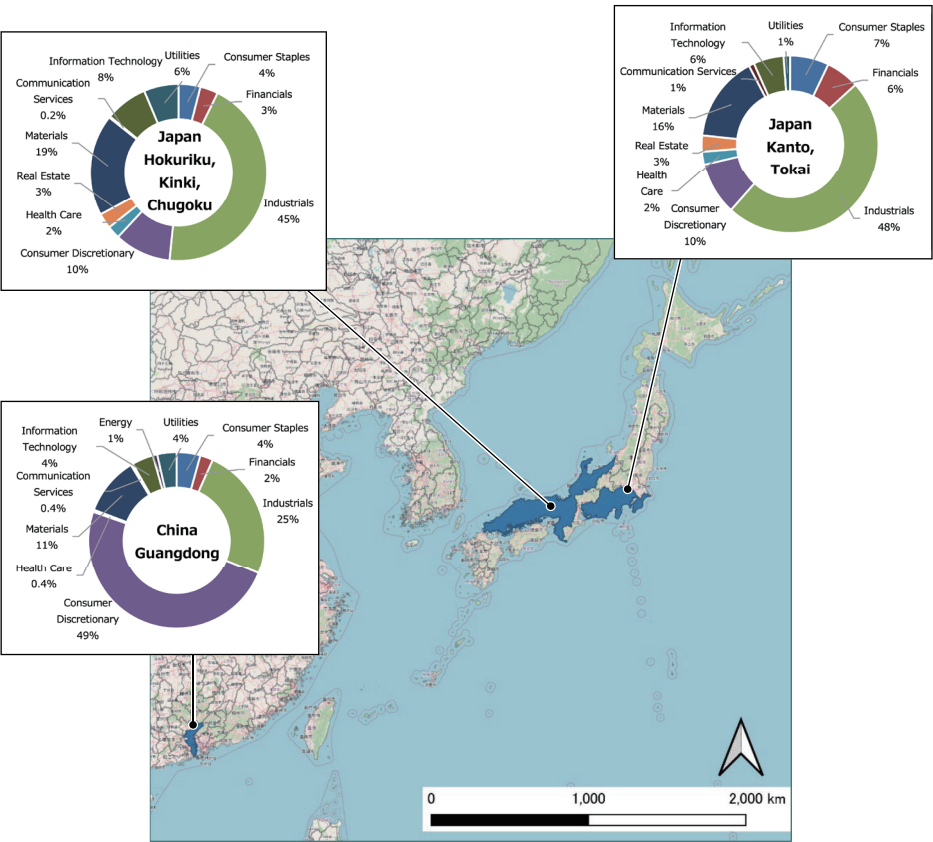
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Investment/loan portfolio company distribution in sensitive locations

In Japan, the Arakawa and Yodo river systems were found to have particularly high flood inundation risks and the greatest concentration of our investment/loan portfolio company sites.

Water-related physical risks by watershed region

Looking at river basins in the Kanto-Tokai and the Hokuriku-Kinki-Chugoku regions, sites with higher risks mainly belonged to client companies in the Industrials sector, accounting for 48% and 45% of the total respectively, while sites in basins located in China’ s Guangdong Province were mostly in the Consumer Discretionary sector at 49%. Taking into account the characteristics of each of these sectors, we use the findings to inform engagement with our clients on measures to address water-related disaster risks.



2. Assessment of TNFD sensitive locations in the Group business

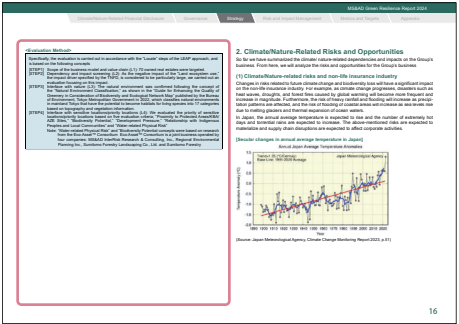
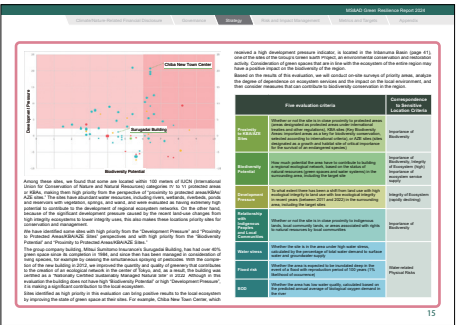
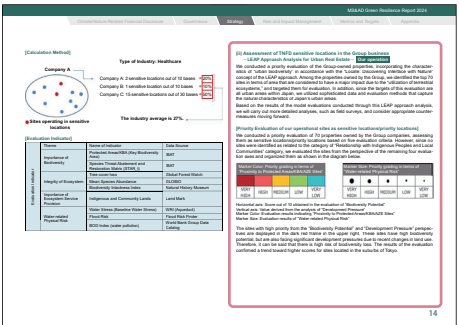
MS&AD Group Operations

For details on the assessment of TNFD sensitive locations in relation to the Group’ s business sites, please refer to page 14 of the MS&AD Green Resilience Report 2024.

→ MS&AD Green Resilience Report 2024

<https://www.ms-ad-hd.com/en/csr/main/05/teaserItems1/01/link/>

Indicates relevant section



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[1] Physical Risk [Underwriting / Investment and Loan]

Climate- and nature-related risks include the direct impact of climate change and damage to nature (physical risk) and the impact of rapid social change toward net zero and nature positivity (transition

risk). As an insurance and financial group centered on non-life insurance business, we need to evaluate risks from both perspectives of underwriting and investment/loan (asset management).

1. Climate- and Nature-Related Physical Risks

Acute and chronic climate/nature-related risks

The growing risk of natural disasters associated with climate change has already begun to exert financial impacts on the insurance underwriting of the MS&AD Group. These include wind and flood damage from typhoons and heavy rainfall, as well as wildfires and hailstorms. In many cases, these damages are further

amplified by the degradation of natural capital. Moreover, not only acute risks like natural disasters but also chronic climate- and nature-related risks, such as the depletion of water resources, are expected to have an increasing medium- to long-term impact on society and business activities.

H+: Very High H: High M: Medium L: Low

Classifica- tion	Event	Examples of main impacts on policyholders and investment and financing recipients	Examples of main impacts on the Group and degree of impact ◆ Underwriting ◆ Investment/loan		Period of manifestation		
					Short term	Medium term	Long term
Acute risks	Typhoons, hurricanes, storm surges	Stronger and more frequent tropical cyclones cause significant damage to homes and businesses. Depending on their course, such cyclones could cause damage over a wide area. Storm surges also cause significant damage to coastal areas.	◆ Insurance claims payouts occur, particularly concerning many homes, businesses, vehicles, and other property ◆ Returns deteriorate owing to large-scale damage affecting important business sites	H+	●	●	●
	Torrential rain, flooding	Increased temperatures increase the amount of water vapor in the atmosphere, causing torrential rainfall. Extensive flooding caused by improper land use or flood control conditions cause significant damage. Lack of soil stability due to deforestation and vegetation removal, or cutting and reclamation of slopes, causes landslides triggered by torrential rainfall.		H	●	●	●
	Hail and snow damage	Hailstorms are caused by active convective activity due to warm, moist air currents in the updrafts generated by strong solar radiation and cold air inflows into the sky. Falling hail damages vehicles and buildings. Many facilities of non-heavy snowfall areas are not strong enough to withstand, and heavy snowfall damages facilities.	◆ Insurance claims payouts occur for damage to vehicles and facilities ◆ Not likely to lead to a significant deterioration in returns	H	●	●	●
	Forest fires	Heat waves and extreme heat cause forest fires. Insufficient tending to forests, such as the neglect of dead trees and underbrush, increases the risk of fire. Fire spreading to surrounding urban areas, etc., will lead to significant damage.	◆ Insurance claims payouts occur for forests, as well as homes and businesses in the event of fires spreading ◆ Returns deteriorate owing to large-scale damage affecting important business sites at the recipients of investment and financing	M	●	●	●
	Heat wave, cold wave	Severe heat and cold waves cause human suffering, sudden strains on energy and water resources, and logistical disruptions such as traffic paralysis.	◆ Large-scale insurance payouts have not yet materialized ◆ Not likely to lead to a significant deterioration in returns	M		●	●
Chronic risks	High temperatures (heat)	Disruptions due to rapid increases in energy demand could occur. Data centers, power plants, and other facilities face an increased burden for cooling. Labor efficiency falls as outdoor activities, such as construction sites are restricted, and there is an impact on health, such as increased stress due to heat and the spread of infectious diseases.	◆ Large-scale insurance payouts have not yet materialized ◆ Returns deteriorate as performance worsens at companies for which high temperatures can be a risk	M		●	●
	Depletion of water resources, dryspells and droughts	Depletion of water resources due to excessive groundwater extraction or development in groundwater recharge areas, as well as droughts and dry spells, can lead to higher costs and losses for agriculture, food processing, and other water-intensive industries. This can include difficulties in procuring raw materials and interruptions in production processes. Interruptions in waterborne transport that relies on rivers and other waterways, and shortages of cooling water, can also affect a wide range of industries.	◆ Large-scale insurance payouts have not yet materialized ◆ Declining returns for companies dependent on water resources	L		●	●
	Sea-level rise	As sea levels rise, port and coastal areas may experience damage to facilities and infrastructure and land erosion caused by storm surges and high waves.	◆ Large-scale insurance payouts have not yet materialized ◆ Not likely to lead to a significant deterioration in asset management returns	L		●	●
	Degradation of other ecosystem services	Serious losses might occur when ecosystem services on which livelihoods and business activities depend are degraded or destroyed. This includes services such as pollination for agriculture, which can be affected by damage to natural capital.	◆ Large-scale insurance payouts have not yet materialized ◆ Returns deteriorate at companies which operate businesses that are overly dependent on ecosystem services in areas with serious damage to natural capital	L			●

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■ Impacts of global warming on extreme weather

Extreme weather events have traditionally occurred as part of natural variability or fluctuations in the climate system. In the past, it was impossible to isolate the specific influence of global warming from this natural variability, making it difficult to scientifically prove a direct link between global warming and extreme weather events. However, in recent years, a groundbreaking analytical method known as event attribution has made such analysis possible. This approach has provided scientific evidence that the intensification of such external forces is attributable to climate change.

According to research conducted by two Japanese agencies—the Program for the Advanced Studies of Climate Change Projection within the Ministry of Education, Culture, Sports, Science and Technology, and the Meteorological Research Institute of the Japan Meteorological Agency—the very destructive Noto Peninsula heavy rainfall disaster of September 2024 saw total precipitation that was approximately 15% higher than in a scenario without global warming. These results suggest that rising air and sea surface temperatures associated with global warming may have contributed to the increased rainfall in the Noto region of Ishikawa Prefecture.

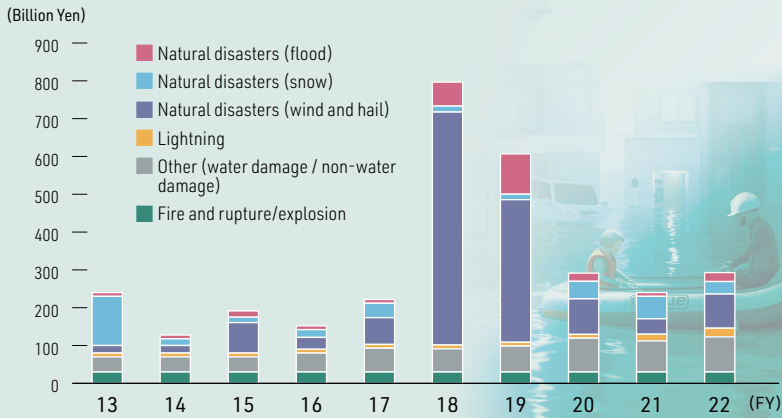
2. Current Situation for Natural Disasters and Non-Life Insurance

(i) Status of insurance payouts for natural disasters in Japan

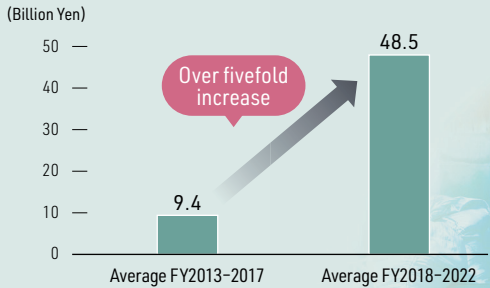
According to data on domestic insurance payouts published by the General Insurance Rating Organization of Japan, while payouts for “fire and rupture/explosion” and “other causes (such as water damage or non-water damage)” have shown a moderate upward trend within a stable range, payouts related to natural disasters have fluctuated significantly from year to year. In particular, payouts for water-related disasters have shown a substantial increase on average. This is because, in recent years, climate change has intensified the severity of natural disasters, resulting in large-scale losses from single disaster events.

Fire Insurance

Insurance Payouts by Type of Incident for Residential Properties



Insurance Payouts for Water Disasters (5-Year Average – Residential Properties)



Source: “Fire Insurance – Insurance Payments by Type of Incident for Residential Properties” (General Insurance Rating Organization of Japan)

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(ii) Situation for Group insurance payouts due to natural disasters

The table below shows the Group’s net incurred insurance claims for natural disasters over the past five years, along with the major disaster events in each fiscal year and the corresponding payout amounts. The increasing severity and frequency of natural disasters have had a significant impact on the amount of insurance payouts, making natural disaster risk one of the key issues for us.

	FY2020	FY2021	FY2022	FY2023	FY2024
Net Incurred Insurance Claims from Natural Disasters	JPY 124.9 bil.	JPY 112.3 bil.	JPY 145.3 bil.	JPY 162.7 bil.	JPY 161.7 bil.
Incurred Insurance Claims for Major Natural Disasters (Directly Underwritten) (in billions of yen)	July Heavy Rain 37.1 Typhoon No. 10 34.7	August Heavy Rain 18.7 Fukushima Offshore Earthquake 14.9 July Heavy Rain 9.1	June Hailstorm 42.8 Typhoon No. 14 34.2 Typhoon No. 15 19.8	Typhoon No. 2 15.4 July Heavy Rain 16.0 July Gunma Hailstorm 31.9 Typhoon No. 7 14.6 Noto Peninsula Earthquake 17.3	Hyogo Hailstorm 49.6 Typhoon No. 10 18.1 Tokai Region Hailstorm 11.5 Tokyo Hailstorm 7.4

(iii) Future trends for natural disasters

Focusing on water-related disasters—where payouts have increased particularly sharply—we examined future trends by considering the three elements of natural disaster risk: hazard, vulnerability, and exposure. “Hazard” refers to the natural phenomena that cause disasters themselves, “vulnerability” refers to the susceptibility to damage or impact, and “exposure” refers to the degree to which people or assets are subject to potential damage or impact.



Hazard

The hazard of weather events such as typhoons and heavy rainfall is intensifying as climate change progresses.

Progress of global warming

The World Meteorological Organization (WMO) announced that 2024 was the hottest year on record, with the global average temperature rising by 1.55°C compared to pre-industrial levels.

Increase in rainfall

The number of brief but intense rainfall events has already increased by about 1.4 times compared with roughly 30 years ago. Japan’s Ministry of Land, Infrastructure, Transport and Tourism (MLIT) projects further changes in rainfall volume and flood frequency as temperatures continue to rise, as shown in the table below.

Climate Change Scenario	Rainfall Increase	River Flow Increase	Flood Likelihood
2°C rise	Approx. 1.1 times	Approx. 1.2 times	Approx. 2 times
4°C rise	Approx. 1.3 times	Approx. 1.4 times	Approx. 4 times

Source: Ministry of Land, Infrastructure, Transport and Tourism, Technical Review Committee on Flood Control Planning in Consideration of Climate Change, “Recommendations for Flood Control Planning in Consideration of Climate Change – Reference Materials” (revised April 2021)

Vulnerability

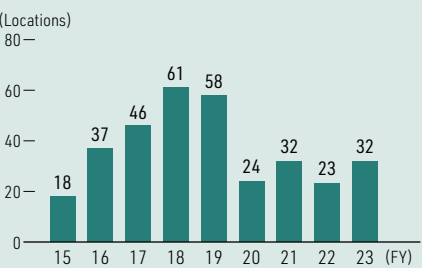
With its history of many water-related disasters, Japan has developed disaster-prevention infrastructure such as levees and dams to protect public safety. However, in recent years, rainfall has often exceeded anticipated levels, revealing growing challenges in the defensive capacity of such infrastructure.

River conditions

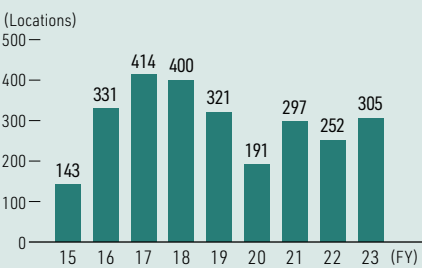
Although MLIT is systematically implementing measures to lower river water levels, such as constructing dams and flood control basins and dredging river channels, the number of locations where floodwaters have exceeded the flood danger level (i.e. the water level at which a river is at risk of overflowing its banks) has been increasing.

Riverbank Locations Exceeding the Flood Danger Level

Nationally Managed Rivers



Prefecture-Managed Rivers



Source : MLIT Technical Review Committee on Flood Control Planning in Consideration of Climate Change “Recommendations on Flood Control Planning in Consideration of Climate Change ? Reference Materials” (Revised April 2021)

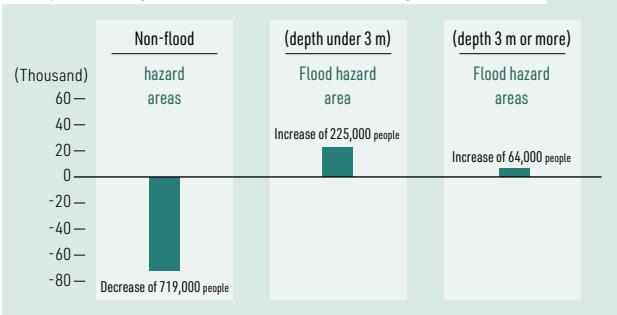
Exposure

When people live or establish business sites in areas prone to flooding, such as near rivers or in low-lying regions, exposure to water-related disaster risk increases. Although Japan’s overall population is declining, data show that residential population is shifting into higher-risk areas, which means that exposure is increasing.

Population concentration

Between 2010 and 2020, when Japan entered a phase of population decline, the population in areas not designated as flood-risk zones decreased by 719,000. In contrast, the population in flood hazard areas increased by a total of 289,000—of which 64,000 were living in areas designated as having a potential inundation depth of three meters or more.

Population Living in Flood Hazard Zones of Urban Planning Areas (2010–2020)



Source: Chie Nozawa, Seiya Ueda, Taiki Kakinuma, “Study on Population Trends and Residential Guidance by Land Use Regulation in Flood-prone Areas”, Reports of the City Planning Institute of Japan, No. 21, February 2023

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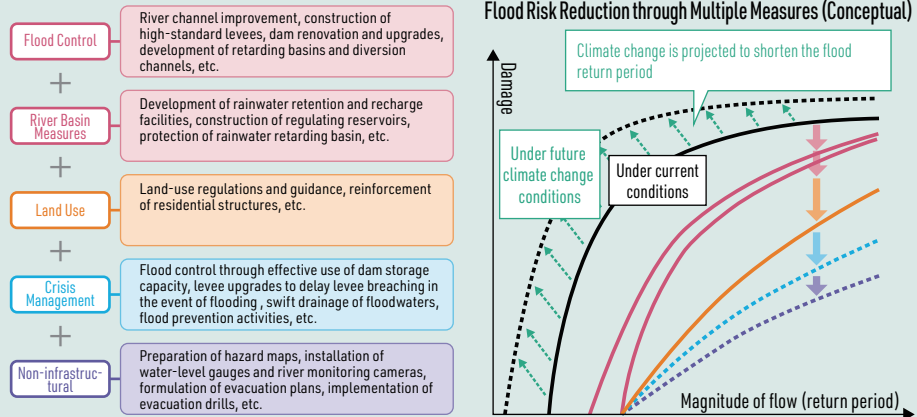
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(iv) Japan’s national approach to flood risk mitigation

In response to the rising risk of water-related disasters, has pointed out that river flood control measures alone are insufficient to address the increase in risk. The Ministry advocates for comprehensive efforts that combine basin-wide measures and land-use management. In line with Japan’s national direction, the MS&AD Group will also work to promote basin-based initiatives through collaboration among industry, government, and academia. We will do this not only by providing compensation for water-related damage but also by pursuing fundamental reductions in water-related disaster risk.

[For details, see page 37.] ➤

Working to Reduce Flood Risks



Source : MLIT Technical Review Committee on Flood Control Planning in Consideration of Climate Change “Recommendations on Flood Control Planning in Consideration of Climate Change ? Reference Materials” (Revised April 2021)

Nature-based Solutions in Basin-wide Flood Control

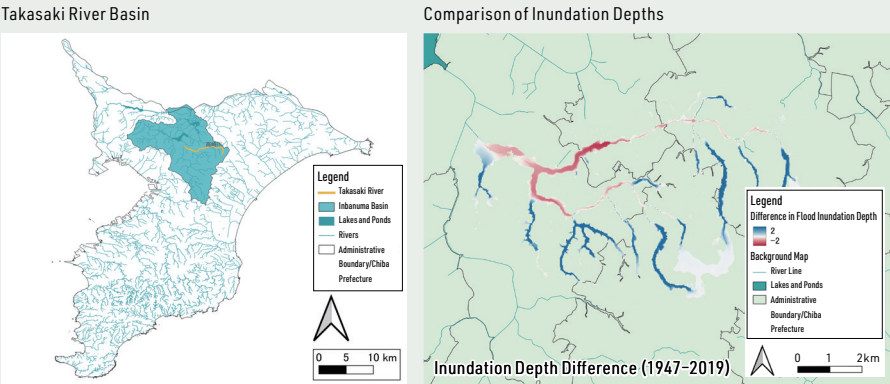
The Inbanuma River Basin once featured a traditional rural Japanese landscape known as “yatsu,” where grasslands covered upland plateau areas, forests lined slopes leading down to valleys, and rice paddies were cultivated on valley floors. However, when the region started to be intensively developed for farmland, factories, and housing, river channel improvements were implemented along with retention basins, resulting in major land use change. In recent years, the increasing frequency of short-duration heavy rainfall events has again raised concerns about heightened flood risk.

The MS&AD Group is working to implement nature-based solutions and green infrastructure in this basin, aiming to reduce water-related disaster risks through the restoration and conservation of degraded yatsu wetlands and upper grassland plateau areas. This analysis evaluates how land-use changes have affected flood risk and the associated financial losses, and considers insights for future basin-wide flood control efforts.

■ Analysis of inundation depth and financial losses through flood simulation

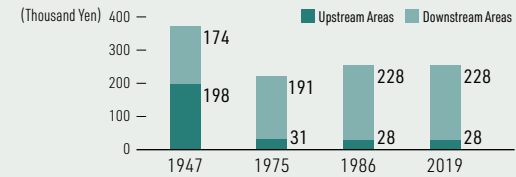
This analysis was conducted using the basin of the Takasaki River, a Class A river that forms part of the Inbanuma River Basin of Chiba Prefecture, and which has been the subject of previous research. Based on the state of agricultural drainage system development between 1947 and 2019, inundation depths were calculated through flood simulations assuming rainfall from a once-in-a-century event. In this analysis, those inundation depths were applied to fiscal 2021 building data to estimate potential damage amounts, thereby assessing how land-use changes have influenced the scale of flood-related losses.

Figure 1: Results of Flood Simulation Based on Land Use in 1947 vs. 2019



Source: Created using resources on administrative boundaries (polygons), rivers (lines), lakes (polygons), watershed boundaries / non-catchment areas [polygons] by MLIT, available on the website of the National Land Numerical Information website: <https://nlit.mlit.go.jp/ksj/index.html> (Japanese only)

Table 2: Changes in Building Damage Losses Upstream and Downstream



■ Increase in damage proportion in downstream areas

As shown in Figure 1, comparing estimated inundation depths for the waterway distributions in 1947 and in 2019 reveals that upstream areas generally show lower depths in 2019 (indicated in blue, in the figure), while downstream areas show higher depths (indicated in red). This indicates that a dense network of waterways developed has increased the flood burden downstream. Additionally, as shown in Table 2, while overall building-related losses from flooding has significantly decreased since 1947, losses in downstream areas began to rise again in 1975, and the proportion of total losses occurring in downstream areas has markedly increased since then.

■ Implications for basin-wide flood control

This analysis suggests that river improvements and the development of agricultural water channels since 1947 have allowed rainwater in upstream areas to drain more quickly, enhancing safety there. However, this has also resulted in rapid accumulation of rainwater downstream, increasing flood risk in regions with concentrated housing and business sites. In recent years, some rice paddies in the upstream yatsu have been abandoned. This presents an opportunity to retain and infiltrate water across the entire yatsu area rather than discharging rainwater through agricultural water channels, thereby reducing downstream runoff and mitigating flood risk. Moving forward, refining analyses of upstream conditions and the entire basin, and quantifying both risk and risk-reduction effects, will help guide concrete basin-wide flood control measures. Furthermore, insights gained from this analysis will be utilized by the insurance industry for risk assessment as well as the development of products and services, contributing to sustainable disaster prevention and mitigation systems that utilize nature-based solutions.

This analysis was conducted based on the following references.
Ohtsuki, K., Nishihiro, J., Kato, H., and Nakamura, K.: Evaluation of the Impact of Drainage Channel on Flood Flow in the Urban-Rural Landscape, Proc. 14th International Symposium on Ecohydraulics, Nanjing, China, 2022.

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3. Physical Risk Analysis in Underwriting

The Group believes that it is our social mission to continue to offer coverage even in a society where natural disasters are increasing due to climate change. We carry out scenario analysis to identify changes in natural disaster risk due to the escalation of climate change, and use various methods to confirm the risk analysis and the effects of risk mitigation, such as refining future risk assessment and evaluating the mitigation of damage caused by water-related disasters through the use of nature.

(i) Scenario Analysis of the Impact of Changes in Typhoon Severity on Claims Settlements

Further global warming could increase the severity of natural disasters such as typhoons and the increased risk of resultant damage. Therefore, as a scenario analysis of physical risk, we analyzed the potential impact on insurance settlement by typhoon severity associated with global warming.

■ Climate change scenario analysis methods

The project for considering methods of analysis that examines the potential effects of climate change on underwriting was launched by the United Nations Environment Programme Finance Initiative (UNEP FI) in 2018. Over 20 insurance companies that signed on to the Principles for Sustainable Insurance (PSI), including the Group, participated in the project, and worked on developing scenario analysis methods in some working groups based on the likely impacts of climate change subject to analysis.

■ Analysis and evaluation tool for typhoon risk

The Group participated in the working group for analyzing typhoons and hurricanes that have a significant impact on underwriting and examined the impact of future global warming on the risk amounts arising from typhoons and hurricanes. Focusing on changes in the “intensity” and “frequency” of typhoons, and referring to the results of research carried out by Knutson et al. (2020) thereon, we developed an analysis and evaluation tool for 2050 in the 4°C scenario (RCP 8.5).

■ Analysis and evaluation tool for storm surge risk

Regarding storm surge changes caused by typhoons, we also developed an analysis and evaluation tool for 2030 and 2050 under the 2°C (RCP 4.5) and 4°C (RCP 8.5) scenarios, referring to the World Resources Institute (WRI)’s tool, Aqueduct Flood, for evaluating storm surge damage, etc.

■ Analysis results

Results using the two analytical evaluation tools are as follows. Scopes of analysis are domestic non-life insurance book (e.g., property, marine, personal accident and auto line) that are expected to be paid out due to typhoons.

> Changes in typhoons themselves

In 2050 under the 4°C scenario (RCP 8.5), insurance loss arising from typhoons could vary from approximately +5% to approximately +50% due to changes in “intensity,” and from approximately –30% to approximately +28% due to changes in “frequency of occurrence”.

Scenario used	Change in “force” of typhoons (2050)	Change in “frequency” of typhoons (2050)
4°C Scenario (RCP8.5)	Approx. +5 – Approx. +50%	Approx. –30% – Approx. +28%

> Change in storm surge caused by typhoons

In both the 2°C (RCP 4.5) and 4°C (RCP 8.5) scenarios in 2030 and 2050, claims settlement may increase by several percent.

Joint research on typhoon risk assessment in the industry-government-academia collaboration project with the University of Tokyo (ClimCORE)

We have been participating since fiscal 2021 in an industry-government-academia collaborative project (ClimCORE) led by the University of Tokyo. This project aims to develop high-resolution meteorological data for the Japanese region, which is necessary to precisely assess the effects of climate change, and to promote research and development for the use of such data in society. In this project, the Group collaborated with the University of Tokyo to reproduce a real case study using a meteorological model for Typhoon No. 15 (Boso Peninsula Typhoon) in 2019 and to analyze how typhoon intensity changes with climate change. In the analysis, which takes into consideration three changes from average weather conditions due to global warming (increased water vapor in the atmosphere, increased sea surface temperatures, and increased air temperatures in the upper atmosphere), results were consistent with the UNEP FI impact analysis tool in terms of the change rate of maximum wind speed and claims settlements. In addition, the impact of each change on typhoon intensity is suggested in the table below.

Changes due to global warming	Impacts on typhoon intensity
Increased water vapor in the atmosphere	An increase in water vapor in the atmosphere, which is the energy source of typhoons, contributes to the strengthening of typhoons.
Increased sea surface temperatures	Increased evaporation of water vapor from the sea surface increases the amount of water vapor in the atmosphere, contributing to the strengthening of typhoons.
Increased air temperatures in the upper atmosphere	When the temperature difference between the surface and the sky becomes smaller, the development of cumulonimbus clouds weakens, contributing to the weakening of typhoons.

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(ii) Scenario analysis of flooding overseas using a future flood hazard map

As global warming progresses, the risk of heavy rainfall and flooding may increase worldwide. To evaluate water-related disaster risk in regions where probability-based assessments are difficult, the Group has utilized the Global Future Flood Hazard Map developed under the Large-scale Risk Assessment of Climate change for Flood Project (LaRC-Flood® Project), a joint initiative by MS&AD InterRisk Research & Consulting, the University of Tokyo, and the Shibaura Institute of Technology. By comparing insurance payouts based on current and future climate hazard maps, we assessed how these risks may change. Leveraging the hazard map developed by the LaRC-Flood® Project enables high-precision analyses of flood inundation depths and potential losses worldwide under multiple climate change scenarios.

(iii) Scenario analysis of hail damage in Japan

Although a causal relationship between global warming and severe hail events is not yet clear, large insurance payouts from hail damage have occurred repeatedly in Japan in recent years. The Group, in collaboration with MS&AD InterRisk Research & Consulting, conducted a scenario analysis assuming a hail disaster in an urban area similar in intensity to the largest recent event—the June 2022 hailstorm centered in northern Kanto. The results suggested potential damage comparable to that of past large-scale typhoons. Unlike wind or snow disasters, precise analysis of hail damage is challenging due to limited data on past hail distribution and available hazard maps. Nevertheless, we continue to work on improving our analytical methods.

(iv) Other scenario analyses and research

■ Scenario analysis in collaboration with the Bank of Japan and the Financial Services Agency

In fiscal 2021, referencing assumptions from scenarios discussed by the Network for Greening the Financial System (NGFS), we collaborated with the Bank of Japan and the Financial Services Agency to conduct scenario analysis exercises, examining insurance payouts from natural disasters intensified by climate change. In fiscal 2024, a second round of scenario analysis under the same framework was conducted.*

→* Reference: "Release of "2nd Scenario Analysis on Climate-Related Risks [Insurance Sector]"
<https://www.fsa.go.jp/en/news/2025/20250620.html>

■ Scenario analysis in collaboration with academic institutions

The Group also seeks to enhance knowledge through research projects in collaboration with academic institutions, while developing analytical methods that reflect changes in the intensity of various disasters due to climate change, thereby improving the accuracy of scenario analyses.

We will continue to examine methods for assessing the impacts of climate change, while referring to the analysis methods based on UNEP FI projects and information to be published by NGFS.

4. Analysis of Physical Risks in Investment and Loan Portfolio Investment/Loan

As an institutional investor, the Group makes investments and loans to many companies, and we believe that an increase in water disaster damage at key locations of our investment/loan portfolio companies due to climate change could lead to a deterioration in investment returns. To this end, we analyze the physical risks of the assets of our major investment/loan portfolio companies to identify climate change risks associated with fund management.

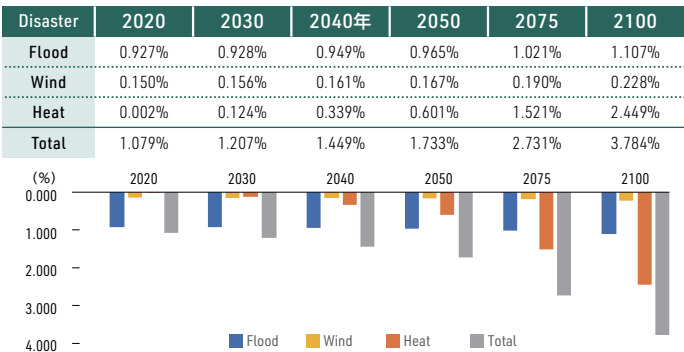
■ Scenario analysis of physical risks for the top 500 investment/loan portfolio companies

Key findings of our analysis

- The 4°C or higher climate change scenario would have the greatest impact on the Group's stock holdings. Under this scenario, sales and asset losses by 2050 are estimated at approximately 2% each, reflecting the combined effects of flooding, wind damage, heat stress, and other factors. However, when compared to the total sales of our portfolio companies, the overall impact on the Group's investment and loan portfolio is considered limited.
- Currently, flood risk is the main contributor to sales losses, but heat-related risk is increasing year by year and is expected to exceed flood risk after 2050.
- Under the 4°C or higher scenario, heat stress emerges as a major risk. Accordingly, the Group will strengthen support for corporate heat-stress measures, including training for heatstroke prevention, establishing response systems for heatwave events, and providing compensation.

The Group is strongly exposed to climate-related risks through its investment and loan relationships with customers. Accordingly, we conducted a quantitative assessment of how physical risks arising from climate change—such as floods, wind damage, and heat stress—could affect the sales and assets of companies in our investment and loan portfolio, which includes stocks, corporate bonds, and corporate loans. Specifically, we selected the top 500 portfolio companies and analyzed how various climate change scenarios could impact their sales and asset values.

Stocks and Sales



For details, see page 59. ▶

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[2] Transition Risk [Underwriting / Investment and Loan]

In the transition to a net-zero or nature-positive society, rapid changes in various areas of society, such as laws and regulations, technology, and markets, pose risks (transition risks) for corporate activities. The Group believes that such risks may lead to lower profits from underwriting and asset management. However, in terms of in underwriting, we expect that the impact will be limited because, with the exception

of a few products, there are few insurance products that directly cover transition risk. We believe that technological innovation and the introduction of new laws and regulations create new opportunities for insurance provision, but it also poses risks if we are unable to respond to these needs.

H+: Very High H: High M: Medium

Classification	Event		Examples of main impacts on policyholders and investment and financing entities	Examples of main impacts on the Group and degree of impact ◆ Underwriting ◆ Investment and financing		Period of manifestation		
						Short term	Medium term	Long term
Technology	Advances in net zero and nature-positive technologies and changes in industrial structure		As technologies that contribute to net zero and nature positive, such as decarbonization, recycling, and pollution removal technologies, spread rapidly, could render existing technologies and infrastructure obsolete and result in loss of our share of the traditional market.	◆ Loss of opportunities to offer insurance ◆ Decline in investment returns	M		●	●
Market	Changes in demand for products and services that contribute to net zero and nature positivity		Increased demand to net zero and nature positivity among consumers and clients could reduce demand for products and services that lead to global warming and excessive impacts on nature.		M		●	●
Policies, laws, and regulations	Rising carbon prices, emission regulations, and changes in the energy mix		Additional carbon price-related costs incurred by businesses that emit large amounts of GHGs, like the imposition of carbon prices by governments, and responses to requests from customers to introduce renewable energy could lead to a loss of earnings and a decline in competitiveness.		M		●	●
	Strengthening of environment-related regulations and standards		The strengthening of laws and regulations, etc., as part of efforts to achieve net zero and nature positivity might not only increase regulatory compliance costs but also lead to business downsizing and suspensions, and difficulties in procuring raw materials, resulting in a loss in profitability. In addition, the burden of disclosure could increase costs, and inadequate disclosure might have a negative impact on management.		M	●	●	●
	Increase in climate/nature-related litigation		Errors in climate/nature-related measures have resulted in significant business losses, and there is a risk that such errors in management strategy could lead to high costs, including officer lawsuits and compensation, as well as a decline in corporate value due to brand damage.		M	●	●	●
Reputation	Criticism due to errors or delays in climate/nature-related measures		Risk that the discovery of involvement in businesses that have significant adverse effects on global warming and nature could lead to consumer boycotts and suspension of business with clients, resulting in reduced sales, brand damage, a decline in corporate value, and worsening financing costs.	◆ Possibility of high insurance claims payments in D&O insurance ^{*1} ◆ Decline in investment returns	H+	●	●	●

*1 D&O: Directors & Officers' liability insurance. Compensation for damages, litigation expenses, etc., incurred by corporate officers because of claims for damages arising from acts (including omissions) committed by corporate officers in their capacity as officers

*2 Compensation for expenses incurred for measures necessary to restore brand image in the event of an accident requiring compensation, etc.

Transition risk analysis in our investment/loan portfolio[Investment/Loan]

■ Scenario analysis: impact of carbon costs on investment portfolios

Key findings of our analysis

- We analyzed the potential future carbon costs that the Group's portfolio companies may incur under different temperature-rise scenarios.
- In the high scenario, in which sufficient policy measures are implemented to limit global temperature rise to below 2°C, transition risks will increase as companies face a greater carbon cost burden.
- Analysis of the Group's investment portfolio as of March 31, 2024, indicates that under both the high and medium scenarios, portfolio companies could experience higher carbon earnings at risk by 2050.

“Carbon pricing,” which assesses the costs associated with GHG emission volumes, is being considered worldwide as a policy to encourage reductions in GHG emissions, and this policy could indicate a risk of an increased carbon cost burden for companies. Therefore, we analyzed the potential future impact of increased carbon costs on the Group's investment portfolio as a transition risk scenario analysis. For the analysis, we used analysis tools developed by S&P Global Trucost, a company that researches environmental data such as carbon emissions and climate change risks, where we analyzed degrees that investee companies presently have the ability to pay the future carbon costs they would need to bear (carbon earnings at risk (EBIT at risk)*).

* Shows the financial impact on the investment portfolio for each scenario, calculated by dividing the unpriced cost of carbon (UCC) by the earnings before interest and taxes (EBIT).

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Taking into consideration that TCFD recommends scenario analysis based on the rise in temperature being maintained at 2°C or less, the Group used the following three scenarios for analysis.

High scenario	Scenario in which administrative measures are implemented that are sufficient to be in line with international targets (Paris Agreement) of keeping temperature increase to less than 2°C by 2100
Medium scenario	Scenario in which long-term administrative policies are enacted to keep global temperature increase to 2°C but short-term administrative policy implementation is delayed
Low scenario	Scenario in which each nation voluntarily implements its own targets but global temperature increase reaches around 3°C

Our analysis covers domestic and foreign stocks of listed companies (covers approx. 98% on a market value basis) and domestic and foreign bonds (also covers approx. 97% on a book value basis) in our investment portfolio as of the end of March 2024. As for the assumption of investee companies' profits, the average value for corporate profits for the last 3 years is used to mitigate fluctuations in financial performance. Regarding GHG emission volumes, Scope 1 (directly emitted by the investee companies) and Scope 2 (indirectly emitted through the use of electric power, etc.) are examined.

> MS&AD Group carbon earning at risk (EBIT at risk)

The results of the analysis are shown in the table right. The carbon cost and transition risk increase in the high and middle scenarios. In the Group's investment portfolio as of the end of March 2024, it is estimated that in 2050, carbon earnings at risk may increase by approximately 158% in the low scenario, 25% in the medium scenario, and 3231% in the high and medium scenario for stocks, and 2814% in the low scenario, 48% in the medium scenario, and 6248% in the high and medium risk scenario for corporate bonds.

Stocks (as of March 31, 2024)				Corporate bonds (as at March 31, 2024)			
	Low Scenario	Medium Scenario	High Scenario		Low Scenario	Medium Scenario	High Scenario
2030	10.5%	15.1%	16.5%	2030	21.9%	31.1%	32.9%
2040	12.9%	21.0%	25.7%	2040	26.5%	41.6%	49.7%
2050	14.5%	25.0%	32.1%	2050	29.4%	48.4%	61.6%

This analysis is based on the current levels of greenhouse gas emissions by investee companies. If they promote decarbonization, the carbon cost allocated to them is reduced and then the future carbon earnings at risk will also be reduced. We will continue to mitigate the impact on the investment portfolio through engagement with investee companies.

Analysis of consistency with 2°C scenario

Key findings of our analysis

- Analysis of the Group's investment portfolio as of March 2024 indicates that the transition path for stocks corresponds to 2–3°C, while that for corporate bonds is below 1.75°C.
- A higher transition path value signals a greater risk from delayed adaptation to the fundamental policy, technology, social system, and lifestyle changes needed to achieve net-zero by 2050. Accordingly, the Group will continue to support portfolio companies in their transition toward net-zero.

We analyzed the transition paths of our investment/loan portfolio companies for alignment with the 2°C target of the Paris Agreement, using S&P Global Trucost's analysis tools. This analysis evaluates both historical and future (medium-term) expected emissions, and determine whether emissions reductions of our investment portfolio companies over time are at an appropriate level in line with the global warming prevention targets of the Paris Agreement.

In analyzing transition pathways, S&P Global Trucost uses two calculation methods, the "Sectoral Decarbonization Approach (SDA)" recommended by the "Science Based Targets initiative (SBTi)," and the Greenhouse Gas Emissions per unit of Value Added (GEVA) approach.

By using historical data on corporate business activities and GHG emissions with 2012 as the base year and forward-looking data up to 2030, we evaluate the expected future transition paths. This aims to eliminate the uncertainty in the assessment caused by relying solely on estimated emissions data, and to ensure a sufficient time period covered to reduce the impact of year-on-year changes on the verification results.

Our analysis covers domestic and foreign stocks of listed companies (covers approx. 99% on a market value basis) and domestic and foreign bonds (also covers approx. 97% on a book value basis) in our investment portfolio as of the end of March 2024.

> Analysis of consistency with MS&AD Group 2°C target

The results of the analysis are shown in the table below. The transition path for equities corresponds to 2–3°C, while that for corporate bonds is below 1.75°C.

As of the end of FY2024	Stocks	Corporate bonds
Transition path through 2030	2°C – 3°C	Below 1.75°C

Achieving net zero by 2050 requires fundamental changes in policy, technology, social systems, and lifestyles. Countermeasures are required at the policy level in each country, including the spread of green investment, thorough energy conservation, and decarbonization of power sources using renewable energy. An increasing number of our investment/loan portfolio companies are also formulating transition plans to achieve net zero emissions. The Group will continue to support the transition of our investment/loan portfolio companies to net zero emissions.

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[3] Climate/Nature-related Opportunities

Based on the identified climate/ nature-related physical risks and transition risks, the Group is committed to resolving the social issues that cause risks, as well as to reducing the occurrence of the risks themselves.

Through our activities we will realize the creation of shared value with society, by identifying and communicating risks, preventing the emergence of risks and reducing their impact, and reducing economic burdens.

	External Environment, Background	Impact on Our Business (Assessment)	Time Horizon		
			Short	Medium	Long
(i) Insurance products for climate change risks	As the physical risks associated with climate change increase, the importance of insurance to protect against economic losses is increasing. Correcting the protection gap is an issue in each country.	In addition to traditional coverage for wind and water-related disasters, there is a need to provide a variety of compensation methods such as weather derivatives and weather index insurance to adapt to climate change. Opportunities are also emerging to offer coverage in collaboration with international organizations.	●	●	●
(ii) Climate change adaptation, disaster prevention and mitigation services	With the frequent occurrence of serious losses, there is a strong need to prevent damage or limit losses, and the global adaptation business is estimated to be up to JPY50 trillion annually by 2050. Furthermore, nature-based solutions (NbS), which includes disaster prevention and mitigation that utilizes nature, is positioned as an important issue in the "European Green Deal" etc.	In addition to providing disaster prevention and mitigation services to policyholders, service targets are expected to expand to include local governments that promote disaster prevention and mitigation. There is a need for insurance companies with strengths in risk analysis to create innovative adaptation businesses.	●	●	●
(iii) Insurance products to protect against the deterioration of ecosystem services	There are increasing calls for coverage for natural capital and ecosystem services to prevent the degradation of ecosystem services essential for people's livelihoods and businesses due to severe natural disasters, pollution, and development (e.g., economic value of pollinators is approx. JPY470 billion).	In a Mexican marine resort area, an insurance policy was structured to protect coral reefs, an important tourist resource, from hurricanes. Similar insurance products and policies that cover the cost burdens in business activities associated with loss of ecosystem services may be considered.		●	●
(iv) Services related to nature and biodiversity	Half of GDP is dependent on natural capital, and in order to ensure the sustainability of business activities, analysis of nature-related risks and solutions such as nature conservation and restoration to mitigate risks are required before significant losses occur.	As an insurance company that has provided disaster risk analysis and mitigation measures based on regional characteristics, there are high business synergies in analyzing and providing solutions for nature-related risks that are unique to the regions business activities.		●	●
(v) Insurance products and services that support and promote net zero	At COP28, a goal of tripling renewable energy power generation capacity by 2030 was adopted, and investment in renewable energy continues to be strong, reaching approximately JPY2 trillion in 2040 in the Japanese market alone. In addition, growth is expected in technologies and products that contribute to low fuel consumption/electric vehicles and energy conservation. Furthermore, as the emissions trading system for high-emission industries will go into full operation from FY2026, emissions trading, including voluntary credits, will become more active.	The construction of new equipment associated with investment in renewable energy and decarbonization technology will lead to an increase in insurance demand. On the other hand, companies in high-emission industries, where reductions are extremely difficult, are expected to utilize carbon credits, which will also increase the need for coverage related to the composition and distribution of credits.	●	●	●
(vi) New coverage and services in line with business model transformation towards nature positivity and a circular economy	The World Economic Forum estimates that as of 2030 the transition to a nature-positive economy will require approximately JPY368 trillion in annual global investment, resulting in an increase in business opportunities of JPY1,372 trillion. More than three-quarters of this estimate is also strongly related to net zero emissions and the circular economy. New technologies and business models will be created in diverse industries for major social and economic transformations.	In order to implement unprecedented technologies and mechanisms into society, insurance systems that cover risks will be important. Demand is expected for risk solutions for new businesses that contribute to nature positivity, net zero, and a circular economy in the upstream and downstream of the supply chain, such as the procurement of certified materials with low environmental impact and the promotion of recycling.		●	●
(vii) Consulting needs to support analysis of risks and opportunities related to climate and nature and the development of business strategies	TCFD has 4,872 companies worldwide and 1,470 companies in Japan (as of October 12, 2023), and TNFD has 416 companies worldwide and 109 companies in Japan that have agreed to disclose information in accordance with the framework. In the EU and Japan, similar information disclosure of information is becoming mandatory.	There is a high need for consulting services as advanced knowledge and analysis are required to comprehensively identify climate- and nature-related risks and opportunities in business, formulate business strategies, and disclose information, including long-term risk analysis.	●	●	●

[4] Risks and Opportunities in Six Industries

Underwriting

Investment/Loan

We analyzed the physical risks, transition risks, and opportunities for each of the six industries identified in the chapter on climate/nature-related dependencies/impacts. We also analyzed the risks and opportunities

for the Group in these industries. Going forward, we will continue to work with our customers to create opportunities and countermeasures against climate/nature-related risks.

[For details, see page 60.] ▶

Strategy | Key Initiatives



[1] Key Initiatives Based on Risks and Opportunities

The MS&AD Group works proactively to mitigate risks and create new business opportunities in the insurance business, taking into account both our dependence on and impact upon nature and climate change. As the increasing frequency and severity of natural disasters due to climate change pose major challenges to business operations, we are promoting the visualization and quantification of risks to enhance underwriting decisions. At the same time, we aim to reduce losses by strengthening loss prevention initiatives designed to avert or minimize damage, while engaging in dialogue with customers to share assessments and challenges related to climate- and nature-related risks. Through these efforts, we contribute to the realization of a sustainable society. These initiatives form an important foundation supporting the sustainability of our insurance business and the transition toward net zero and nature positive outcomes.

[2] Enhancing Value Provision in Response to Increasing Natural Disasters

Compensation for losses caused by natural disasters lies at the core of the non-life insurance business, and natural disaster risk exerts an especially significant impact among climate- and nature-related risks. In addition to the growing severity and frequency of disasters linked to climate change, social structural changes such as declining and aging population are generating new vulnerabilities. To address this complex and evolving landscape, the Group advances the visualization and quantification of disaster risks, strengthens underwriting practices, cultivates specialized talent, and reinforces loss prevention measures to promote preparedness and prevention even during normal times. Through these efforts, we aim to provide sustainable coverage to a wide range of customers and view the enhancement of value for those facing natural disasters as a key business opportunity.

1. Ensuring the sustainability of insurance coverage

We strive to maintain strong financial soundness by improving the balance of income and expenses of insurance related to natural disaster insurance, while offering services that help customers visualize and mitigate their disaster risks. Our goal is to ensure the sustainable provision of insurance coverage that is affordable.

(i) Improving profitability and diversifying the portfolio

In response to the increasing insurance claims payments due to natural disasters, the General Insurance Rating Organization of Japan has been gradually raising the advisory in recent years.

To appropriately reflect the rising disaster risk in premiums, we have also been shortening insurance periods. Through enhanced underwriting—including reassessment of insured amounts, more sophisticated risk surveys, and appropriate setting of coverage scopes—we work to present customers with fair premium levels while ensuring stability in earnings and expenses.

To maintain a strong financial foundation, we must diversify our portfolio, including disaster risks. We are therefore advancing portfolio transformation through expansion of our overseas businesses, domestic life insurance operations, and new business domains.

(ii) Visualization and mitigation services for natural disaster risks

For many companies, natural disaster risks are already a tangible reality. Helping them gain an accurate understanding of future climate change impacts benefits both our customers and the Group by enhancing sustainability and corporate value. We visualize uncertain risks through collaboration with advanced scientific expertise and leverage digital transformation (DX) to support the implementation of effective risk reduction measures.

Risk surveys related to natural disasters

The degree of natural disaster risk depends heavily on the location and condition of business facilities. MS&AD InterRisk Research & Consulting identifies and analyzes latent risks through disaster analysis simulations and other methods. By conducting on-site investigations and engaging in dialogue with customers, we propose concrete countermeasures. Implementing these measures alongside insurance underwriting enables appropriate risk assessment and the provision of suitable coverage.

Assessing the impact of physical risks due to climate change

MS&AD InterRisk Research & Consulting has focused on assessing climate change risks. Accordingly, it collaborates with external organizations that possess advanced expertise in quantitatively analyzing the physical impacts of climate change. In 2020, we partnered with U.S. startup Jupiter Intelligence to launch a service that quantitatively assesses the risk of various future natural disasters worldwide with an resolution of 90 m × 90 m, based on climate change impact assessment using AI. In addition, the “Large-Scale Assessment of Flood Risks Due to Climate Change (LaRC-Flood®)” project launched in 2018, in collaboration with the University of Tokyo and Shibaura Institute of Technology, has achieved highly accurate estimation of inundation depth distribution around the world. In 2023, we began providing “Flood Risk Finder,” a SaaS platform that can evaluate flood risks globally the world.