

# Climate-Related Financial Disclosure

~ TCFD Report ~

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MS & AD Insurance Group

## Table of Contents

<b>Climate-Related Financial Disclosure .....</b>	<b>1</b>
<b>1. Governance .....</b>	<b>1</b>
<b>2. Strategy .....</b>	<b>2</b>
(1) Climate-related Risks and Opportunities .....	3
(2) Approaches Based on Risks and Opportunities .....	5
(3) Scenario Analysis .....	9
<b>3. Risk Management.....</b>	<b>11</b>
(1) Management of Natural Catastrophe Risk .....	13
(2) Control of the Retained Amount of Natural Catastrophe .....	13
(3) Litigation Risks in Insurance Underwriting .....	14
(4) As Responsible Institutional Investor .....	14
<b>4. Metrics and Targets .....</b>	<b>15</b>
(1) Metrics for Risks and Opportunities .....	15
(2) Environmental Burden of Our Business Activities .....	16
(3) Metrics and Targets for Reduction of Environmental Burden of Our Business Activities .....	16
(4) Greenhouse Gas Emissions in Investment Portfolio .....	16
(5) Weighted average carbon intensity (WACI) of investee .....	17
(6) Remuneration for Directors and Officers in Relation to Climate Issues .....	17

# Climate-Related Financial Disclosure

Climate change is a material global issue. Countries around the world have signed on to the Paris Agreement with the aim of realizing a decarbonized society, and are promoting measures against climate change.

The MS&AD Insurance Group has been implementing measures to address climate change, which has a significant impact on society and the Group.

For example, we are promoting the provision of products and services that contribute to disaster prevention and mitigation to support the improvement of society's resilience to damage from natural catastrophe and its adaptability to climate change. In addition, through the provision of insurance and investments, we are supporting the research and development and dissemination of new technologies to reduce the risk of climate change and contributing to the transition to a decarbonized society.

The Task Force on Climate-related Financial Disclosures (hereinafter "TCFD"), recommends that responses to climate change be disclosed in accordance with the four frameworks of Governance, Strategy, Risk Management, and Metrics and Targets. The Group supports this and promotes climate-related disclosures.

## 1. Governance

Our climate-related governance structure consists of the Board of Directors, the Group Management Committee, and Task-Specific Committees.

In addition to matters specified by law and the Articles of Incorporation, the Board of Directors discusses and decides upon important climate-related matters involving Group management strategy and corporate management involving climate-related matters, including the Group's management policies, management strategies and capital policy, in addition to overseeing the duties of directors and executive officers. The Board of Directors allocates management resources according to risk appetite controlled with a balance of risk, return, and capital, including climate-related risks, and aims to increase corporate value over the medium to long term by achieving sustainable growth and improving profitability and capital efficiency based on soundness. In addition to appointing executive officers, the Board of Directors aims to separate management decision making and oversight by the Board of Directors from business execution by executive officers by clarifying their respective roles. Executive officers are responsible for executing business in the respective areas of business entrusted to them by the Board of Directors, and report on the status of business execution to the Board of Directors.

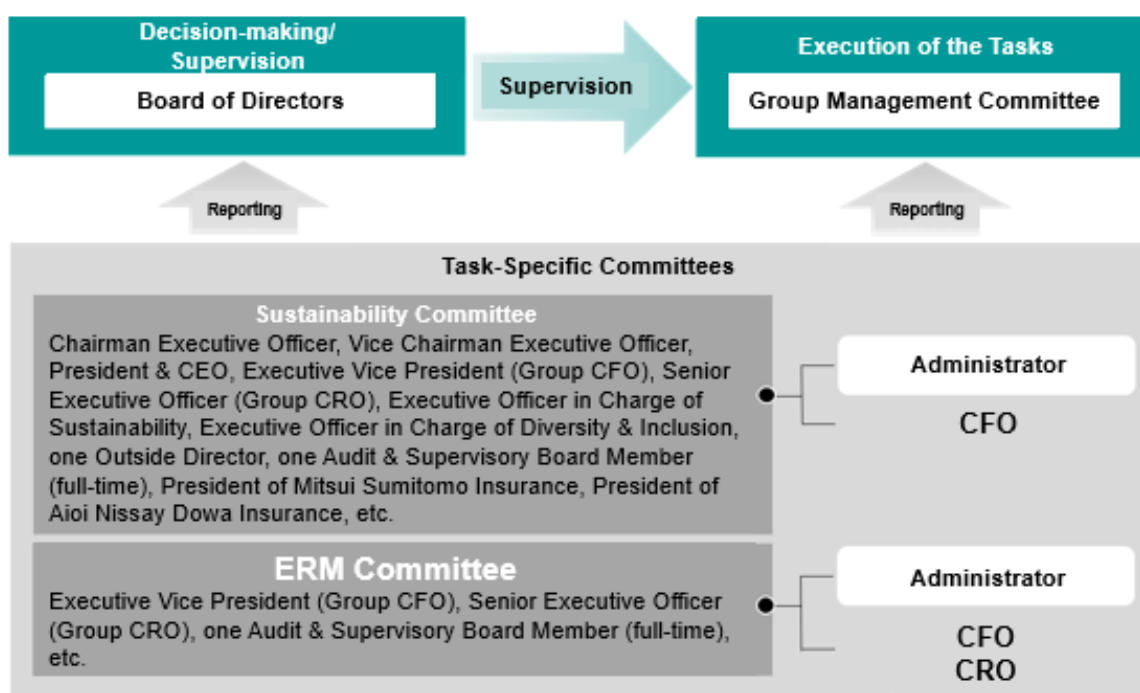
The role of the Group Management Committee is to discuss management policies, management strategies, and other matters that are key issues to the Company and the Group companies. It also monitors specific business operations by receiving reports on approved matters under the rules for the Group Management Committee.

The task-specific committees have been established with the aim to deliberate on various key issues in management when executing operations as well as to coordinate perspectives across various departments. Climate-related issues and initiatives are reported to both the Board of Directors and the Group Management Committee for determination after discussion by, primarily, the Sustainability Committee and the ERM Committee (respectively held approximately four times a year in principle) of Task-Specific Committees.

The Sustainability Committee, headed by the Group CFO, consists of the presidents of each Group company, the Group CFO (Director in charge of Sustainability), the Group CRO, and the Director in charge of Diversity and Inclusion. It discusses policies, plans, and strategies for addressing sustainability issues, including climate ones. In FY 2021, it was held five times. Our Initiatives for Realizing Net Zero Emissions by 2050 as a target for reduction of greenhouse gas emissions generated by the Group's business activities, and our measures for realization of the target, those which were announced in May 2021, were discussed in the first committee in April. Second one in May 2021 discussed how to deal with insurance underwriting related to coal-fired power plants to be constructed in the future. That deliberation led to our announcement in June 2021

of the suspension of such underwriting. Fifth one held in January 2022, deliberated about specifying, in the four-year medium-term management plan starting from 2022, the responses to climate change as a key priority issue which requires ongoing consideration, and defining the rate of reducing greenhouse gas emissions and that of introducing renewable energies as KPIs. Discussion were reported to the Board of Directors.

The ERM Committee, headed by the Group CFO and the Group CRO, discusses and coordinates important matters concerning ERM, as well as monitoring the status of risk, return/capital and the status of risk management, including climate-related risks. It was held eight times in FY 2021. One held in February 2022, discussed classifying climate change as Group Material Risk, which should be handled by management, and strengthening of management thereof, taking into consideration increased litigation risks. The discussion was reported to the Board of Directors where decision was made. In addition, the ERM Committee discusses improvement of natural catastrophic events including climate change, a management, and then reports to the Board of Directors.



Climate-related governance structure

- Internal Control (<https://www.ms-ad-hd.com/en/group/value/group.html>)

## 2. Strategy

Climate change brings about the intensification of natural catastrophe, physical changes in weather conditions, social and economic changes will be occurred rapidly in the course of transition to a decarbonized society.

Our medium-term management plan has three priority issues in sustainability (materiality); namely “Symbiosis with global environment ~ Planetary Health~,” “Safe and secure society ~ Resilience~” and “Happiness of diverse people ~ Well-being~,” and promotes CSV initiatives that create shared value with society. We, through climate change related CSV initiatives in “Symbiosis with global environment ~ Planetary Health~,” work toward mitigating the impacts of climate change and supporting transition to decarbonization. We, with 2050 net zero targets, sustain a resilient and sustainable society by taking initiatives to support development of new technologies and transition to a decarbonized society that will mitigate climate change risks and by reducing the environmental impacts associated with the Group's business activities. Ensuring financial soundness and earnings stability we provide with insurance coverages for damages arising from natural disasters such as typhoons and floods.

## ( 1 ) Climate-Related Risks and Opportunities

We recognize that some climate-related risks and opportunities have impacts on the balance of a single fiscal year such as large-scale natural disasters, while others occur over the medium to long term.

In addition to business plans for a single fiscal year, the Group has formulated medium-term strategies and plans based on various risks and opportunities, including those relating to climate issues. We will contribute to addressing climate change issues and grow with society as a platformer of risk solutions.

### [Climate-Related Risks]

We consider the effects of physical changes in weather conditions and the transition to a decarbonized society to be risks in our business operations, and are working to ensure stable earnings and financial soundness. We will maintain and strengthen a system that enables the prompt payment of insurance claims even in the event of a large-scale natural catastrophe. We will also mitigate risks by promoting disaster prevention and mitigation initiatives.

TCFD classifies climate-related risks into two categories: physical risks and transition risks.

Physical risks are those associated with the physical impacts of climate change. They are further divided into two sub-categories by how they manifest. One is "Acute physical risks" due to acute physical events such as typhoons and the other is "Chronic physical risks" due to changes in long-term climate patterns.

Transition risks are those associated with the transition to a decarbonized economy. They are classified into four sub-categories by factor. "Risks from Policies and regulations on climate change mitigation and adaptation," "Risks from technology that supports the transition to a decarbonized society," "Risks from changes in market supply and demand," and "Risks from social evaluation and reputation for responding to climate change"

Risks according to this classification are as follows.

Classification		Example	Risk Examples in our Business Activities
Physical risks	Acute	Typhoons, floods, storm surges, heavy rains and wildfires	<ul style="list-style-type: none"> <li>• Deterioration in income and expenditure due to the intensification of natural catastrophe, etc., and an increase in capital costs due to an increase in profit volatility</li> </ul>
	Chronic	<ul style="list-style-type: none"> <li>• Rising sea levels and mean temperatures</li> <li>• Changes in weather such as low rainfall and drought</li> <li>• Decrease in supply of water and other resources</li> <li>• Changes in the habitat of infectious disease vectors</li> <li>• Increase in heat stroke</li> </ul>	
Transition Risks	Policy and Legal	<ul style="list-style-type: none"> <li>• Rise in carbon prices</li> <li>• Strengthening environmental regulations and standards</li> <li>• Change in energy composition</li> <li>• Rise in climate-related litigation cases</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in investment returns caused by deterioration in the performance of investee companies due to an increase in carbon costs</li> </ul>
	Technology	Progress in decarbonization technology Changes in industrial structure due to a decrease in demand for low-carbon efficient products	<ul style="list-style-type: none"> <li>• Reduced earnings due to inability to capture changing markets due to decarbonization</li> </ul>
	Market	Changes in supply and demand for goods and services	
	Reputation	Criticism of delayed response to climate change	<ul style="list-style-type: none"> <li>• Decreased reputation due to inadequate information disclosure and/or delayed response to climate change</li> </ul>

## [Climate-related Opportunities]

Rapid social and economic changes resulting from transition to a decarbonized society will bring opportunities for the Group's growth, such as stimulated demand for new insurance products and services, and improved performance of our clients along with new industries emerge or technological changes take place. TCFD classifies climate-related opportunities into five categories: Resource Efficiency, Energy Source, Products and Services, Markets, and Resilience.

"Resource Efficiency" is opportunity related to efficient use of energy and resources.

"Energy Source" is that related to the production and utilization of low-emission energy.

"Products and Services" is that related to the development and innovation of new low-emission products and services.

"Markets" is that related to development of new markets.

"Resilience" is that related to climate-related adaptation..

Opportunities in the Group's business activities are classified are as follows:

Classification	Example	Opportunity Example in our Business Activities
Products and Services	Development and expansion of low-carbon products and services Adapting to the impacts of evolving climate change Development of new products and services through R & D and innovation Diversification of business activities Changes in consumer preferences	<ul style="list-style-type: none"> <li>• Increase in new insurance coverage needs due to changes of clients' business</li> <li>• Increasing consulting needs for decarbonization and disaster prevention/mitigation</li> <li>• Expanding markets for Climate Change (Disclosure of information, Response to regulations, Provision of mitigation and adaptation measures, etc.)</li> </ul>
Markets	Expansion of new and emerging markets Occurrence of assets requiring new financial services	
Resilience	Improving Capacity to Adapt to Climate Change	<ul style="list-style-type: none"> <li>• Increasing needs for disaster prevention and mitigation</li> </ul>
Resource Efficiency	Modal shift Efficient production and distribution Building efficiency improvement. Relocation to high-efficiency buildings Reduction of water usage and consumption Spread of recycling	
Energy Source	Conversion to renewable energy and low-emission energy Utilization of policies and incentives to support climate change measures Use of new technology Utilization of the carbon market	<ul style="list-style-type: none"> <li>• Increase in compensation needs due to electrification of mobility, AI of building equipment, etc.</li> </ul>

## (2) Approaches Based on Risks and Opportunities

According to the World Meteorological Organization (WMO), the global average temperature in 2021 was about 1.1°C higher than the pre-industrial (1850–1900) average. As global warming progresses, natural catastrophe tends to become more severe. Japan finds that the number of heavy rain and short time heavy rain events which may cause floods and sediment disasters has been increasing. The average temperature in 2100 could rise by more than 4°C compared to the pre-industrial era if initiatives to mitigate global warming progression are not taken. In that case, the insurance payment for natural catastrophe may increase significantly.

The Group promotes initiatives to mitigate further climate change as well as those to prepare against intensifying natural disasters.

### [Climate Change Mitigation]

The Group has been working to reduce greenhouse gas emissions. We set a goal of reducing greenhouse gas emissions from our business activities to “Net Zero Emissions by 2050,” and committed to contributing to transition to a decarbonized society in cooperation with stakeholders.

In May 2021, the Ministry of Economy, Trade and Industry set “Basic Guidelines on Climate Transition Finance” and published roadmaps for transition financing in the steel, chemical, electric power, gas, and oil sectors, the cement and paper/pulp sectors. Indicated in these roadmaps are low-carbon initiatives such as energy saving, efficiency improvement, and fuel conversion as well as adoption of future innovative technologies. Companies are supposed to refer to these guidelines in their progress toward transition to decarbonization.

In order to promote transition to decarbonization among companies, the Group has set a KPI of attaining an annual average of 18% of premium growth rate in the years leading up to 2025 for insurance products which contribute to “Coexistence with global environment ~ Planetary Health~” and we are supporting the establishment and social implementation of innovative technologies of next-generation energy such as renewables and hydrogen, CCUS and carbon recycling through provision of new risk solutions which actively utilize DX (digital transformation).

#### Provision of Carbon Neutral Support Clause for Companies (adaptation measures)

Mitsui Sumitomo Insurance and Aioi Nissay Dowa Insurance launched Carbon Neutral Support Clause (Decarbonization Expense Coverage Clause) in August 2021 with the aim of supporting companies in their efforts toward decarbonization. This clause covers additional expenses for such as newly adopting equipment, leading to reduction of greenhouse gas emissions when restoring disaster-stricken buildings. Conventional fire insurance covers restoration cost up to the original condition. Meanwhile, as endeavors toward decarbonization spread, more companies are likely to adopt, with additional costs, equipment that leads to reduction of greenhouse gas emissions when restoring buildings following damage by fire, wind, flooding, etc. Mitsui Sumitomo Insurance and Aioi Nissay Dowa Insurance developed this clause for the purpose of contributing to realization of a decarbonized society based on the concept of “Build Back Better (creative restoration)\*1.”

\*1: A concept of realizing the town development which is more resilient against disasters than before.

#### Service provision and research on climate change risk assessment and analysis (Adaptation Measures)

The Group is working on climate change risk assessment and analysis. The scope of risks to be identified by companies includes the risk of socio-economic transition to a decarbonized society (transition risk), such as the conversion of energy structures in addition to the physical risks such as floods and droughts caused by climate change. InterRisk Research & Consulting, the Group company, provides support for assessment and analysis of risks, the establishment of a climate governance system, scenario analysis, and strategy formulation in line with the TCFD recommendations.

In July 2020, we partnered with Jupiter Intelligence, a venture company that analyzes climate change risks, to provide a service that quantitatively evaluates the impact of natural disaster risks caused by climate change on a global scale with an accuracy of 90 meters square.

## ● Implementation of “Business Activities with Consideration for Sustainability”

In September 2020, we published “Business Activities with Consideration for Sustainability” which is the Group’s policy on dealing with sustainability. As an insurance and financial services group which provides safety and peace of mind, we conduct business activities with consideration for sustainability, and aim to enhance corporate value by contributing to solutions for sustainability issues with profound understanding through stakeholder engagement. Our underwriting considers issues and risks that would have negative impacts on society and the global environment and we provide products and services that respond to the demands of society.. Our investment considers ESG factors in pursuit of medium-to long-term returns and contribution to solutions of sustainability issues.

Our response to coal-fired power generation, which is we will not provide insurance for, or make investments in new coal-fired power plants. In June 2022, we decided not to, in principle, provide new insurance for or make new investments in the existing coal-fired power plants and development and operation of coal mines which produce primarily steam coal. In addition, we made it a rule to carefully determine whether or not to provide insurance or make investments in the business involving oil sands mining, and gas/oil exploitation in the Arctic zone, taking account of such factors as how each business gives consideration to environmental impact.

It is an essential role of an insurance company to support decarbonization of all of society through provision of products and risk consulting services that assist our corporate clients with their efforts to resolve climate change problems. The Group supports our corporate clients in their endeavors to resolve solutions to such issues as reduction of climate change risks in their existing business activities and creation of profit opportunities through new business that contributes to the zero carbon objective.

➤ Business Activities with Consideration for Sustainability (<https://www.ms-ad-hd.com/en/csr/summary/materiality.html>)

## ● Reduction of greenhouse gas emissions in underwriting

In December 2021, the Group joined “Partnership for Carbon Accounting Financials”, a global partnership by financial institutions to develop methods to measure greenhouse gas emissions of underwriting portfolio. In June 2022, we took part in an international initiative, Net-Zero Insurance Alliance, and is actively involved in development of international standards. With outcome of these initiatives, we are proceeding with measurement of and target setting for greenhouse gas emissions of our insurance portfolio, and support for transition to net zero society through engagements with our clients.

## ● Reduction of greenhouse gas emissions in investments

Aiming for realization of a decarbonized society, we, as an institutional investor, support through constructive dialogue (engagement) our investee companies to reduce greenhouse gas emissions and their disclosure in accordance with the TCFD recommendations.

As part of our active approach to climate change mitigation, we invest in project financing and funding related to construction of power generation plants that utilize renewable resources such as solar, wind and biomass. In December 2021, Mitsui Sumitomo Insurance, Aioi Nissay Dowa Insurance, Mitsui Sumitomo Aioi Life Insurance, and Mitsui Sumitomo Primary Life Insurance jointly invested in the impact funds which focus on climate change. The balance of ESG thematic investing, which lead to resolution of social issues including climate change, totaled approx. JPY180 billion as of the end of March 2022. Through our continuous green investment, we support companies that are tackling the challenge of developing innovative technologies aimed at realizing drastic reduction of greenhouse gas emissions. In addition, we will continue our engagement with companies concerning realization of a decarbonized society and our efforts toward further measurement and disclosure of greenhouse gas emissions in the Group’s investee/borrower companies, thereby support corporate zero carbon initiatives, and contributing to transition to net zero society..

## ● Reduction of greenhouse gas emissions with our value chain

In order to realize a decarbonized society, various innovations in business and society are essential. We will support the establishment and implementation of innovative technologies for a decarbonized society, like next-generation energy



such as renewable energy and hydrogen, CCUS \*, carbon recycling, etc., through the provision of insurance products.

※ Carbon dioxide Capture, Utilization and Storage

We are working with our insurance agents, who are our Group's business partners, to reform their business processes by utilizing digital technology and other means and are promoting their sales activities through web communications without paper usage which save energy and resource.

#### Provision of Service for calculating and visualizing GHC emissions

Mitsui Sumitomo Insurance and Aioi Nissay Dowa Insurance provide a cloud service “zeroboard\*1” for calculating and visualizing greenhouse gas emissions for their insurance agent organizations\*2 free of charge to assist member agents, who are the Group’s business partners, with their promotion of decarbonized management.

In order to realize “Net Zero Emissions by 2050,” it is essential to reduce greenhouse gas emissions of society as a whole. The Group, together with our stakeholders such as clients and agents, is working to reduce greenhouse gas emissions in our value chain.

\*1: A cloud service offered by Zeroboard, Inc. for calculation and visualization of greenhouse gas emissions. It enables calculation based on the internationally recommended standard known as “Greenhouse Gas Protocol.”

\*2: Mitsui Sumitomo Agencies (MSA) and Advance Club, insurance agent organization comprising car maintenance service providers, of Mitsui Sumitomo Insurance and members of Professional Agents of Aioi Nissay Dowa Insurance. Aioi Nissay Dowa Insurance also provides small to medium enterprises in Japan with the same service free of charge.

#### ● Reduction of greenhouse gas emissions utilizing natural capital

Nature provides us with various solutions to threats of natural disasters and drastic weather changes, which are intensifying as climate change progresses. We, being a member of TNFD\*, take part in discussions on development of a framework for nature-related risks and opportunities disclosures.

\* Task Force on Nature-related Financial Disclosures

Also, the Group has been promoting rainforest restoration in Indonesia since 2005, and tree-planting at Bihoro Town in Hokkaido since 2019. We will further accelerate our actions toward reduction of greenhouse gas emissions utilizing natural capital with stakeholders.

#### Establishment of TNFD Consultation Group for Japan

In June 2022, the Group established the TNFD Consultation Group\*1 for Japan with participation by TNFD Forum\*2 members in Japan. With the assistance of the Ministry of the Environment, the Financial Services Agency, and the Keidanren Committee on Nature Conservation, we are participating in the disclosure framework development work, which is to be completed in September 2023.

\*1: An organization for supporting the development work for a disclosure framework, comprising companies and organizations with expertise in nature, finance, etc.

\*2: A council in Japan officially recognized by TNFD to discuss how financial and other businesses should deal with nature and future adoption of a disclosure framework. Similar organizations have been established in Australia, New Zealand, India, the Netherlands, Switzerland, and the UK (as of June 2022).

### Provision of products and services to contribute to preservation and recovery of natural capital and

“Nature Positive” means taking steps to stem damage to biodiversity and put nature on a path to a positive state and was advocated in the “Kunming Declaration” adopted in the 15th meeting of the Conference of the Parties (COP15) to the Convention on Biological Diversity. Conservation of nature and biodiversity is closely related to the responses to climate change. For example, forests function to absorb carbon dioxide (CO<sub>2</sub>) and to prevent flooding.

In June 2022, Group companies Mitsui Sumitomo Insurance and Aioi Nissay Dowa Insurance launched new products and services which would contribute to the preservation and recovery of nature and biodiversity. Those products and services include Endorsement for Coverage for Additional Costs for Responses to Marine Contamination, which covers costs of voluntary actions by ship owners as preservation and restoration of damages to the natural environment at times of marine accidents; Endorsement for Extended Coverage for Contamination, which provides facility owners or managers with coverages for losses arising out of unpredictable and sudden contamination at facilities, etc.; and Endorsement for Coverage for Costs for reforestation which covers reforestation costs, etc. These products have positive impacts on sea, forest, land and animals, which are also key factors in responding to climate change.

## [Climate Change Adaptation]

The Group provides insurance coverage for damage from natural disasters while ensuring financial soundness to provide society with peace of mind and safety. We have been promoting climate change adaptation by providing services to help eliminate or reduce damage and loss caused by natural disasters.

If natural catastrophe becomes more severe due to climate change, the amount of insurance claims may increase and in turn may lead to rise in reinsurance premiums. To this end, the Group utilizes reinsurance alternative methods such as cat bonds (bonds that incorporate a function to receive funds in the event of a natural catastrophe) and accumulate catastrophe reserve.

In FY 2019, Group companies MSI and Aioi Nissay Dowa Insurance have secured a joint common reinsurance option. This option ensures stability of Group profits and losses over the period even when payments for insurance claims due to natural catastrophe reach a large amount throughout the year.

In preparation for a more severe natural disaster, we are also providing disaster and weather data analysis services using AI, and working to enhance disaster prevention, recovery, and adaptation capabilities. In the event of a natural disaster, we establish an efficient payment procedure that uses AI and drones to conduct damage investigations so that our clients can recover promptly by our insurance claims payment.

Taking into account the impact of climate change, we will continue to control the retention of risk amount and secure the capital necessary to maintain our financial soundness. We will build a more stable earnings base by diversifying risks geographically and operationally through expansion of our overseas and life insurance businesses.

### Free provision of “cmap.dev,” real-time natural disaster damage forecast

In June 2019, Group company Aioi Nissay Dowa Insurance began providing, free of charge, “cmap.dev,” the world’s first website which, forecasts the likely number of damaged buildings and the damage ratio for each municipality and displays the real-time forecast outcomes on the map when damage is caused by a disaster such as a typhoon, torrential rain, or earthquake. The website even enables simulation using major typhoons, torrential rains and earthquakes that occurred in the past and confirmation of worldwide weather information. It is made available to the general public so that people can access it 24/7/365 using various devices, including PCs and smartphones. Further, a new service was added to “cmap” in March 2022 to make available on the website the barrier-free information offered by WheelLog, a general incorporated association, with the aim of enabling those who have difficulty with mobility to evacuate easily and safely without anxiety in the event of a disaster.

#### Provision of disaster prevention and mitigation support system, using weather/damage data and AI

Mitsui Sumitomo Insurance and MS&AD InterRisk Research & Consulting jointly developed a disaster prevention and mitigation support system for use by local governments, called "Disaster Prevention Dashboard," and are supporting their disaster prevention and mitigation measures through provision of the system. They offer free trial to local governments which would like to use it in April 2022, and begin offering in earnest in April 2023.

With the increasing frequency and severity of disasters, measures for their prevention and mitigation have become important social issues. Local governments, in particular, are required to take various actions in an appropriate manner, such as prior evacuation guidance for local citizens in order to mitigate harm.

Through provision of "Disaster Prevention Dashboard," the Group visualizes in a unified manner real-time data on weather conditions that could lead to disaster risks, flood forecast data for 30 or more hours ahead, and AI-based estimation of post-occurrence damage, thereby supporting the disaster prevention and mitigation measures in local communities to help protect the lives and property of residents.

### (3) Scenario Analysis

The physical and transition risks of climate change could have a variety of impacts on our group's business in the future. The Group has developed scenario analyses. One is to analyze impact on insurance underwriting arising from physical risk, natural catastrophe and the other is on investment from transition risk, rise of carbon cost.

For the analysis of physical risks, we analyzed changes in insurance loss arising from typhoons of which are impacted by further warming of the planet, and confirmed insurance loss might be increased. For the analysis of transition risks, we analyzed additional costs allocated to our investee companies in the context of responses to rising global temperature. We found the companies developing their measures might lead to reduce additional costs.

In the analyses, wide range assumptions have been set since the impact and likelihood of climate change are volatile. Our physical risk analysis is based on the Intergovernmental Panel on Climate Change (IPCC) scenario, and our transition risk analysis is based on the International Energy Agency (IEA) scenario.

The Group continuously updates and refines its scenario analysis in light of climate change mitigation and adaptation initiatives and from scientific point of view.

#### [Scenario Analysis of Insurance Underwriting (Physical Risk Analysis)]

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 impact of changes in typhoons on insurance loss.

The project for considering methods of forward-looking scenario analysis that examines the potential effects of climate change on insurance 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 Company, participated in the project, and worked on developing scenario analysis methods in some groups based on the likely impacts of climate change subject to analysis.

The Company participated in the group for analyzing typhoons and hurricanes that have a significant impact on insurance 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 due to climate change, 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).

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.

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".

## ●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, insurance loss may increase by several percent.

Apart from the analyses mentioned above, we collaborated in FY2021 with the Bank of Japan and the Financial Services Agency in carrying out scenario analysis exercises referring to materials such as the assumptions of scenarios considered by NGFS (Network of Central Banks and Supervisors for Greening the Financial System), and analyzed the likely amounts of damage caused by natural disasters which were becoming increasingly intense under the impact of climate change.

In addition to the above, the Group is endeavoring to advance our knowledge by such means as research work through projects conducted jointly with academic institutions, and is working to improve accuracy in scenario analyses, such as developing an analysis method which reflects changes in typhoon intensity due to climate change.

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

## [Investment Scenario Analysis (Transition Risk Analysis)]

"Carbon pricing," which assesses the costs associated with greenhouse gas emission volumes, is being introduced around the world as a policy for reducing greenhouse gas emissions, and this policy could indicate the risk of increased carbon cost burdens to 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 Trucost, which company researches environmental data such as carbon emissions and climate change risks, 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) \*).

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

Taking into consideration that TCFD recommends analyses scenarios, including but not limited to 2°C one or below 2°C one, the Group used three scenarios: "high 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" in which long-term administrative policies are enacted to keep global temperature increase to 2°C but short-term administrative policy implementation is delayed; and "low scenario" in which each nation voluntarily implements its own targets and global temperature increase reaches around 3°C.

Our analysis covers domestic and foreign stocks (covers approx. 98% of domestic and foreign listed stocks on a market value basis) and domestic and foreign bonds (also covers approx. 68% of domestic and foreign bonds) in our investment portfolio as of the end of March 2021. 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. As for greenhouse gas emission volumes, Scope 1 and Scope 2 are examined.

As shown in the following table, analyses carried out in FY2022 cover a larger scope than those in FY2021

Analysis asset	Analyses carried out in FY2022 Portfolio as of the end of March 2021	Analyses carried out in FY2021 Portfolio as of the end of March 2020
Stock	Domestic and foreign stocks (management by the company or outsourced)	Domestic stocks (management by the company)
Bond	Domestic and foreign bonds(management by the company or outsourced)	Domestic and foreign bonds(management by the company and partially outsourced)

The results of the analysis are shown in the table below. The carbon cost and transition risk increases in the high and middle scenarios. In the Group's investment portfolio as of the end of March 2021, it is estimated that in 2050, carbon earnings at risk may increase by approximately 8% in the low scenario and 30% in the high and medium scenario for stocks, 16% in the low scenario and 55% in the high and medium risk scenario for corporate bonds

#### ●MS&AD Group Carbon Earning at Risk (EBIT at Risk)

< Stocks (as of March 31, 2021) >

	Low Scenario	Medium Scenario	High Scenario
2030	4.0%	8.1%	17.5%
2040	6.5%	12.8%	26.4%
2050	7.6%	30.0%	30.0%

< Corporate bonds (as of March 31, 2020) >

	Low Scenario	Medium Scenario	High Scenario
2030	8.9%	16.4%	33.5%
2040	13.7%	24.8%	49.1%
2050	15.6%	55.4%	55.4%

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.

## 3. Risk Management

Based on the MS&AD Insurance Group Risk Appetite Statement, we have determined to clarify the amount of risk that can be held under normal conditions and to take risks based on its capital policy in order to realize its management vision. We develop a Group medium-term management plan that is in line with our Risk Appetite Statement. Also, we aim to ensure soundness and improve capital efficiency and RoR based on the ERM cycle.

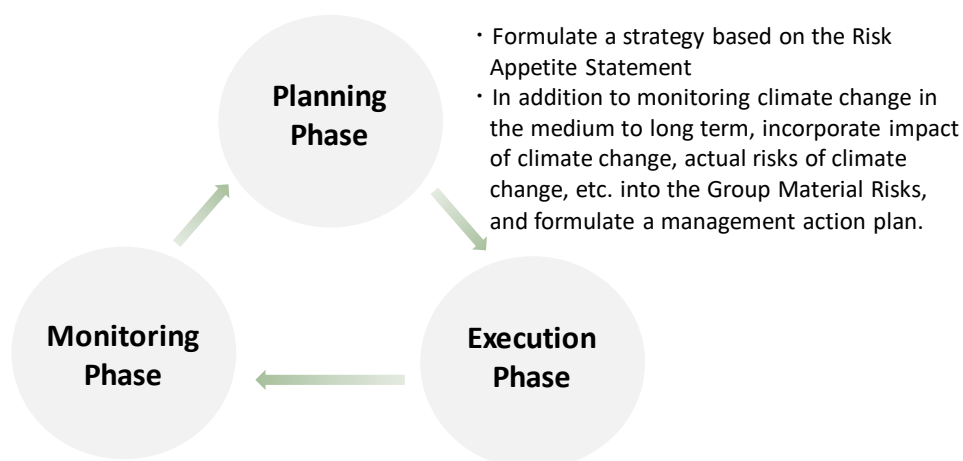
As for underwriting risk, we are working to advance growth strategies and assertively take on risks, while also striving to set appropriate insurance conditions, appropriately control natural catastrophe risks, and expand our returns.

With regard to asset management risk, we strive to implement comprehensive asset and liability management that takes into account the characteristics of liabilities, and the reduction of strategic equity holdings, and to expand our returns while securing the soundness and liquidity of assets.

In terms of risk management at the Group, based on the MS&AD Insurance Group Basic Policy on Risk Management, we recognize risks including climate-related risks, quantitatively determine the magnitude and possibility of their occurrence, and optimize their scope and extent. We also process risks by possession, transfer, and avoidance, verify their effects, and improve the processing method based on the results. The status of risks is reported to the Management Committee. Matters concerning climate-related risks is also reported to the Group Management Committee and the Board of Directors after discussing by the ERM Committee.

The Group identifies Group Material Risks to be controlled by management, formulates a Management Action Plan and regularly monitors the status. The Group monitors and controls climate change as one of Group Material Risks. Specifically, since climate change is a risk event that affects wide range of other Group Material Risks, such as the occurrence of a large-scale natural catastrophe, it is associated with other Group Material Risks as shown in the table below. The Group establishes and monitors key scenarios arising from climate change, and conducts regular monitoring over the medium to long term.

## ●ERM cycle



## ●Group Material Risks and Key Scenarios for Climate Change

Group Material Risks Related to Climate Change	
	Key scenarios related to climate change
Occurrence of large-scale natural catastrophe	Changes in probability of occurrence, size, etc., affected by climate change
Sharp fluctuations in financial markets	Decline in the value of the Group's assets due to the materialization of transition risks associated with corporate responses to climate change (Strengthen environment-related policies and regulations, advance decarbonization technologies, increase in lawsuits, etc.)
Increase in credit risk	
Occurrence of behavior that is detrimental to the corporate value of the Group, loss of social credibility	Deterioration in reputation and financial burden due to deficient responses to issues concerning sustainability, such as those relating to climate change and associated lawsuits, etc.
Frequent occurrence of IT system failures, the occurrence of critical IT system failures and large-scale IT system development plan-related progress delays, shortfalls, budget overruns and expected effects being unrealized	Stagnation of business services due to damage to system-related facilities caused by large-scale natural catastrophe
Pandemic of new influenza and other diseases	Spread of affected areas due to global warming and climate change
Changes in insurance market	Changes in market size and structure due to response to climate change

## (1) Management of Natural Catastrophe Risks

The Group manages natural catastrophe risks through measuring and examining the risk levels for covered events by geography and type of disaster, using a model which incorporates engineering knowledge, mainly that relating to

meteorology and architecture. Of these risks, those subject to the impacts of climate change include typhoons, floods and forest fires.

We are managing financial soundness by setting the maximum risk levels (risk limits) for the Group and for each company, using the levels of risk that occur once every 200 years as a basis in addition to large-scale natural catastrophe stress tests.

We have also been working to further refine the model based on the latest academic knowledge and the status of occurrence of natural disasters, in collaboration with external organizations that are conversant with natural disaster risks.

Additionally, we are working on such topics as incorporating the effects of climate change into stress tests and having the uncertainties of climate change reflected in the risk levels for the entire Group.

#### **About Stress Testing**

We conduct stress tests to confirm the impact of various stress events on capital and risk levels.

In order to complement the limitations of statistical methods for risk measurement, stress testing identifies portfolio vulnerabilities and identifies the need for and urgency of countermeasures by using scenarios that have been selected based on the Group's portfolio and risk profile and taking into account significant changes in the external environment.

We conduct tests based on the assumption of more severe stress, such as continuous typhoons and flooding of multiple rivers, and estimate the impact of long-term climate change on domestic typhoons, domestic flood disasters, and hurricanes in North America.

## **( 2 ) Control of the Retained Amount of Natural Catastrophe Risks**

Based on risk levels by geography and by disaster type, we are working to underwrite insurance appropriately, procuring reinsurance, issuing cat bonds, and accumulating contingency reserves. Through these measures we improve the financial soundness of the Group as a whole and to reduce the risk of fluctuations in profit and loss during a given period.

#### **Group-wide Natural Catastrophe Risk Control**

We are working on controlling natural catastrophe risks through an annual process to first set the Group's net retention standard for risk levels within Japan and abroad (hereinafter, "Guidelines"), develop reinsurance plans (ceding and accepting) and carry out reinsurance procurement and underwriting based on the Guidelines, and then check if the resulting risk levels remain within the scope set by the Guidelines.

#### **Reducing Risk of Fluctuations in Profit and Loss**

For natural disasters in Japan, in addition to reinsurance by MSI and Aioi Nissay Dowa Insurance respectively, we have secured joint reinsurance for both companies that targets their total, annual cumulative damage amounts. This has functioned effectively with respect to domestic natural disaster occurrences, and in 2022 we have secured reinsurance possessing a similar function, and are reducing risks of fluctuations in profit and loss.

We employ a policy concerning natural disasters in overseas markets to reduce risks and decrease the impact on periodic profit and loss by some 20%.

## **( 3 ) Litigation Risks in Insurance Underwriting**

If filings of climate related lawsuits becomes more frequent, amount of insurance payment for liability insurance covering such risks may increase as it covers indemnifications, settlements and defense costs. Major liability insurance products covering litigation risks related to climate change include the following:

Type of insurance	Coverage	Litigation Risks Related to Climate Change
Premises Liability Insurance	Insurance covers monetary damages and defense costs when the insured legally becomes liable for other person's personal injury and property damage arising out of facilities owned, used or controlled by the insured or from the business activities of the insured.	Litigations claiming for insured's omitting to take measures for prevention or mitigation of damage related to climate change in the course of the insured's business activities.
Directors' and Officers' Liability Insurance (D&O Liability Insurance)	Insurance covers monetary damages, defense costs, etc. for when the insured director or officer becomes liable in a claim for damages filed for its act (or omission of act) while performing its duties as a director.	Litigation against the insured director and officer claiming on the ground for delay or deficiency in taking measures against climate change, or insufficient disclosure of information. Litigation aiming for encouraging behavior modification in relation to climate change issues are also seen.

The Group manages litigation risk relating to climate change in insurance underwriting by classifying it under one of the Group Material Risks "Climate Change," and is endeavoring to ascertain the risk situation through considering factors such as the state of underwriting of relevant insurance products and the litigation occurrence status. We also define "damage to natural capital (exhaustion of resources, deterioration of and crisis over ecosystems, and human-induced pollution and accidents that cause major damage to the environment)" as one of the Group Emerging Risks and monitor the situation thereof in order to fully understand the medium- to long-term trend of relevant risk events.

## (4) As Responsible Institutional Investor

The "Japan's Stewardship Code," a set of principles for "responsible institutional investors," published by Financial Services Agency, is a code of conduct for institutional investors who invest in listed shares, etc. in Japan. As an asset owner, the Group supports its intent.

The Group has a policy of conducting "constructive dialogue (engagement) with investee companies, focusing on management issues, shareholder returns policy, and other non-financial information such as ESG from the perspective of enhancing the corporate value of the investee and promoting sustainable growth over the medium to long term, in accordance with Japan's Stewardship Code. We often confirm their response for climate change and decarbonized society in E(environment) related queries of their ESG policy.

< Examples of initiatives for engagement in relation to climate change >

Example 1	Example 2
We had a dialogue with a logistics company which is intensifying its initiative toward ESG and have exchanged views on matters such as how information disclosure should be carried out. The company is making active efforts to save energy through introducing environment-friendly vehicles and a modal shift combining transportation means of railway, vessels and trucks. We made a proposal that they disclose information such as objectives and track records of these efforts in an appropriate manner so that their initiatives can be properly evaluated by investors.	We confirmed that a company was steadily achieving a reduction in its consumption of petrochemical raw materials through reviewing the manufacturing processes for its products in terms of environment friendliness. Also, we found that, while having set the utilization ratio of biomass power generation as a target of the initiative, the company was facing issues such as reliability of supply and high costs of materials for power generation



## 4. Metrics and Targets

### (1) Metrics for Risks and Opportunities

#### ● Metrics for "Creating Shared Value with Society (CSV initiatives)"

Development and revision of products that contribute to climate change mitigation and adaptation are set as monitoring indicators. The results are reflected in performance-linked compensation for directors.

➤ Impact of CSV initiatives on society and our company (<https://www.ms-ad-hd.com/en/csr/quality/impact.html>)

#### ● Metrics for products/services that contribute to climate change responses

Annual average premium growth rate of 18% in years to 2025 in insurance products and services which contribute to "Symbiosis with global environment ~ Planetary Health." as KPI of our medium-term management plan in order to accelerate the provision of products and services covering risks related to climate change.

Item	Scope	Target	FY 2021
Products and services which contribute to "Symbiosis with global environment ~ Planetary Health~"	Group Domestic + and other affiliates	18% of annual average premium growth	19.98%

#### ● Metrics for natural catastrophe risk levels in insurance underwriting

Risk levels that occur once every 200 years.

#### ● Metrics for ESG thematic investing including climate change responses

Zero carbon transition requires technological innovation and capital investment toward a drastic reduction of greenhouse gas emissions. Factors such as growth of demand for funding and needs for new financial products and services in relevant industries will likely bring about opportunities for financial institutions. The Group is working on thematic investing that focuses on ESG, assuming profitability, such as investment in themes leading to solutions for social issues, including climate change.

(Unit: ¥ billion)

Theme	Cumulative investments to date(As of March 31, 2022)	New investments(April 2021– March 2022)
Green/Social/Sustainability Bonds	103.1	+36.1
Transition Bonds/Loans	1.2	+1.2
Renewable (e.g., solar, wind, hydrogen) energy projects	26.3	+6.9
Impact investment, ESG in general, regional revitalization	15.1	+8.7
International agency bonds	37.4	+6.3
<b>Total</b>	<b>183.2</b>	<b>+59.3</b>

## ● Metrics for investment in venture business including climate change responses

Through investment in venture business including climate change responses, we are promoting cooperation and collaboration with innovation partners who possess cutting-edge technologies effective for achieving decarbonization, such as Jupiter Intelligence, a company which offers AI-based climate change risk assessment that responds to TCFD.

Item	End of March 2022
Number of investments by MS&AD Ventures (climate change)	63 (5)

## (2) Environmental Burden of Our Business Activities

### ● Greenhouse gas emissions and energy consumption from our group's business activities

➤ ESG data (Environment) (<https://www.ms-ad-hd.com/en/csr/data.html#012>)

## (3) Metrics and Targets for Reduction of Environmental Burdens of Our Business Activities

### ● Targets

The Group set medium- to long-term greenhouse gas emission reduction targets in FY 2010 and has been working to reduce greenhouse gas emissions from its business activities. Having achieved FY 2020 greenhouse gas emissions reduction target (30% reduction from the FY 2009 level) set there, we set new Paris Agreement aligned targets in May 2021 in line with the Paris Agreement.

< Greenhouse gas emissions Reduction Target >

Target	FY2030	FY2050
Scope 1・2※1	-50%(Base year:FY2019)	Net zero
Scope 3※2	-50%(Base year:FY2019) (Categories1・3・5・7・13)	Net zero (All categories)

\*1:Scope 1 refers to direct emissions from our group, such as gasoline from company-owned vehicles.

Scope 2 refers to indirect emissions from consumption of purchased electricity, heat or steam.

\*2:Indirect emissions through the Group's business activities other than Scope 2. Category 1 refers to purchased products and services (covered by paper and mail). Category 3 refers to fuel and energy activities other than Scope 1 and Scope 2. Category 5 refers to waste from operations. Category 7 refers to employee commuting. Category 13 refers to leased assets

< Renewable Energy Usage >

Target Year	Usage Rate
FY 2030	60%
FY 2050	100%

### ● Metrics

Reduction rates of total energy consumption and greenhouse gas emissions are monitoring metrics for reduction of environmental burden of our business activities.

## (4) Greenhouse Gas Emissions in Investment Portfolio

The following table shows the carbon footprints (CO2 equivalent of greenhouse gas emissions from business activities) of investees. Scope 1 and Scope 2 greenhouse gas emissions are calculated through using Trucost's tool for calculating greenhouse gas emissions through a proprietary modeling approach when there is not enough information disclosed by investees or publicly available.

Subject assets are domestic and foreign stocks (covering approx. 98% of domestic and foreign listed stocks on a market value basis) and domestic and foreign bonds (covering approx. 68% of domestic and foreign bonds from the Group in our investment portfolio as of the end of March 2021).

With revisions to TCFD recommendations in October 2021, we are adopting PCAF standards for measuring greenhouse gas emissions in investee companies.

#### < Greenhouse Gas Emissions in Investment Portfolio >

(Unit: t-CO2e)

As of the end of March 2021	Stocks	Corporate bonds
Scope 1 + Scope 2	2,453	2,410

## (5) Weighted Average Carbon Intensity (WACI) in Investment Portfolio

Weighted average carbon intensity (WACI) is used as metrics of the carbon intensity of our investment portfolio. Scope 1 and Scope 2 are calculated through Trucost's tool. Subject assets are same as those of "Greenhouse Gas Emissions in Investment Portfolio".

#### < Weighted average carbon intensity (WACI) >

(Unit: t-CO2e/US \$1 million)

As of the end of March 2021	Stocks	Corporate bonds
Scope 1 + Scope 2	129.5	139.5

## (6) Remuneration for Directors and Officers in Relation to Climate Issues

As part of the initiatives contributing to medium- to long-term performance, we have non-financial indicators reflected in the performance-linked remuneration for directors and officers excluding external directors. Initiatives toward climate change mitigation are included in the evaluation of these indicators.

The standard ratio of performance-linked remuneration to total remuneration is 50% for President & CEO and 30 -40% for other directors and officers.

- Policies for determining the content of individual remuneration for Directors, etc.

(<https://www.ms-ad-hd.com/en/group/value/corporate.html#015>)

### ● Further climate-related information

#### Strategy

- Impact of natural catastrophe on insurance underwriting profit: MS & AD Integrated Report 2021 (Englished version to be released soon. P139 in Japanese version.)
- Medium-to Long term Targets (<https://www.ms-ad-hd.com/en/csr/summary/kpi.html#vtable-item-7>)
- ESG integration and sustainability approach (<https://www.ms-ad-hd.com/en/csr/summary/esg.html>)
- Impact of CSV initiatives on Society and our company (<https://www.ms-ad-hd.com/en/csr/quality/impact.html>)

#### risk management

- ERM and Risk Management ([https://www.ms-ad-hd.com/en/group/value/risk\\_management/erm.html](https://www.ms-ad-hd.com/en/group/value/risk_management/erm.html))

#### Metrics and Targets

- Targets(KPI) and Results (<https://www.ms-ad-hd.com/en/csr/summary/kpi.html>)
- ISO26000 Core Subjects(Environment) (<https://www.ms-ad-hd.com/en/csr/data.html#012>)