
Practical guide for Scenario Analysis in line with the TCFD recommendations 2022



Ministry of the Environment
March 2023

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1. Introduction

1-1. Purpose of this Practical Guide

1-2. Significance of the TCFD recommendations/
positioning of scenario analysis

Chapter 1. Introduction



This chapter explains the purpose of Practical Guide, concept and significance of the TCFD recommendations, and positioning of scenario analysis

[Structure and Use of this Practical Guide]

Composed of "The TCFD recommendations", "Key points for scenario analysis", "Practice cases by sector", "Disclosure example", "Parameters and tools for reference"

Corporate Needs	Chapters and the Practical Guide and Their Summaries
Companies want to know what the TCFD recommendations are and what scenario analysis is in terms of the TCFD recommendations in the first place	Chapter 1. Introduction This chapter explains the purpose of this practical guide, outlines the TCFD recommendations and significance in the background, and positions of scenario analysis
Companies want to know the specific steps and practical points for scenario analysis	Chapter 2. Scenario Analysis - Key Points of Practice This chapter explains how to practically undertake scenario analysis and describes key points of its practice, based on use cases performed by companies under the support program of the Ministry of the Environment
Companies want to know the steps taken to conduct the actual scenario analysis by Japanese companies	Chapter 3. Scenario Analysis - Practice Cases by sector This chapter explains how scenario analysis is carried out based on the support cases of the Ministry of the Environment (13 companies supported in FY2020 and FY2021)
Companies want to know disclosure examples that could be used as reference for scenario analysis	Chapter 4. Scenario Analysis - Example disclosures (domestic and overseas) Provide examples of national and international disclosures on scenario analysis based on the latest findings
Companies want to know the reference tools and literature for scenario analysis	Chapter 5. Scenario Analysis – Parameters and tools for reference Provides useful materials for scenario analysis based on the support cases

- TCFD's approach for scenario analysis in this Practical Guide has been developed based on a technical supplement to scenario analysis ("TCFD Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities" (2017.6)) as well as its own methodology and interpretations.
- Figures for each case are based on information at the time of acquisition.
- Examples of projects supported by the Ministry of the Environment are examples of projects supported by the "Project to Analyze Scenarios of Climate Risks and Opportunities in Accordance with TCFD" implemented in FY2018, FY2019, FY2020 and FY2021.

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1- 1

[Purpose and target for this guidance]

With increasing demand for disclosures in line with the TCFD framework, this guide explains the “scenario analysis”, which is one of the 11 disclosure items that companies are struggling to respond to. This guide is for all sectors

- The Task Force on Climate-related Financial Disclosures (TCFD) has positioned itself as an important framework for disclosure amid a shift in corporate management toward decarbonization and increasing demands for disclosure of information on climate risks and opportunities
 - ✓ Fearing that climate change will undermine the stability of the financial system, the Financial Stability Board established TCFD in 2015 at the request of the G20
 - ✓ Since the Paris Agreement, **countries have announced long-term goals for decarbonization**. Japan also declared a goal for carbon neutrality in 2020
 - ✓ These developments have led to **increasing demands for climate-related disclosures** as companies shift their operations to decarbonize
 - ✓ **The TCFD recommendations also represent an important position in the framework of information disclosure, and many companies and institutions are promoting information disclosure in line with the TCFD recommendations**
- Based on the above background, this guide provides commentary on **“scenario analysis”** among the 11 recommended disclosure items in the TCFD recommendation that companies are particularly struggling to respond to
 - ✓ The TCFD recommendations set out 11 recommended disclosure items for governance, strategy, risk management, and indicators and targets
 - ✓ Out of the 11 recommended disclosure items, many companies are struggling to address the **strategy c “describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario (=scenario analysis)”** that was not mentioned in previous disclosure frameworks
 - ✓ Therefore, this guide **focuses on scenario analysis and explains practical points, reference information, and reference cases** to carry out the scenario analysis
- This guide is **for all sectors and all positions**
 - ✓ This guide is for all sectors and includes examples of wide-range of sectors as well as parameters and tools for reference
 - ✓ In addition, this guide is for all positions (management/ scenario analysts, etc.) and can be utilized for the following
 - Management: Understand the overview of TCFD recommendation and scenario analysis through chapter 1, and gain an understanding of the overall picture of the implementation of the scenario analysis
 - Scenario analyst: Capture the overall scenario analysis and implementation steps through chapter 1-3. Use chapter 4 and 5 to obtain information on references

1- 2

[Challenges for companies in implementing scenario analysis] Respond to the challenges of scenario analysis with “Practical Points” and “Practice Cases by Sector”

- There are roughly 6 difficulties that companies face in implementing scenario analysis.
 - (1) Scenario analysis is roughly understood, but **no specific implementation process is known**.
 - (2) **The processes and departments** involved in scenario analysis differ for each company and product, and the level of implementation of scenario analysis cannot be determined uniformly.
 - (3) **Efforts are required to ensure that internal management understands** the purpose and the results of scenario analysis.
 - (4) The method for calculating business impact is unknown, and **utilizable external data for scenario analysis is lacking**.
 - (5) The **direction for increasing the sophistication** of scenario analysis is unknown (includes implementing 1.5°C scenarios and considering transitions).
 - (6) The **direction for disclosing** scenario analysis results is unknown (Securities reports, Integrated reports, Corporate Governance Code, etc.).
- The above issues can be resolved in this Practical Guide.
 - ✓ (1), (2) : In this practical guide, understand “**chapter 2. Key Points of Practice**” and “**chapter 3 Practice Cases by Sector**”. **In the beginning of chapter 2, the steps for analysis is explained separately for “first-time” companies and “continuing” companies**. Therefore, check which category your company falls into.
 - ✓ (3) : Have management understand the significance of the TCFD recommendations and scenario analysis through “**chapter 1 Significance of the TCFD recommendations / positioning of scenario analysis**” in this Practical Guide.
 - ✓ (4) : Then, conduct the scenario analysis by utilizing the implementation procedures and calculation methods described in “**chapter 2 Key Points of Practice**” and “**chapter 3 Practice Cases by Sector**” in this Practical Guide. Start a dialogue with management with the results of the analysis. If necessary, refer to this practical guide’s “**chapter 5. Scenario Analysis – Parameters and tools for reference**” for available external data.
 - ✓ (5) : Understand and practice the direction to take for making scenario analysis more sophisticated (example: after the second year) through “**chapter 2 Key Points of Practice**” in this Practical Guide. Also give thought to implementing 1.5°C scenarios and considering transitions.
 - ✓ (6) : Refer to the latest disclosure case studies for preparing Securities reports, Integrated reports, and Corporate Governance reports from the **best practice case studies** in this Practical Guide’s “**chapter 4. Scenario Analysis - Example disclosures (domestic and overseas)**”
- The key is to begin scenario analysis with what you understand, and progress and deepen your knowledge and experience.
 - ✓ Example: First, conduct a qualitative scenario analysis. Then, try a quantitative scenario analysis.
 - ✓ Example: First, apply the scenario analysis to a certain segment. Then, apply to a greater part of your company.
- The goal of scenario analysis is to “respond to climate-related issues” and to “increase corporate value” at the same time.
 - ✓ It is important not only to conduct scenario analysis, but also to continue the “cycle” which is to disclose information and hold dialogues with management.
 - ✓ Seize opportunities by continuing the cycle and incorporate it into business plans.

1- 3

[Key points revised in this Guidance from versions from past fiscal years] (1) Detailed explanations of international/domestic trends surrounding the TCFD, (2) additional commentary explaining financial impact, and (3) improved reference information

(1)	<p>Explanations added for international / domestic trends surrounding the TCFD</p>	<ul style="list-style-type: none"> ✓ Updated with the latest domestic and international trends surrounding the TCFD such as strengthening of regulations and rules for climate-related disclosures by various national governments to be in line with the TCFD, ISSB (International Sustainability Standards Board) trends for consideration of international standard proposals, and amendments to domestic securities reports; also contains more detailed explanations of the significance of addressing the TCFD recommendations <p style="text-align: right; background-color: #90EE90; padding: 2px;">Chapter 1</p>	
(2)	<p>Explanations added for business impact analysis</p>	<ul style="list-style-type: none"> ✓ A detailed explanations for business impact analysis, which is an area companies addressing scenario analysis struggles with. Concrete examples of calculations and patterns are included as well <p style="text-align: right; background-color: #90EE90; padding: 2px;">Chapter 2</p>	
(3)	<p>Enhanced practical aspect through inclusion of a list of TCFD-related documentation</p>	<ul style="list-style-type: none"> ✓ Enhanced practicality through inclusion of information that can be referenced when addressing the TCFD recommendations or when considering implementation of scenario analysis; this information includes explanations of the latest disclosure case studies, an organized list of TCFD-related documentation, and partial excerpts of parameters and tools that can be acquired without cost ✓ It is now possible to learn about risk/opportunity analysis case studies in certain sectors by referencing case studies of support from past fiscal years <p style="text-align: right; background-color: #90EE90; padding: 2px;">Chapter 3,4,5</p>	

1- 4

1. Introduction

1-1. Purpose of this Practical Guide

1-2. Significance of the TCFD recommendations/ positioning of scenario analysis

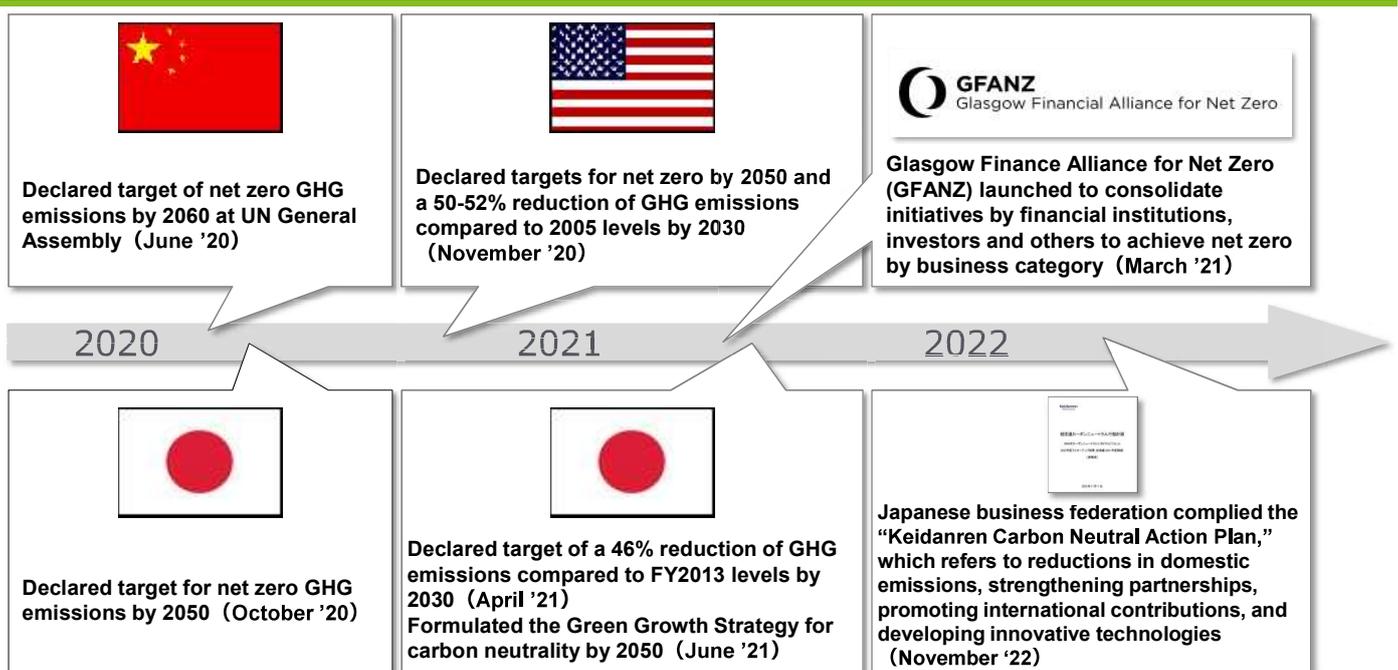
Chapter 1. Introduction

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1- 5

【Trends toward Decarbonization】

As countries and institutional investors declare decarbonization targets such as carbon neutrality by 2050, companies are also being called on to implement decarbonized business practices

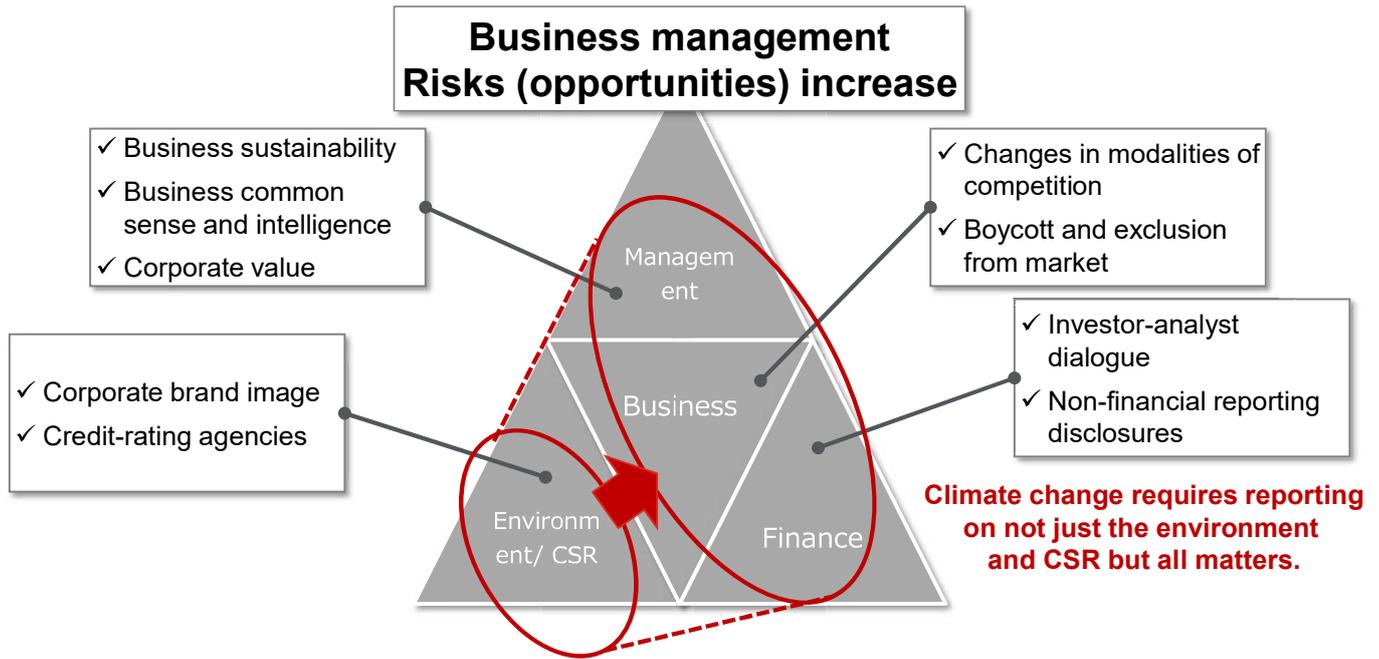


In response to these trends, companies are required to disclose more information, such as Scope3 disclosure* and net zero transparency. In Japan, there was a revisions to the corporate governance code, which effectively required companies listed on the prime list to disclose, and require sustainability information in securities reports

*The ISSB is also considering temporarily exempting Scope3 from disclosure for first year when S2 is first applied (as of February 2023)

[Corporate Management and Climate Change]

For corporate management, climate change has the potential to become a clear risk and opportunity for the company as a whole



The environment and CSR department has responded to the climate change, however, there is a growing need for a company to respond to the issues as a whole, as climate-related issues can be risks and opportunities in the field of “corporate value”, “business sales”, and “fund raising.”

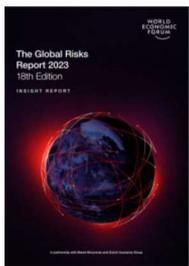
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[Management and Climate Change Risks (1)]

Environmental risks related to climate change are also being focused on by management around the world; environmental risks are mentioned for all short, medium and long-term time frames, and there is a concern that serious environmental risks will increase with longer time frames

Top 10 risks in the World Economic Forum (WEF) "The Global Risk Report 2023"

■ : Environmental risks



	By time frame and severity	
	Short term (2 years)	Long term (10 years)
1	Cost-of-living crisis	Failure to mitigate climate change
2	Natural disasters and extreme weather events	Failure of climate-change adaption
3	Geoeconomic confrontation	Natural disasters and extreme weather events
4	Failure to mitigate climate change	Biodiversity loss and ecosystem collapse
5	Erosion of social cohesion and societal polarization	Large-scale involuntary migration
6	Large-scale environmental damage incidents	Natural resource crises
7	Failure of climate-change adaption	Erosion of social cohesion and societal polarization
8	Widespread cybercrime and cyber insecurity	Widespread cybercrime and cyber insecurity
9	Natural resource crises	Geoeconomic confrontation
10	Large-scale involuntary migration	Large-scale environmental damage incidents

Source : World Economic Forum "Global Risks Report 2023" https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf

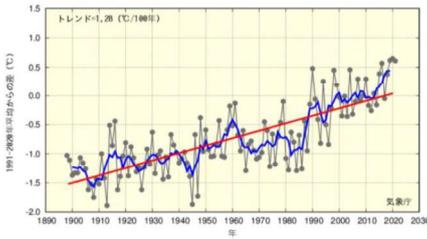
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[Management and Climate Change Risks (2)]

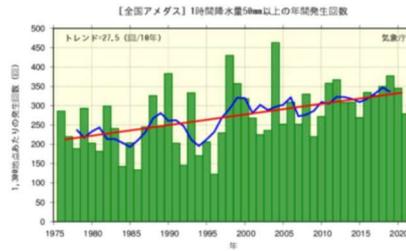
In Japan, too, rising average temperatures and more frequent heavy rains are predicted, and physical risks from climate change will affect the sustainable management of companies in time frames spanning from short- to medium- and long-term

- The global average temperature for 2011 – 2020 is already about 1.1°C higher than the pre-industrial (1850 – 1900) average. If this trend continues, **global warming will exceed 1.5°C and 2°C within the 21st century unless emissions of carbon dioxide and other greenhouse gases are significantly reduced in the coming decades.** (IPCC: the Sixth Assessment Report [the Working Group 1] “AR6 Climate Change 2021: The Physical Science Basis”)
- Global warming is expected to cause increased risk of heat stroke, rising sea levels, and **increased frequency/severity of extreme weather events** such as heavy rains, typhoons, and heatwaves. This will **affect the viability of corporate activities** through supply chain disruptions, damage to facilities, and employee health risks.

Changes in annual average temperature in Japan
(Difference from the 1991 – 2020 average)



Changes in the number of annual short-duration heavy rainfall events in Japan



→Clear the trend for short-duration heavy rainfall events is increasing

Observation of high temperatures across Japan

July 2018

Highest temperature ever recorded at 41.1°C in Kumagaya City, Saitama Prefecture
Record number of emergency transports due to heatstroke from July 16 – 22

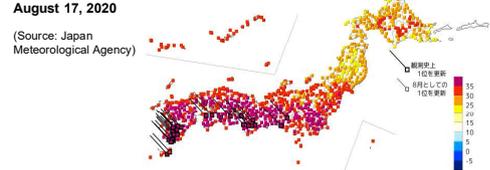
Maximum daytime temperature on July 23, 2018

(Source: Japan Meteorological Agency)

August 2020

Temperature tied for the record high of 41.1°C in Hamamatsu City, Shizuoka Prefecture
Maximum daytime temperature on August 17, 2020

(Source: Japan Meteorological Agency)



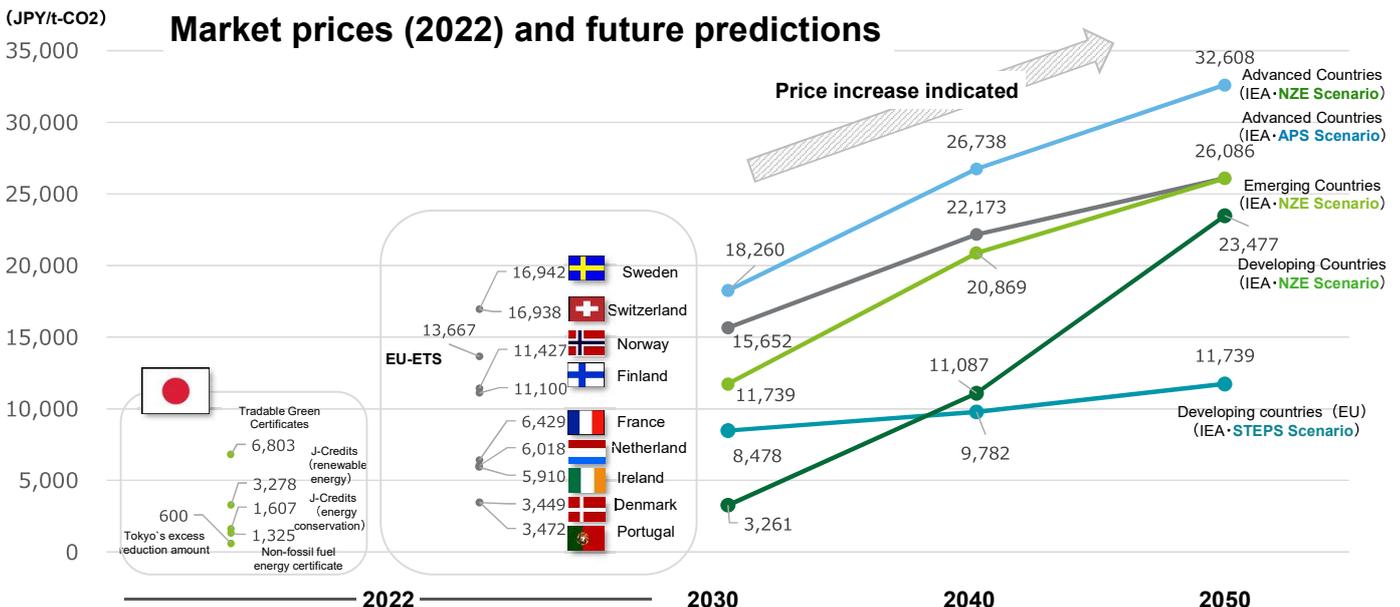
Source : Japan Meteorological Agency, Climate Change Monitoring Report 2021 <https://www.data.jma.go.jp/cpdinfo/monitor/index.html>

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[Climate Change Risks/Opportunities: Projected Changes in Carbon Pricing]

Carbon pricing, which is being introduced in many countries in the transition to a low-carbon economy, will rise to between 10,000 JPY and 30,000 JPY; price increases are expected to occur worldwide in the future, which could be both a risk and opportunity

- Carbon price linked to carbon tax and emission trading, etc.
- According to IEA, the carbon price increases between 2030 and 2050 to meet targets such as, 1.5°C target



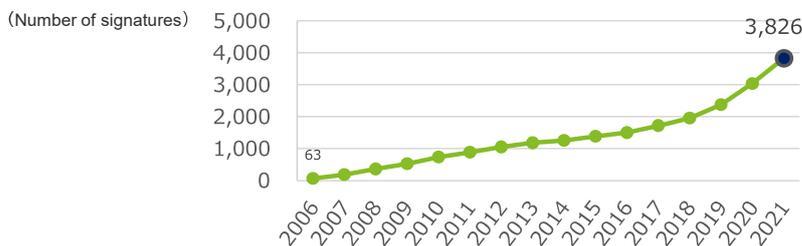
※1 USD = 130.43 JPY, 1 EUR = 140.75 JPY (as of January 31, 2023) ※EU-ETS prices as of January 31, 2023, are used ※Future projections for 2030, 2040, and 2050 are based on IEA WEO 2022 and uses exchange rates as of January 31, 2023
 ※Tradable Green Certificates have been temporarily determined as 3 JPY/kWh
 ※For the CO2 emission factor for electricity, substitute values "0.000441 (t-CO2/kwh)" (<https://ghg-santeikohyo.env.go.jp/calc/>) from "Emission factors by electric utility" (for calculating greenhouse gas emissions of specific emitters) - FY 2021 results - published by the Ministry of the Environment and Ministry of Economy, Trade and Industry
 Source : non-fossil fuel energy certificates : Agency for Natural Resources and Energy website (https://www.enecho.meti.go.jp/category/electricity_and_gas/electric/nonfossil/katsuyou_joutyuu/) , J-Credit system "average bid price" (<https://japancredit.jp/jc/leader/>) , Tokyo's excess reduction amount: Tokyo Metropolitan Government website (http://www.kankyo.metro.tokyo.jp/climate/large_scale/trade/) , EU-ETS (<https://tradingeconomics.com/commodity/carbon>) , IEA [World Energy Outlook2022] (<https://iea.blob.core.windows.net/assets/47be1252-05d6-44da-bd64-4926806dd7f3/WorldEnergyOutlook2022.pdf>) , Price Rate 1 (highest price) from World Bank "Carbon Pricing Dashboard" (<https://carbonpricingdashboard.worldbank.org/>)

[Increased Decarbonization Awareness in Investors (1)]

ESG investments continue to increase, with investments reaching 121 trillion USD globally and 494 trillion JPY in Japan

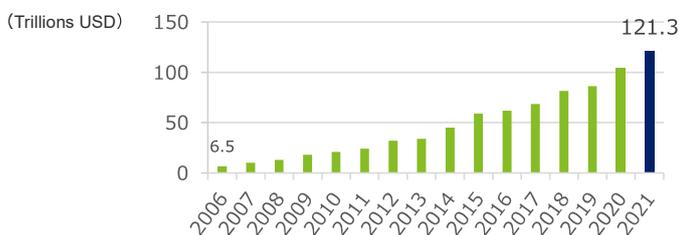
Number of PRI signatures (globally)

- The number of PRI signatures as of 2021 was 3,826



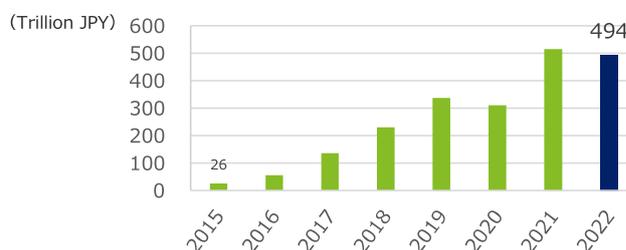
ESG assets under management (globally)

- As of 2021, the total amount of AUM was approximately 121 trillion USD



ESG assets under management (Japan)

- As of late March 2022, the total amount of AUM was approximately 494 trillion JPY



Source : PRI HP <https://www.unpri.org/about-us/about-the-pri>
JSIF (Japan Sustainable Investment Forum) website <https://japansif.com/survey#toc5>

1- 11

[Increased Decarbonization Awareness in Investors (2)]

There are signs that companies will be required not only to set higher targets that are faster and more effective but also to set interim targets for decarbonization

Investors setting decarbonization targets

- In addition to declaring carbon neutrality, domestic financial institutions that are members of the Net-Zero Banking Alliance (NZBA) have set interim targets for sectors with high CO2 emissions
 - Mitsubishi UFJ Financial Group, Mizuho Financial Group, Sumitomo Mitsui Financial Group, Sumitomo Mitsui Trust Holdings have set **2030 interim targets** for the electric power, oil and gas, and coal sectors, among others (April 2022~)
- Similarly, domestic financial institutions affiliated with the Net-Zero Asset Owner Alliance (NZAOA) and other organizations have also set targets for sub-portfolio engagement transition finance
 - Nippon Life Insurance and Dai-ichi Life Group **set goals for their sub-portfolios of listed stocks**, internal companies, real estate, etc., and also set goals **for engagement and transition finance** (March 2021~)

Investor engagement with companies

- The Hague, Netherlands, orders Shell to reduce CO2 emissions
 - A lawsuit filed by several environmental protection groups cited that the biggest European oil company Royal Dutch Shell (UK, Netherlands) lacked specificity, binding effect, and speed, and **demand that the company reduce its emissions, including Scope 3 emissions, by 45% of its 2019 net emissions by 2030** (May 2021)
- Major institutional investors demand emission reduction targets be set
 - Larry Fink, CEO of BlackRock of the U.S., the world's largest asset management firms, released a letter to top executives of the companies BlackRock invests in, **requesting that they set short, medium, and long-term GHG emission reduction targets and perform information disclosure in compliance with the TCFD recommendations** (January 2022)
- In addition, several financial institutions put forward proposals at shareholders meetings calling for stronger measures on decarbonization
 - **Environmental NGOs, financial institutions, and other organizations** called several Japanese companies to strengthen their response to decarbonization (June 2022)

Source : UNEP FI HP (<https://www.unepfi.org/net-zero-alliance/resources/member-targets/>, <https://www.unepfi.org/net-zero-banking/members/>) , Compiled by the Ministry of the Environment based on each publicly available information

1- 12

[Background of the TCFD]

The Financial Stability Board established the Task Force on Climate-related Financial Disclosures (TCFD) at the G20's request due to concerns that climate change could undermine the stability of the financial system and threaten financial institutions

- "The financial risks that could result from the process of adjustment towards a lower carbon economy could prompt a reassessment of the value of a large range of assets with a large volume of greenhouse gas emissions and destabilize the financial system." Speech by Mark Carney, Chair of the Financial Stability Board (FSB), Then Governor of the Bank of England
- Dr. Carney also refers to the possibility that a sudden reassessment could destabilize markets like the subprime loan crises.

Speech by Mark Carney, Chair of the Financial Stability Board (FSB), Then Governor of the Bank of England (September 2015)



There are three broad channels through which climate change **can affect financial stability**:

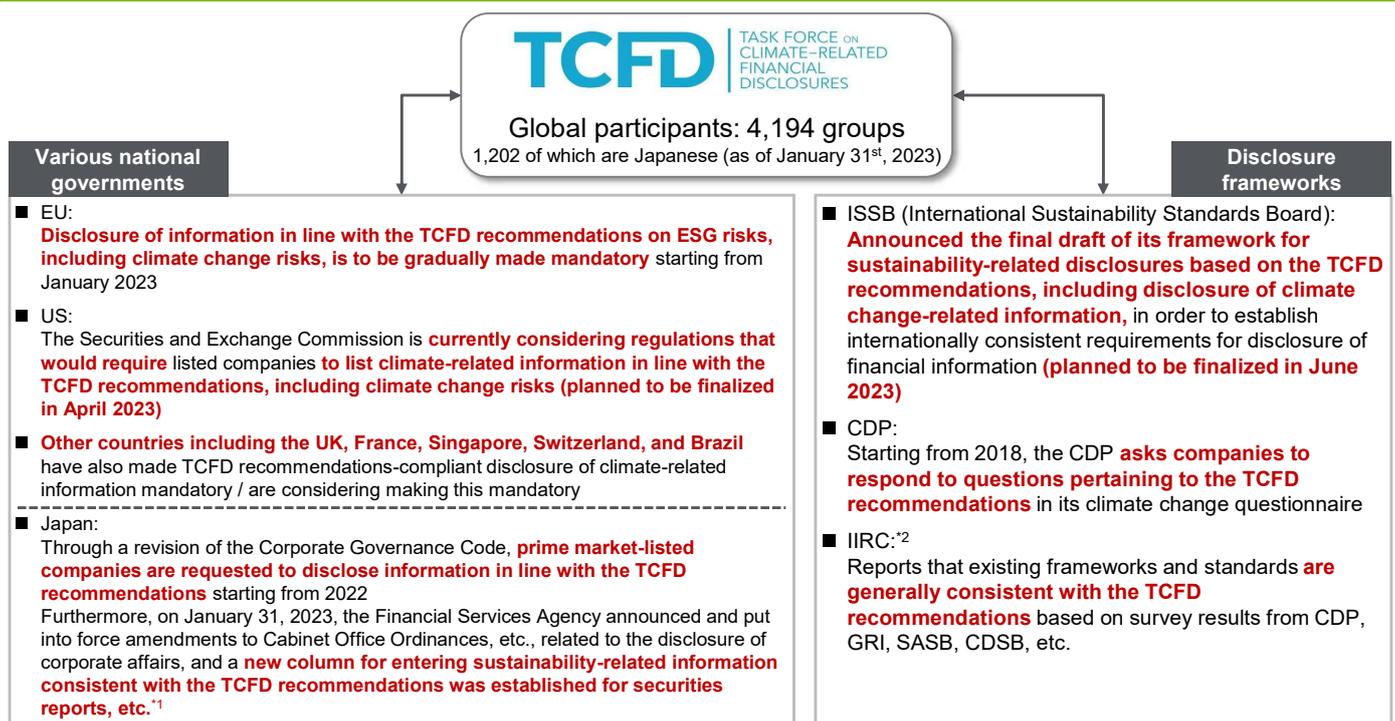
- **Physical risks**: The direct impacts on property from climate related events, such as floods and storms and indirect impacts on blocked global supply chain or depletion of resources;
- **Liability risks**: The impacts that could arise if parties who have suffered loss or damage from the effects of climate change seek compensation from those, they hold responsible;
- **Transition risks**: The risks which could result from **reassessment of the value of a large range of assets with a large volume of greenhouse gas emissions during the process of adjustment towards a lower carbon economy**.

Source: Financial Times Online, September 30, 2015

1- 13

[International trends surrounding the TCFD]

Various national governments, including Japan, have developed / are in the process of developing disclosure rules in line with the TCFD; the disclosure frameworks are also consistent with the TCFD, with the TCFD playing a central role in disclosures related to climate change



*1: Applied starting with securities reports, etc. for the business year ended on and after March 31, 2023. However, early application starting with securities reports, etc. submitted on or after the day of entry into force is also permitted

*2: The IIRC merged with the SASB to form the VRF (Value Reporting Foundation), which works to build a comprehensive and unified corporate reporting framework using the IIRC integrated reporting framework and SASB standards

[TCFD Recommendation Requirements and Disclosures]

There are four elements of TCFD recommendations: Governance, Strategy, Risk Management, Metrics and Targets. Implementation of climate change scenario analysis is recommended in the “strategy” section of the TCFD recommendations

Recommended disclosures	Governance	Strategy	Risk Management	Metrics and Targets
Areas in detail	Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material	Disclose how the organization identifies, assesses, and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended Disclosures	a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
	b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks
		c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities, and performance against targets

(Differences with the existing information disclosure system)
 ■ **Implementation of scenario analysis:**
 Recommends disclosure of information using **specific climate-related scenario analysis** as recommended by the TCFD

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.14

[Requirement of the TCFD Recommendations]

The TCFD recommendations disclosure of information related to climate change that poses financial risks and opportunities



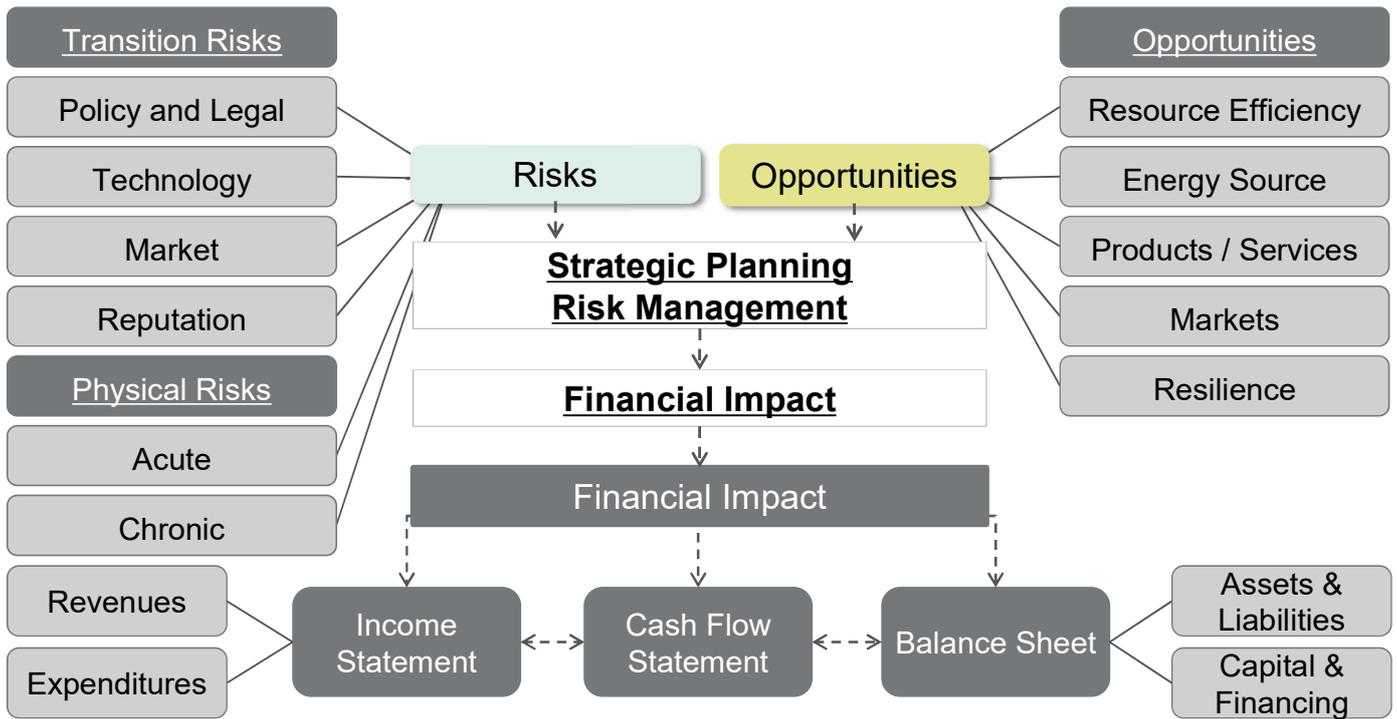
The TCFD recommendations request all companies to (i) use different climate-related scenarios, including a 2°C or lower scenario to (ii) assess their climate-related risks and opportunities, (iii) incorporate such risks and opportunities in their business strategies and risk management, and (iv) understand and disclose their financial impacts.

Sources: prepared by the Ministry of the Environment based on the page 9 of Financial Services Agency's document, "On Reports of the Task Force on Climate related Financial Disclosures (TCFD)" for briefings on "Final Report"

[Financial Impact]

The TCFD recommendations present the scope of climate-related risks and opportunities, and financial impacts to be disclosed

Climate-Related Risks, Opportunities, and Financial Impacts



Source: Prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.8

[Climate-related Risks]

The TCFD Recommendations divided climate-related risks into two major categories: transition risks related to the transition to a lower-carbon economy and physical risks related to the physical impacts of climate change

Category	Definition	Type	Major aspects and policy actions
Transition Risks	Risks related to the transition to a lower-carbon economy	Policy and Legal	Enhancing regulations on GHG emissions, imposing greater obligations on information disclosure
		Technology	Replacing existing products with those based on low-carbon technologies, investing in new technologies that eventually turn out to be a failure
		Market	Changes in consumer behaviors, market signals with greater uncertainty, a rise in materials and costs
		Reputation	Changes in customer or community perceptions, criticism against certain industries, increased concern among stakeholders
Physical Risks	Risks related to the physical impacts of climate change	Acute	Event-driven risks, including severity of extreme events such as cyclones or floods
		Chronic	Longer-term shifts in climate patterns, including sustained higher temperatures, which may cause sea level rise or chronic heat waves

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.10

[Climate-related Opportunities]

The TCFD recommendations identified the following five areas of climate-related opportunities that organizations can produce in the course of their efforts to mitigate and adapt to climate change

	Area	Policy actions	Financial impact
Opportunities	Resource Efficiency	<ul style="list-style-type: none"> Use of more efficient models of transport Use of more efficient production and distribution processes Use of Recycling Move to more efficient buildings Reduced water usage and consumption 	<ul style="list-style-type: none"> Reduced operating costs (e.g., through efficiency gains and cost reductions) Increased production capacity, resulting in increased revenues Increased value of fixed assets (e.g., highly rated energy-efficient buildings) Benefits to workforce management and planning (e.g., improved health and safety, employee satisfaction) resulting in lower costs
	Energy Source	<ul style="list-style-type: none"> Use of lower-emission sources of energy Use of supportive policy incentives Use of new technologies Participation in carbon market Shift toward decentralized energy generation 	<ul style="list-style-type: none"> Reduced operational costs (e.g., through use of lowest cost abatement) Reduced exposure to future fossil fuel price increases Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon Returns on investment in low-emissions technology Increased capital availability (e.g., as more investors favor lower-emissions producers) Reputational benefits resulting in increased demand for goods/services
	Products and Services	<ul style="list-style-type: none"> Development and/or expansion of low emission goods and services Development of climate adaptation and insurance risk solutions Development of new products or services through R&D and innovation Ability to diversify business activities 	<ul style="list-style-type: none"> Increased revenue through demand for lower emissions products and services Increased revenue through new solutions to adaptation needs (e.g., insurance risk transfer products and services) Better competitive position to reflect shifting consumer preferences, resulting in increased revenues
	Markets	<ul style="list-style-type: none"> Access to new markets Use of public-sector incentives Access to new assets and locations needing insurance coverage 	<ul style="list-style-type: none"> Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks) Increased diversification of financial assets (e.g., green bonds and infrastructure)
	Resilience	<ul style="list-style-type: none"> Participation in renewable energy programs and adaptation of energy-efficiency measures Resource substitutes/diversification 	<ul style="list-style-type: none"> Increased market valuation through resilience planning Increased reliability of supply chain and ability to operate under various conditions Increased revenue through new products and services

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.11

1- 19

[Guidance for Specific Sectors]

The TCFD supplemental guidance, such as "Annex" and "Technical Supplement", provides additional context and suggestions for implementing the recommended disclosures for four non-financial sectors (Energy; Transportation; Materials and Buildings; and Agriculture, Food, and Forest Products) potentially most affected by climate change

Sector	Industry	Recommended disclosure
Energy	<ul style="list-style-type: none"> Oil and Gas Coal Electric Utilities 	Assessment and potential impacts of legal compliance, operating costs, changes in risks and opportunities; changes in regulations and shift in consumer and investor preferences; and changes in investment strategy
Transportation	<ul style="list-style-type: none"> Air Transport, Maritime Transportation Land Transportation (Rail Transportation, Trucking Services) Automobiles 	Assessment and potential impacts of financial risks of enhanced regulations and new technology on existing factories and equipment; R&D investment in new technologies; opportunities for use of new technologies to lower emissions standards and regulations on higher fuel efficiency
Materials and Buildings	<ul style="list-style-type: none"> Metals and Mining Chemicals Construction Materials, Capital Goods Real Estate Management and Development 	Assessment and potential impacts of enhanced regulations on GHG emissions and carbon pricing; risk assessment of increased severity of extreme weather events on construction materials and property; and opportunities for products to improve energy efficiency or reduce energy consumption
Agriculture, Food, and Forest Products	<ul style="list-style-type: none"> Beverages, Foods Agriculture Paper and Forest Products 	Assessment and potential impacts of GHG emissions reductions; recycling and waste management; business of food and textile products with lower GHG emissions, and shifts in consumer preferences

Source: Prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.52-65

1- 20

[Governance]

To incorporate climate-related risks and opportunities in business strategy, an organization should establish a system involving management. The TCFD recommendations require an organization to describe the board's oversight of climate-related risks and opportunities, and management's role in assessing and managing such risks and opportunities

The organization's governance around climate-related risks and opportunities

The board's oversight of climate-related risks and opportunities

- Processes and frequency by which the board and/or board committees are informed about climate-related issues
- Whether the board and/or board committees consider climate-related issues when reviewing and guiding strategy, major plans of action, risk management policies, annual budgets, and business plans as setting the organization's performance objectives, monitoring implementation and performance, and overseeing major capital expenditures, acquisitions, and divestitures
- How the board monitors and oversees progress against goals and targets for addressing climate-related issues

Management role in assessing and managing climate-related risks and opportunities

- Whether the organization has assigned climate-related responsibilities to management-level positions or committees; and, if so, whether such management positions or committees report to the board or a committee of the board and whether those responsibilities include assessing and/or managing climate-related issues
- A description of the associated organizational structure(s)
- How management (through specific positions and/or management committees) monitors climate-related issues

Source: Prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.19

1- 21

[Strategy]

The TCFD recommendations require an organization to describe the climate-related risks and opportunities over the short, medium, and long term; their impacts on the organization's businesses, strategy, and financial planning; and the resilience of the organization's strategy, considering different climate-related scenarios, including a 2°C or lower scenario

Impact on the organization's businesses, strategy, and financial planning (where relevant information is critical)

The climate-related risks and opportunities the organization has identified over the short, medium, and long term

- A description of what they consider to be the relevant short, medium, and long-term time horizons
- The specific climate-related issues for each time horizon that could have a material financial impact on the organization
- The process(es) used to determine which risks and opportunities could have a material financial impact on the organization

The impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

- How identified climate-related issues have affected their businesses, strategy, and financial planning
- The impact on their businesses and strategy in the areas of products and services; supply chain and/or value chain; adaptation and mitigation activities; investment in research and development; and operations
- The impact of climate-related issues on operating costs and revenues; capital expenditures and capital allocation; acquisitions or divestments; and access to capital

The resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario

- How resilient their strategies are to climate-related risks and opportunities
- Where they believe their strategies may be affected by climate-related risks and opportunities; how their strategies might change to address such potential risks and opportunities; and the climate-related scenarios and associated time horizon(s)

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.20-21

1- 22

[Risk Management]

The TCFD recommendations require an organization to describe the organization's processes for identifying, assessing, and managing climate-related risks, as well as how these processes are integrated into the organization's overall risk management

How the organization identifies, assesses, and manages climate-related risks

The Organization's processes for identifying and assessing climate-related risks

- Their risk management processes for identifying and assessing climate-related risks (An important aspect is how the organization determines the relative materiality of climate-related risks in relation to other risks)
- Whether they consider existing and emerging regulatory requirements related to climate change
- Their processes for assessing the potential size and scope of identified climate-related risks; and definitions of risk terminology used or references to existing risk classification frameworks used

The organization's processes for managing climate-related risks

- Their processes for managing climate-related risks, (including how they make decisions to mitigate, transfer, accept, or control those risks)
- Their processes for prioritizing climate-related risks, (including how materiality determinations are made)

How processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risks management

- How their processes for identifying, assessing, and managing climate-related risks are integrated into their overall risk management

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.21-22

1- 23

[Metrics and Targets]

The TCFD recommendations require an organization to describe the metrics used to assess climate-related risks and opportunities in line with its strategy and risk management process; GHG emissions; the targets to manage climate-related risks and opportunities, and performance against targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material

The metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process

- The key metrics used to measure and manage climate-related risks and opportunities (organizations should consider including metrics associated with water, energy, land use, and waste management)
- Whether and how related performance metrics are incorporated into remuneration policies (where climate-related issues are material)
- Their internal carbon prices as well as climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy
- Metrics should be provided for historical periods to allow for trend analysis. The methodologies used to calculate or estimate metrics should also be included.

Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks

- GHG emissions calculated in line with the GHG Protocol methodology to allow for aggregation and comparability across organizations and jurisdictions
- Related, generally accepted industry-specific GHG efficiency ratios (as appropriate)
- GHG emissions and associated metrics should be provided for historical periods. The methodologies used to calculate or estimate the metrics should also be included.

The targets used by the organization to manage climate-related risks and opportunities and performance against targets

- Their key climate-related targets (such as those related to GHG emissions, water usage, energy usage)
- Other goals including efficiency or financial goals through the entire life cycle of products and services
- Whether the target is absolute or intensity; time frames over which the target applies; key performance indicators, etc.

Source: Prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.22-23

1- 24

[TCFD Recommendation Requirements and Disclosures]

TCFD recommendations seeks all companies to disclose information about climate-related risks and opportunities, and unlike the other existing frameworks, the TCFD recommends companies to conduct the scenario analysis

Recommended disclosures	Governance	Strategy	Risk Management	Metrics and Targets
Areas in detail	Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material	Disclose how the organization identifies, assesses, and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended Disclosures	a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
	b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks
		c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities, and performance against targets

(Differences with the existing information disclosure system)

■ **Implementation of scenario analysis:**

Recommends disclosure of information using **specific climate-related scenario analysis** as recommended by the TCFD

Source: prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures, "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2017. p.14

**[Impact on companies who do not implement responses to the TCFD recommendations]
Perceptions of lacking / having inadequate measures for addressing the TCFD recommendations have a great risk of hindering sustainable management of the company in the short, medium, and long-term**

Short term

- **Increased financing costs:** Perceptions of inadequate measures against climate change will lead to increased financial costs due to withdrawn investments and lost opportunities for ESG investment and green financing
- **Environmental reputation/branding:** Decline in environmental reputation and branding due to lack of compliance with international disclosure rules
- **Lawsuits:** Litigation by shareholders and other stakeholders for failure to uphold obligations for reporting material information (example: Commonwealth Bank of Australia)



Short to medium-term

- **Regulations:** Failure to comply with information disclosure rules and accounting standards may lead to a decline in the company's reputation and its competitiveness, as well as incurring penalties from the government (Corporate Governance Code revision in Japan, movement toward legislation in several countries in Europe)

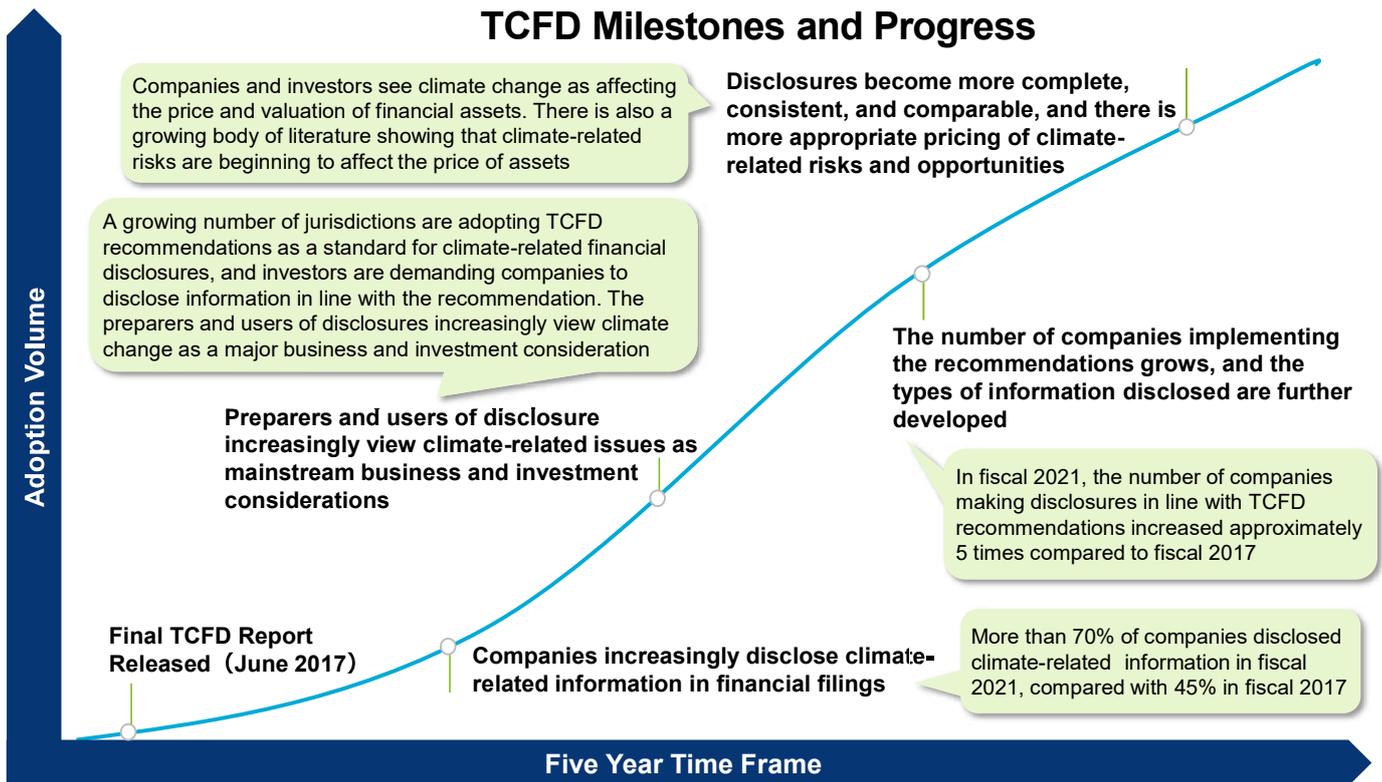


Long term

- **Weakening of business itself:** If the company fails to cope with the uncertainties of climate change, it will lose opportunities / be exposed to risks that may jeopardize its long-term survival

【TCFD's five-year trajectory】

More companies are disclosing information in line with TCFD recommendations. Climate change has come to be seen as a major consideration for business and investment, and more companies and investors see that the prices of financial assets affected



Source : TCFD, Task Force on Climate-related Financial Disclosures 2022 Status Report

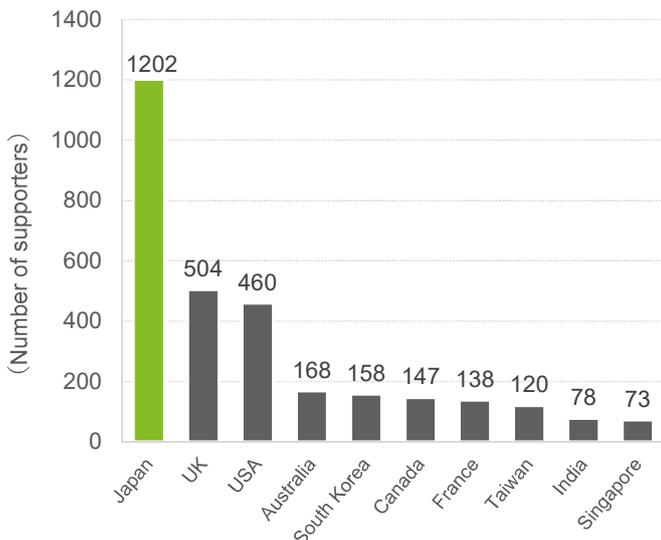
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【Status of support for TCFD】

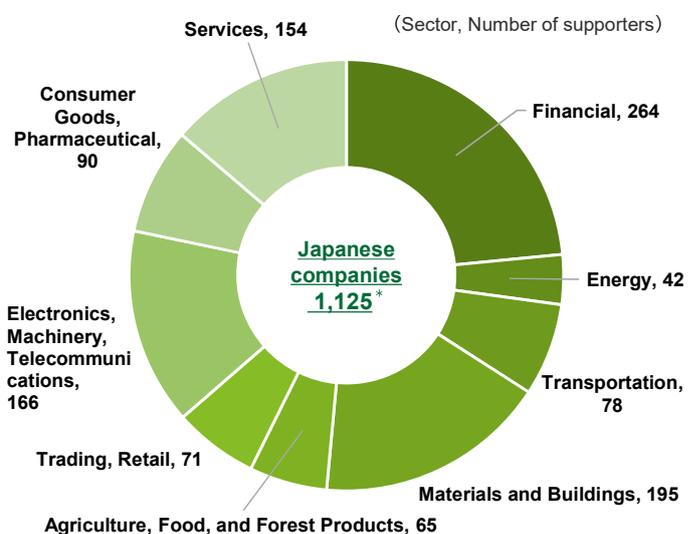
Japan ranks first in the world in terms of the number of organizations expressing support, with various sectors expressing support

- 93 countries/regions, 4,194 companies, governments, multilateral institutions, private organizations, etc., expressed their support for TCFD (As of January 31, 2023). The Ministry of the Environment on July 27, 2018, the Ministry of Economy, Trade, and Industries on December 26, 2018.
- Total assets of financial institutions that have expressed their support already exceed 220 trillion USD and have continued to increase thereafter (from the 2022 Status Report)

Top 10 supporting countries & regions (as of January 31, 2023)



Number of Japanese Companies Presenting Support by sector (as of January 31, 2023)



See below (the Ministry of the Environment website) for the latest number of companies presenting support and their names <http://www.env.go.jp/earth/datsutansokeiei.html>

Source : TCFD website

* : The number of organization presenting support in Japan is 1,202, and the number of companies presenting support in Japan (including general incorporated associations and law firms in addition to general companies) is 1,125 companies. (as of January 31, 2023)

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[TCFD Recommendation Initiatives in Japan: Revision of Corporate Governance Code] In Japan, the revised Corporate Governance Code requires disclosure based on the TCFD recommendations for prime market listed companies

- The **Corporate Governance Code and guidelines for dialogue between investors and companies were revised** to enable companies to demonstrate more sophisticated governance (June 2021)
- **Prime market listed companies will be required to submit an annual “Corporate Governance Report” every year starting in 2022*1**

Details of TCFD-related revisions*2

<p>コーポレートガバナンス・コードと 投資家と企業の対話ガイドラインの改訂について</p> <p>スチュワードシップ・コード及びコーポレートガバナンス・コードのフォローアップ会議 2021年4月6日</p>	<ul style="list-style-type: none"> It is important for listed companies to consider and promote sustainability initiatives on a company-wide basis (e.g., establishing committees on sustainability, holding dialogue with shareholders) 	<p>コーポレートガバナンス・コード ～会社の持続的な成長と中長期的な企業価値の向上のために～</p>  <p>2021年6月11日 株式会社東京証券取引所</p>	<ul style="list-style-type: none"> When disclosing management strategies, listed companies should make appropriate disclosure of their efforts related to sustainability Prime market listed companies*2 should promote the quality and quantity of their disclosures based on the TCFD recommendations The Board of Directors should formulate basic policies on the company’s sustainability initiatives and provide effective oversight
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*1: The revisions in the Corporate Governance Code that cover prime market listed companies will come into effect on April 4, 2022. Reports based on the principles, etc., for prime market listed companies are required to be submitted starting April 4, 2022; the Corporate Governance Reporting Guidelines (April 2022 version) will be effective starting April 4, 2022

*2: One of the market classifications after the Tokyo Stock Exchange listing classification change (scheduled for April 4, 2022). Generally equivalent to the current First Section of the Tokyo Stock Exchange

1- 29 Source: Financial Services Agency website

[TCFD Recommendation Initiatives in Japan : Announcement and entry into force of amendments to Cabinet Office Ordinances, etc., related to the disclosure of corporate affairs]

At the end of January 2023, the Financial Services Agency announced and put into force amendments to Cabinet Office Ordinances, etc., related to the disclosure of corporate affairs; a new column for entering sustainability-related information was established for securities reports, etc.*1

- The Report by the “Working Group on Corporate Disclosure” of the Financial System Council recommends that systems be developed for disclosure of corporate sustainability-related initiatives and disclosure of information related to corporate governance (June 2022)
- **On January 31, 2023, a revision was made to include disclosures of corporate sustainability-related initiatives in the items for listing in securities reports, etc.,** based on the recommendations and public commentary

Revisions / announcements related to disclosure of corporate sustainability-related initiatives (excerpt)

Overview of revisions / announcements	Details of revisions / announcements
<p>Establishment of a new column for entering sustainability-related information</p>	<ul style="list-style-type: none"> ✓ A new column for entering information on the company’s concept of / efforts toward sustainability is established for securities reports, etc. This is to be a column for which entry is mandatory in “Governance” and “Risk Management”, and one for which entry is requested in “Strategy” and “Metrics and Targets” depending on significance ✓ Additionally, if the company has included sustainability-related information in any other column in securities reports, etc., the company must reference those entries in the sustainability-related information entry column
<p>Statements of forward-looking information / liability for misstatements, and references to other published documents</p>	<ul style="list-style-type: none"> ✓ For forward-looking information, if a concrete explanation is provided to the extent that is generally considered reasonable, the company will not be held immediately liable for misstatements, etc., even if the actual results differ from the forward-looking information stated in the securities registration statement. ✓ Additionally, when providing the explanation in question, if, for example, the explanation is one that was reached as a result of appropriate internal consideration of the forward-thinking information based on reasonable grounds, the company must include a statement to that effect, providing an overview of the details of the consideration behind this (e.g., the facts upon which the premise was built and the degree to which tentative assumptions and estimations were used) ✓ For entries on sustainability-related information and the status of activities by the board of directors, etc., after entering the key matters for inclusion in securities registration statements, the company must then reference other published documents for information on the details for these entries. Furthermore, excepting cases where the act of referencing other published documents may itself constitute a significant misstatement in the securities registration statement (such as where the company has knowingly referenced other published documents that clearly include significant misstatements), the company will not be held immediately liable for misstatements, etc., through documents referenced

*1: Applied starting with securities reports, etc. for the business year ended on and after March 31, 2023. However, early application starting with securities reports, etc. submitted on or after the day of entry into force is also permitted

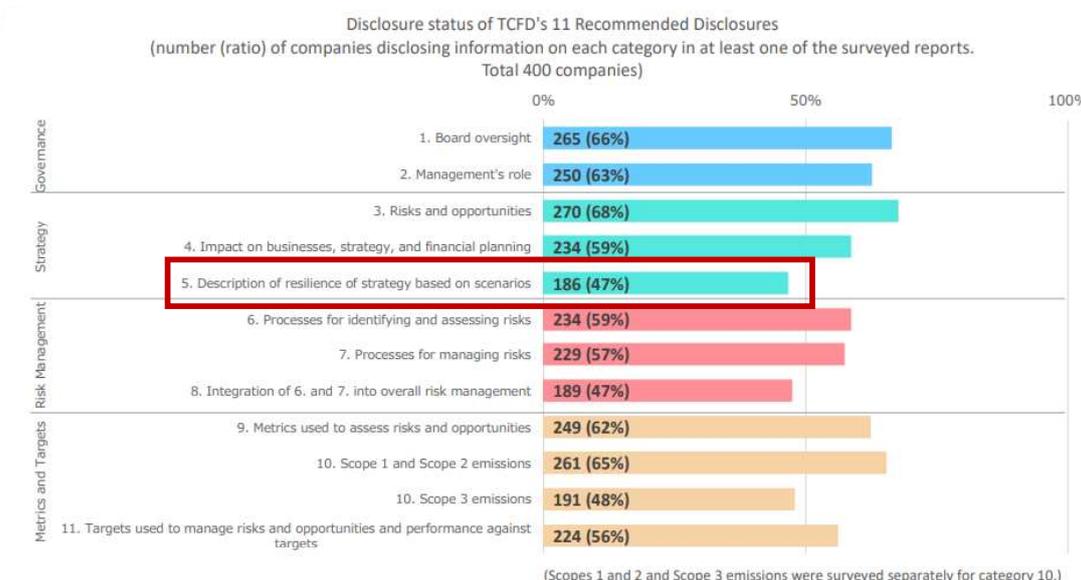
[TCFD recommendation initiatives in Japan: Disclosure in corporate and securities reports]
In chapter 4 of this practical guide, a total of 28 disclosure examples of corporate scenario analysis are introduced, including overseas examples

Region	Sector	Company Name
Domestic	Financial	Sompo Holdings, Inc., Dai-ichi Life Holdings, Inc., The Norinchukin Bank, Mizuho Financial Group, Inc.
	Energy	J-POWER, The Chugoku Electric Power Company, Inc.
	Transportation	Mitsui O.S.K. Lines, Ltd., East Japan Railway Company
	Materials, Buildings	KH Neochem Co., Ltd., JFE Holdings, Inc., TODA CORPORATION, LIXIL Corporation
	Agriculture, Food, and Forest Products	Kameda Seika Co., Ltd., Kirin Holdings Company, Limited, FUJI OIL HOLDINGS INC.
	Trading, Retail	J. Front Retailing Co., Ltd., Isetan Mitsukoshi Holdings, Ltd., Mitsubishi Corporation
	Electricity, Machinery, Communication	NTT DATA Corporation, Ebara Corporation, Seiko Epson Corporation, NEC Corporation, Panasonic Holdings Corporation
	Consumer Discretionary, Pharmaceutical or Food	Shiseido Company, Limited, SEKISUI CHEMICAL CO., LTD., Nichirei Corporation
	Service (Other)	Members Co., Ltd., Recruit Holdings Co., Recruit Holdings Co., Ltd.
Overseas	Energy	NRG Energy Inc (US) 、 Shell plc (UK) 、 Woodside Energy Limited (Australia)
	Transportation	Canadian National Railway (Canada) 、 FirstGroup plc (UK) 、 Ford Motor Company (US)
	Materials, Buildings	The Dow Chemical Company (US) 、 Freeport-McMoRan Inc (US) 、 Newmont Corporation (US)
	Agriculture, Food, and Forest Products	J Sainsbury Plc (UK) 、 Mondi Group (UK)
	Electricity, Machinery, Communication	Eaton Corporation plc (US) 、 Schneider Electric SE (France)
	Consumer Discretionary, Pharmaceutical	Burberry Group PLC (UK) 、 Unilever plc (UK)

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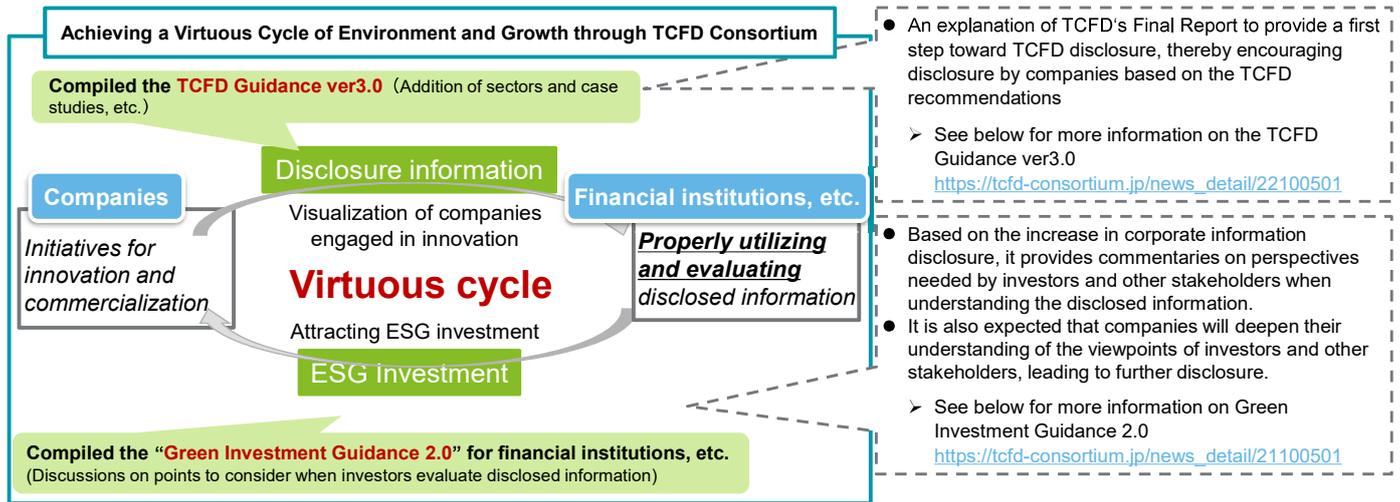
(Reference) [Japanese company's TCFD disclosure situation in Japan]
Nearly 70% of the 400 constituents of the JPX-Nikkei Index have disclosed 1 or more disclosure items recommended by the TCFD, indicating that disclosure is progressing

- Japan Exchange Group investigated the disclosure status of the TCFD recommendations for the 400 constituents of the JPX Nikkei Index (as of October 2022). About **70% of companies disclosed at least one disclosure item** from the recommendation
- While many companies disclose the “board oversight”, “risks and opportunities”, “Scope1,2 emissions”, **less than half of the companies disclosed the “description of resilience of the organization’s strategy based on the scenarios”**



【TCFD Consortium Overview】

- In view of the increased awareness on corporate disclosure and use of climate-related information highlighted by the Task Force on Climate-related Financial Disclosures (TCFD) in Japan, **the private-led TCFD Consortium was established on May 27, 2019**, by five founders.
 - * Founders of the consortium: Professor Kunio Ito of Hitotsubashi University; Chairman Hiroaki Nakanishi of Keidanren (Japan Business Federation); Chair Makoto Takashima of the Japan Bankers Association; President and Chief Executive Officer Takehiko Kakiuchi of Mitsubishi Corporation; and Chairman of the Board Shuzo Sumi of Tokyo Marine Holdings.
- The Consortium aims to further discussion on **effective corporate disclosure of climate-related information and their use by financial institutions for appropriate investment decision**.
- Published **“Guidance for Utilizing Climate-related Information to Promote Green Investment 2.0 (Green Investment Guidance 2.0)”** (October 2021) **which explains the perspective from which investors and others interpret disclosures based on TCFD recommendations**, and published **“Guidance on Climate-related Financial Disclosures 3.0 (TCFD Guidance 3.0)”** (October 2022)
- In addition, the **TCFD Summit** has been held since 2019 **where leaders from industry and finance that took world leading initiatives gather to discuss TCFD’s challenges and future directions**. In October 2022, the 4th TCFD Summit 2022 was held to share best practices and engage in wide-ranging

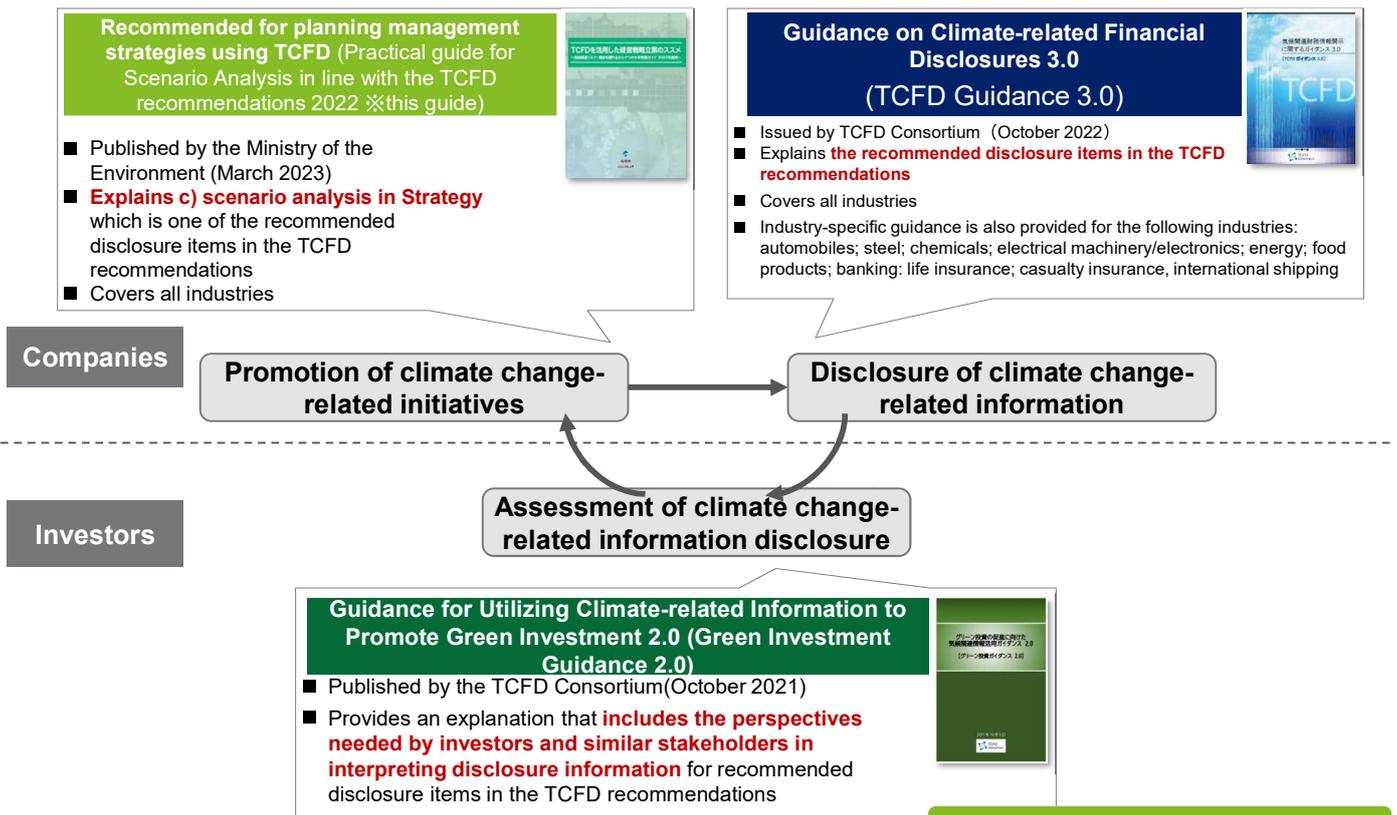


Source : TCFD Consortium

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【Guidance/guides related to the TCFD in Japan】

“Guidance on Climate-related Financial Disclosures (TCFD Guidance)”, “Guidance for Utilizing Climate-related Information to Promote Green Investment (Green Investment Guidance)”, and “Practical guide for Scenario Analysis in line with the TCFD recommendations” (this practical guide)



[Status of various countries' TCFD initiatives (1/3)]

TCFD disclosures are advancing in Europe and are becoming mandatory in the EU as well as UK beginning 2023

 EU

Final approval passed for TCFD-compliant Corporate Sustainability Directive. Implementation will start gradually from January 2023

- **The final draft was announced for implementation of technical standards in line with initiatives such as the TCFD recommendations for disclosure of ESG risks, including climate change-related risks.** The standards apply to major financial institutions that have issued securities recognized for trade in markets regulated by the European Banking Authority and EU member states. The Capital Requirements Regulation (CRR), **makes it mandatory as of June 28, 2022, for major financial institutions to disclose information on ESG risks, including climate change-related risks** (January 2022)
- **The TCFD recommendations-compliant Non-Financial Reporting Directive (NFRD) was revised,** and the Corporate Sustainability Reporting Directive (CSRD) was announced, which newly expands the scope of the Taxonomy on disclosures and requires double materiality-based disclosure of ESG-related information on the company's environmental and social impact. The European Financial Reporting Advisory Group (EFRAG), an EU corporate reporting agency, **began discussion on the proposed standards for the Corporate Sustainability Reporting Directive (CSRD)** in May 2022, and announced the draft for the EU Sustainability Reporting Standards (ESRS). The **European Parliament passed final approval for the CSRD in November 2022, and began its application from 2023** based on the results of tripartite discussion between the European Parliament, European Council, and European Commission. **The first group will be required to perform disclosures in line with the CSRD beginning FY 2024** (November 2022)

 France

Progress both in imposing companies to disclose climate-related information and imposing the companies to link the results with initiatives related to TCFD recommendations and biodiversity

- **Energy Transition for Green Growth Act, Article 173 makes it mandatory for companies to disclose information on climate-related risks in annual reports** (2015)
- The 40 major French companies listed in the CAC40 index declared their support of the TCFD recommendations. With a statement of support signed by multiple government officials, the strengthening of disclosure requirements in line with the TCFD recommendations was a display of France's commitment for building a financial system that is resilient against climate change (December 2020)
- **As a result of civic discourse on plans to strengthen rules through Article 173 of the Energy Transition for Green Growth Act from the perspective of reporting on risks related to climate change and biodiversity loss and from the perspective of TCFD-compliant reporting** supported by G20, the French bureau of finance **mandated disclosure of information related to biodiversity loss and 2030 targets** (June 2021)
- (Reference) Article 29 of the new Energy-Climate Law was announced, which contains rules on biodiversity-related reporting that make it mandatory for French financial institutions to disclose information related to consistency with long-term biodiversity protection goals, with the objective of achieving consistency with the strengthened rules in Energy Transition for Green Growth Act Article 173 and the SFDR (EU) (June 2021)

 UK

TCFD-compliant information disclosures made mandatory through revisions to corporate law in line with the TCFD

- In October 2021, the Department for Business, Energy and Industrial Strategy **announced a proposed corporate law rule that would make TCFD-based information disclosures mandatory for major companies and specified financial institutions.** As a result, **mandatory disclosure of information in line with the TCFD recommendations in the annual reports of listed companies and major asset owners was applied from the financial year starting from April 6, 2022.** Consideration is being made in 2023 of expanding the scope of applicable companies, with **gradual mandatory implementation planned by 2025** (October 2021)
- The Financial Conduct Authority (FCA) made an **announcement based on the "TCFD Guidance on Metrics, Targets and Transition Plans" published in 2021 that starting from 2023 it would be mandatory** for listed companies and companies in specific financial sectors, such as asset management companies and regulated companies, **to publish their climate change transition plans.** On November 8, 2022, it **published the draft of its transition plan guidelines,** for which it is currently requesting public commentary until February 28, 2023 (November 2022)

1- 35 Sources: "2022 Status Report" (TCFD), various publicly available information sources such as Ministry of the Environment, and European Commission websites

*As of the end of January 2023

[Status of various countries' TCFD initiatives (2/3)]

The US and Canada are also recommending information disclosure; the US is currently considering making TCFD-compliant disclosures mandatory

 US

The Securities and Exchange Commission (SEC) is pushing forward with making disclosures in line with TCFD recommendations mandatory

- The SEC issued a report recommending that the US consider adopting its own version of the ESG disclosure framework. Standards from the TCFD, GRI, and US Sustainability Accounting Standards Board (SASB) are recognized as being useful for preparing the ESG disclosure framework (May 2020)
- Public commentary was opened concerning mandatory disclosure of information on climate change-related risks, and a joint statement by 180 institutional investors, 155 global companies, and 58 NGOs was published calling for mandatory information disclosure based on TCFD guidelines by listed companies (June 2021)
- **In March 2022, the SEC proposed a draft for rules on climate change disclosures based on TCFD recommendations and GHG Protocol. The rules call for disclosures on "governance", "strategies and impact on business for climate-related risks", "risk management", "metrics", "climate-related targets and transition plans", and "greenhouse gas emissions" by listed companies.** The proposed rules require third-party guarantee for Scope 1 and 2 risk-related disclosures; disclosure is also requested for Scope 3 risks in significant cases / cases where targets have been set for these. These are expected to be implemented gradually over three years based on the company's registration group, with disclosure for the first group becoming mandatory in the first financial year after the rules' date of entry into force. **In June 2022, the US Commodity Futures Trading Commission made a request for provision of information on public commentary concerning climate-related market risks,** and the rules will **be finalized in April 2023** (November 2022)

 Canada

Gradual introduction from 2024 planned for TCFD-compliant disclosures by financial institutions

- Financial institutions such as banks and the CSA (Canada Standard Authority) are leading consideration of Canada's own version of the Taxonomy (September 2021)
- The Canadian federal government released Budget 2022 and **announced its intention to push forward with mandating reporting for climate-related financial risks in a broad range of areas in Canada's economy based on the TCFD framework.** In 2022, the Office of the Superintendent of Financial Institutions (OSFI) held discussions on climate change-related disclosure guidelines for federally regulated financial institutions. **Starting from 2024, disclosures of climate change-related financial information in line with the TCFD framework will be made mandatory for federally regulated financial institutions,** which is expected to be **introduced in a gradual manner.** Federally regulated financial institutions include all Canadian banks, insurance companies, and federally incorporated or registered trust and loan companies. The financial institutions will be expected to gather information from clients concerning climate change-related risks and emission levels, and to evaluate these. (April 2022)

1- 36 Sources: "2022 Status Report" (TCFD), various publicly available information sources such as Ministry of the Environment, European Commission, and Financial Services websites

*As of the end of January 2023

[Status of various countries' TCFD initiatives (3/3)]

In Japan, disclosures in securities reports are becoming mandatory, and activity toward recommending information disclosures can also be seen in China

Japan

The revised Corporate Governance Code requests listed companies to disclose information in line with TCFD

- The Ministry of Economy, Trade and Industry released its “TCFD Guidance 3.0”¹, which encourages corporate disclosures based on the TCFD recommendations, as well as providing an explanation of the finalized TCFD report (December 2018)
- The Ministry of the Environment released its “Practical guide for Scenario Analysis”, which includes case examples and methodology for companies to use as reference when conducting scenario analysis (revised every March starting from 2019)
- The TCFD Consortium was established by founders including Professor Kunio Ito of Hitotsubashi University Graduate School (May 2019)
- “Green Investment Guidance 2.0”² was developed, which provides an explanation of interpreting TCFD recommendation-based information disclosures from an investor perspective. The Guidance is mentioned at the TCFD Summit (October 2021)
- The Financial Services Agency **revised the Corporate Governance Code**, which also mentions sustainability and the TCFD. **As a supplementary principle, in order to enhance information disclosures, prime market-listed companies are requested to make disclosures of information based on the TCFD recommendations.** As of 2022, prime market-listed companies³ are required to continue to submit a “Corporate Governance Report” once per year (June 2021)
- As a result of the recommendation in the June 2022 report of the Working Group on Corporate Disclosure of the Financial System Council and the public commentary held in December 2022, proposed amendments to Cabinet Office Ordinances, etc., related to disclosure of corporate affairs were announced and put into force. **A new column for entering sustainability-related information in line with TCFD recommendations was established for securities reports, etc.** (January 2023)

China

Translation of the TCFD recommendations and Guidance moves forward with the aim of adopting the TCFD framework

- There is investigation on how to include the TCFD framework in China’s environmental reporting guidelines, and China has shown its intent to make TCFD compliance mandatory for all listed companies in 2020 (January 2018)
- Joint pilot project launched in cooperation with the UK government, with a progress report issued for the second year (May 2020)
- **Industrial and Commercial Bank of China (ICBC) translated five documents aimed at adopting and implementing the TCFD framework in China; the documents include the TCFD recommendations and guidance.** The translation of even more documents is planned in the future (January 2022)

*1: Guidance on Climate-related Financial Disclosures; version 3.0 released October 2022

*2: Guidance for Utilizing Climate-related Information to Promote Green Investment 2.0

*3: Companies with 800 or more shareholders, 20,000 or more units of tradable shares, aggregate market value of tradable shares worth JPY 10 billion or more, etc.

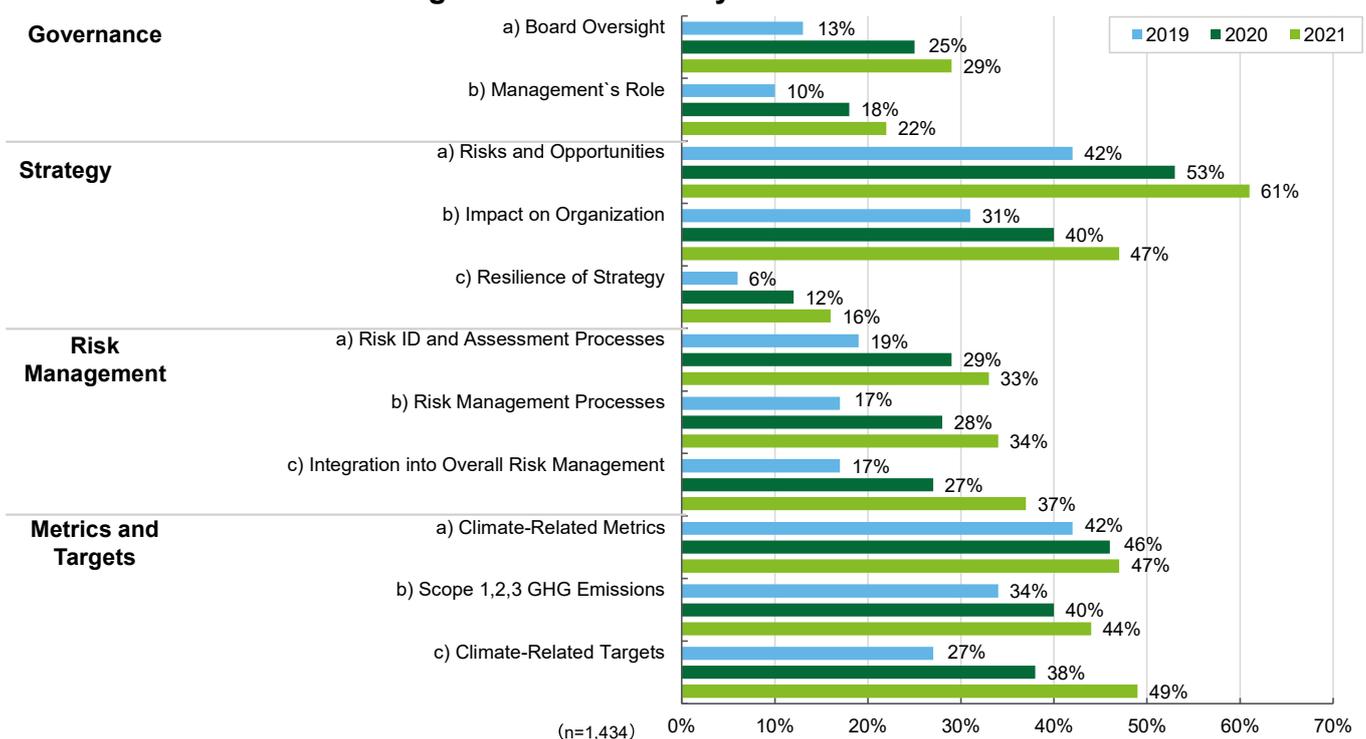
Sources: “2022 Status Report” (TCFD), various publicly available information sources such as Ministry of the Environment, European Commission, and Financial Services websites

*As of the end of January 2023

(Reference) [Global TCFD recommendation disclosures situation]

Looking at the trends from 2019 to 2020, the percentage of companies disclosing in line with the TCFD recommendations is on a rise

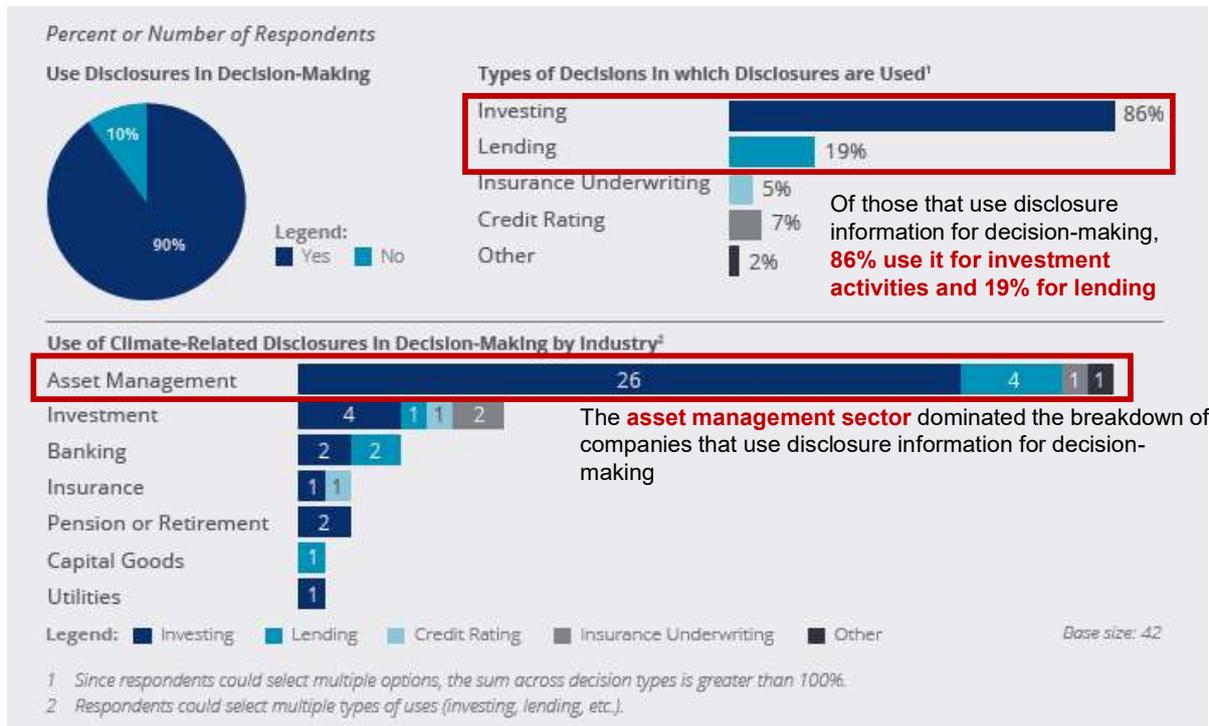
TCFD-Aligned Disclosures by Fiscal Year for 2019-2021



Source : TCFD, “Task Force on Climate-related Financial Disclosures 2022 Status Report”

**(Reference) [Use of Climate-related Disclosures in the Financial sector]
Multiple companies in asset management has answered that climate-related information is used for decision making in investment activities and lending**

Use of climate-related disclosures in decision-making



Source : TCFD, "Task Force on Climate-related Financial Disclosures 2022 Status Report"

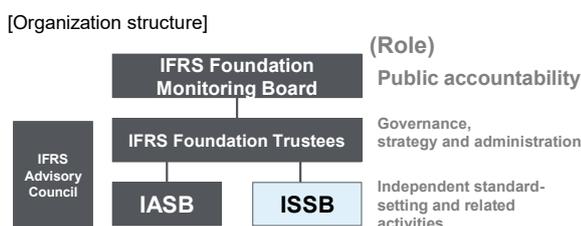
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**[Relationship with TCFD recommendations in the disclosure framework: ISSB trends]
The ISSB was organized to develop unified international standards for sustainability-related disclosures, so it is necessary to pay attention to the organization's trends; in climate-related disclosures, the ISSB requires disclosures based on the TCFD recommendations**

- The IFRS Foundation established the ISSB, which develops international disclosure standards, on November 3, 2021, to address the needs of investors, etc.
- The TRWG^{*} released its prototype for climate-related disclosure standards in November 2021, which **requests disclosures based on the TCFD recommendations**
- On March 31, 2022, the proposed standards were announced based on TRWG consideration, and public commentary on the exposure draft was opened until July 29, 2022. The standards are planned to be finalized by around June 2023, and S1 and S2 are expected to be applied from January 2024

History and purpose of ISSB

- ✓ Background behind establishment: On November 3, 2021, the IFRS Foundation Trustees **announced the establishment of the ISSB (International Sustainability Standards Board)** at COP26
- ✓ Purpose: **Aims to develop international standards for disclosure of ESG information such as climate change risk** in order to improve the consistency and comparability of corporate sustainability-related disclosures



*: The TRWG is composed of representatives from the CDSB, TCFD, IASB, VRF, and World Economic Forum

Relationship between the ISSB and the TCFD recommendations

- ✓ TRWG is the working group for consideration of ISSB standards. Out of the deliverables forming the foundation for future consideration (8 deliverables), it has released exposure drafts for the **general requirements for disclosure of sustainability-related financial information (S1)** and for **climate-related disclosures (S2)**
- ✓ At the ISSB meeting held January 17 to 19, 2023, **the requirements for evaluating climate-related resilience using scenario analysis were established based on materials issued by the TCFD**, and it was stressed that companies could develop their capability over time to strengthen their disclosures



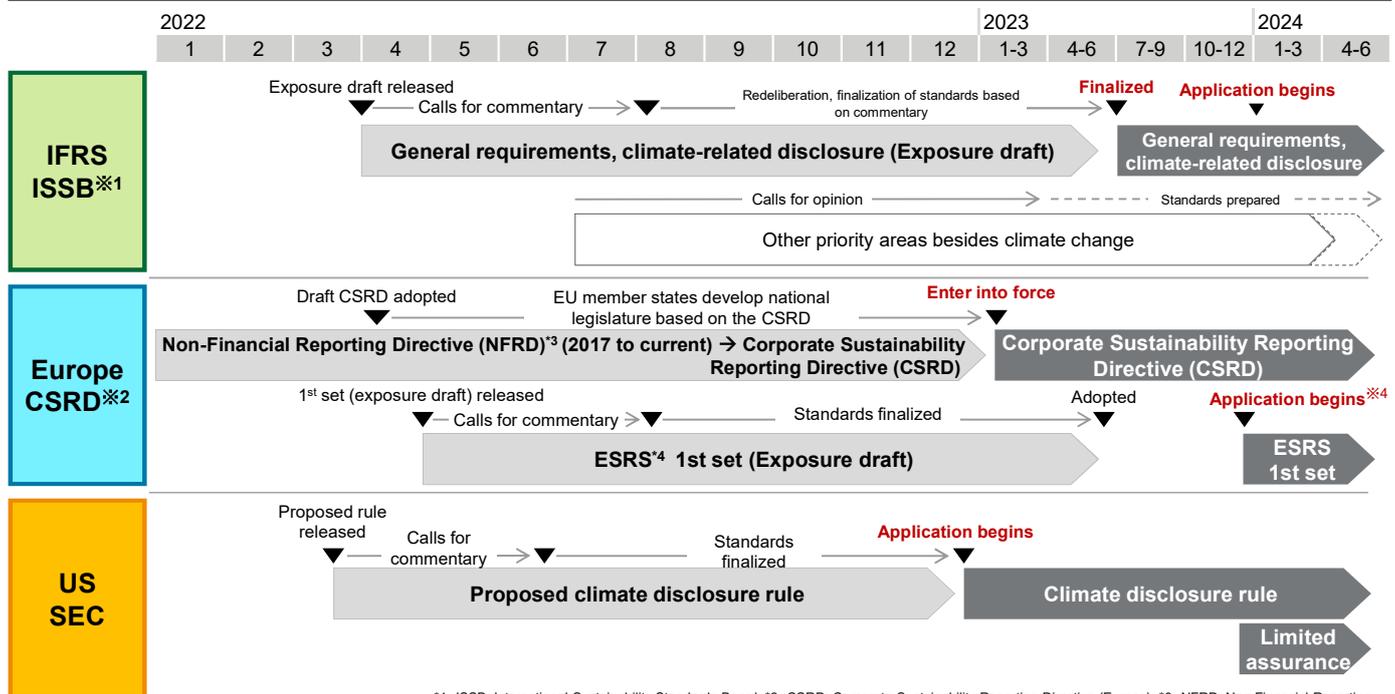
Sources: IFRS Foundation website: [IFRS - Our structure](https://www.ifrs.org/groups/technical-readiness-working-group/#about), <https://www.ifrs.org/groups/technical-readiness-working-group/#about>, [IFRS - Climate-related Disclosures](https://www.ifrs.org/groups/technical-readiness-working-group/#about), "Climate-related Disclosures Prototype" (TRWG, IFRS Foundation, November 3, 2021) [Prototype Climate-related Disclosures Requirements \(Climate Prototype\) \(ifrs.org\)](https://www.ifrs.org/groups/technical-readiness-working-group/#about), the Nikkel

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(Reference)[Relationship with TCFD recommendations in the disclosure framework: Schedules for beginning application by the ISSB, CSRD, and SEC]

Three institutions are considering standards for disclosure of non-financial information concurrently: the IFRS Foundation's ISSB, which assumes the global application of standards; Europe's sustainability reporting directive, CSRD; and the US SEC

■ The global ISSB, Europe's CSRD, and the US SEC are currently considering standards for climate change disclosures



*1 ISSB: International Sustainability Standards Board, *2 CSRD: Corporate Sustainability Reporting Directive (Europe), *3 NFRD: Non-Financial Reporting Directive (Europe), *4 ESRS: EU Sustainability Reporting Standards, *5: Application to companies outside of the NFRD scope will start from 2025

Source : Compiled by the Ministry of Environment with information from SEC website (<https://www.sec.gov/rules/proposed/2022/33-11042.pdf>) , European Commission ([Corporate sustainability reporting \(europa.eu\)](https://corporate.sustainability-reporting.europa.eu)) , IFRS Foundation website ([IFRS - Climate-related Disclosures](https://www.ifrs.org/standards/developments/IFRS-Sustainability-standards))

[Relationship between CDP questions and TCFD recommendations]
CDP's questions also conform to TCFD recommendations, and questions related to TCFD recommendations have been established

■ CDP sends out questionnaires **at the request of institutional investors and companies making ESG investments to evaluate companies' environmental responses**
 ■ The climate change questionnaire **complies with the recommended disclosure items in the TCFD recommendations** and asks for information about companies' risks, opportunities, impacts on climate change

CDP Climate Change Questionnaire (2022) : Questions related to TCFD recommendation are included in C3.2, etc.

C3 Business strategy

Business strategy

(C3.1) Does your organization's strategy include a climate transition plan that aligns with a 1.5°C world?

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

(C3.5a) Quantify the percentage share of your spending/revenue that is aligned with your organization's climate transition.

(C3.5b) Quantify the percentage share of your spending/revenue that was associated with eligible and aligned activities under the sustainable finance taxonomy in the reporting year.

(C3.5c) Provide any additional contextual and/or verification/assurance information relevant to your organization's taxonomy alignment.

1- 42 Source : CDP website

[Significance of Scenario Analysis (1)]

Information disclosure using scenario analysis is recommended for evaluating the impact made by climate-related risks and opportunities; 1.5°C scenarios are becoming more complete and are useful for companies to consider their decarbonization strategies

Usefulness of scenario analysis	<ul style="list-style-type: none"> ■ Scenario analysis is a useful method for organizations to use to strategically address issues that are long-term and have a high level of uncertainty ■ Disclosures should also include premises for key scenarios in industries where climate change-related risks are a concern. Scenario analysis requires ability / manpower, but it also holds benefits for organizations
Target	Scenario groups that may be applied
Transition risks	<ul style="list-style-type: none"> ■ IEA WEO NZE / IEA WEO APS / IEA WEO STEPS ■ NGFS Current Policies / Delayed Transition / Net Zero 2050 ■ Deep Decarbonization Pathways Project (the target of 2°C is achieved) ■ IRENA REmap (the renewable energy ratio is doubled by 2030) ■ Greenpeace Advanced Energy [R]evolution (the target of 2°C is achieved) ■ PRI 1.5°C RPS (Required Policy Scenario) , PRI FPS (Forecast Policy Scenario)
Physical risks	<ul style="list-style-type: none"> ■ RCP (Representative Concentration Pathways) scenarios employed by IPCC: RCP8.5, RCP6.0, RCP4.5, RCP2.6

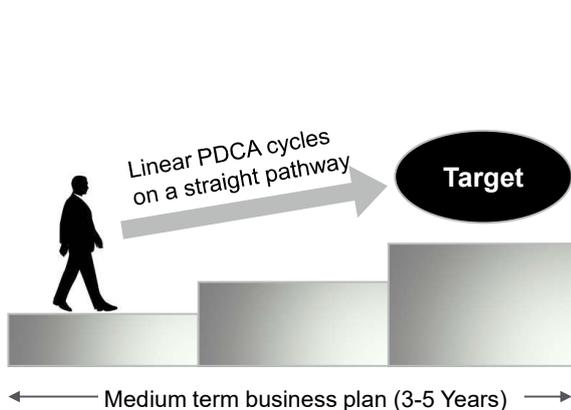
Sources: Prepared by the Ministry of the Environment based on the Task Force on Climate-related Financial Disclosures: "Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures", 2019, pages 25 - 20;
 Task Force on Climate-related Financial Disclosures: "Supplementary Guidance - Using scenario analysis for disclosing climate-related risks and opportunities", 2017, p.21 & 25
 The scenarios listed in the IEA WEO have been updated to reflect the most recently published report

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[Significance of Scenario Analysis (2)]

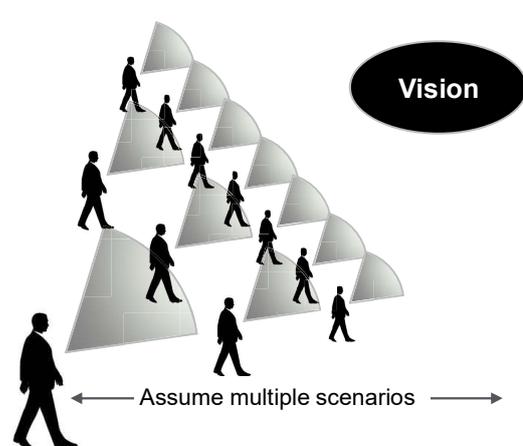
Scenario analysis enables strategic planning and internal/external dialogue in response to future uncertainties

In a reasonably foreseeable term...



- Business strategy cannot respond to changes in the future
- The discussion never reaches a consensus on future perspectives
- Suspected of lacking business resilience

In a longer term, where outcomes are highly uncertain, and possibly promising...



- Business management can flexibly respond to future change
- The discussion takes place without any subjective viewpoints on future
- Management can demonstrate business resilience

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(Reference) [Disclosure contents required by the TCFD recommendations]

In the “Metrics and Targets” area in the TCFD recommendations, disclosure of Scope 1, Scope 2, and appropriate Scope 3 GHG emissions is recommended

Recommended disclosures	Governance	Strategy	Risk Management	Metrics and Targets
Areas in detail	Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material	Disclose how the organization identifies, assesses, and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended Disclosures	a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
	b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks
		c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities, and performance against targets

(Definition of applicable Scope 3 emissions)

- The notes to the revised Annex contain the following explanation on disclosure of Scope 3 emissions:
“When considering whether to disclose Scope 3 GHG emissions, organizations should consider whether such emissions are a significant portion of their total GHG emissions. For example, see discussion of 40% threshold in the Science Based Targets Initiatives (SBTi's) paper, SBTi Criteria and Recommendations, Ver4.2, Section V, p.10”

1- 45 Sources: Task Force on Climate-related Financial Disclosures, “Recommendations of the Task Force on Climate-related Financial Disclosures (Final Version)”, 2017 postscript, TCFD “Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures” (October 2021)

(Reference) [TNFD (Taskforce on Nature-related Financial Disclosures)]

With concerns over the negative impacts of environmental degradation, the Taskforce on Nature-related Financial Disclosure (TNFD)’s launch was declared in 2021. It refers to the TCFD framework

Establishment period	July 23, 2020 (“Informal Working Group (IWG)” was launched on September 25, 2020)
Leaders behind establishment	United Nations Environment Programme Finance Initiative (UNEP FI), United Nations Development Programme (UNDP), World Wildlife Fund (WWF), Global Canopy (a UK environmental NGO) 
Taskforce member groups	<p>【Financial Institutions】 AP 7, AXA, Bank of America, BlackRock, BNP Paribas, FirstRand, Grupo Financiero Banorte, HSBC, Macquarie Group, MS&AD Insurance Group, Mirova, Norges Bank Investment Management, Norinchukin Bank, Rabobank, Swiss Re, UBS</p> <p>【Private Companies】 AB InBev, Acciona, Anglo American, Bayer AG, Bunge Ltd, Dow INC, Ecopetrol, GSK, Grieg Seafood, Holcim, LVMH, Natura & Co, Nestlé, Reckitt, Suzano, Swire Properties Ltd, Tata Steel</p> <p>【Private Companies (market service providers)】 Deloitte, EY, KPMG, Moody's Corporation, PwC, S&P Global, Singapore Exchange</p>
Who is expected to use the framework	<ul style="list-style-type: none"> The following players are listed as targets in the beta version of the framework: Investors, financial institutions, analysts, private companies, regulatory authorities, stock exchanges, accounting firms, ESG data providers / credit rating agencies
Disclosure information	<ul style="list-style-type: none"> Formulated in a manner consistent with the TCFD framework, such as conducting scenario analysis and disclosing financial information in four frameworks (Governance, Strategy, Risk Management, Metrics and Targets). Based on the TCFD, a disclosure framework that accounts for the characteristics of natural capital is being considered

(Reference) [TNFD overview]

Due to concerns over the negative impacts of environmental degradation, the Taskforce on Nature-related Financial Disclosure (TNFD)'s launch was declared in June 2021

- 1 What is the TNFD?**
 - The Taskforce on Nature-related Financial Disclosures (TNFD) is an international initiative that was launched with the aim of investigating a framework to be used by companies and financial institutions for **visualizing their level of dependence on the natural world, and evaluating, managing, and reporting their impact on the natural environment and ecosystems**
- 2 Background behind establishment**
 - **In economic circles, there is increasing interest and concern about the negative impact the deteriorating natural environment will have on economic activities**
 - Economic activities for approximately half of the world's GDP are dependent on services related to ecosystems.
 - The TNFD launch was also pushed forward by the emergence of new nature-related threats such as the ocean plastic pollution issue and COVID-19
- 3 Purpose**
 - **The TNFD aims to improve the resilience of the global economy by reducing capital flows that are detrimental to nature and people and shifting to capital flows that are beneficial for the natural environment**
 - Economic value worth a maximum of USD 10 trillion a year will be created by shifting to an economy that is beneficial for the natural environment
 - Financial institutions and the French and Swiss governments have been active participants in the TNFD since its conception
- 4 Future trends**
 - **Developing a framework and guideline for finance-related information and is aiming to finalize them by September 2023**
 - **Showing the economic effects from achieving cash flows that are beneficial for the natural environment will increase the level of interest from the general public**
 - 395 million new jobs will be created by 2030 through shifting to an economy that is beneficial for the natural environment

Source : Prepared by Ministry of Environment from the official TNFD website

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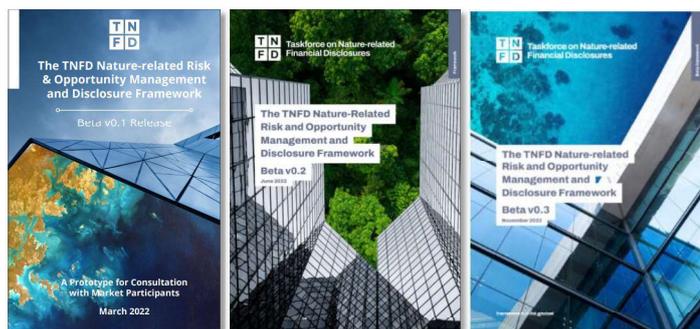
(Reference) [TNFD overview: Published media]

In March 2022, TNFD began the release of its beta version framework reports and online portal; it aims to establish consistency with the new global baseline for the ISSB standards

- The TNFD taskforce uses an open innovation approach to advance development of the TNFD framework
- The online portal is updated together **with the releases of the TNFD framework beta versions, with Beta v0.1 released in March 2022, Beta v0.2 in June 2022, and Beta v0.3 released in November 2022**
 - Using the **TCFD approaches as its foundation**, it aims to establish **consistency with the new global baseline for the ISSB's sustainability standards**, which are currently under development
- **The framework Beta v1.0 (set version) is expected to be released in September 2023**; from 2022, the framework has been continuously updated to reflect opinions from market participants

Reports

The reports are a collection of contents such as (1) core concepts and definitions for understanding nature, (2) TNFD draft disclosure guidance for nature-related risks and opportunities, and (3) the process business operators can use to perform integrated evaluation of nature-related risks and opportunities (LEAP)

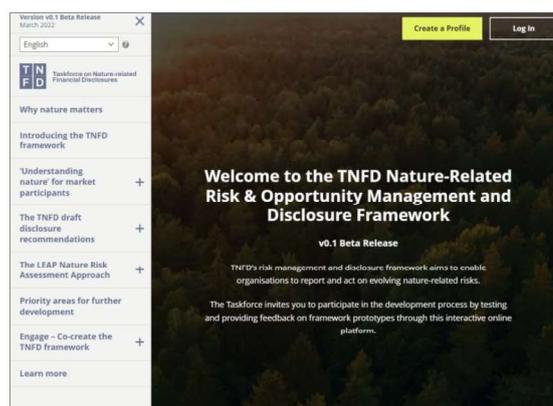


Source : Prepared by Ministry of Environment from the official TNFD website

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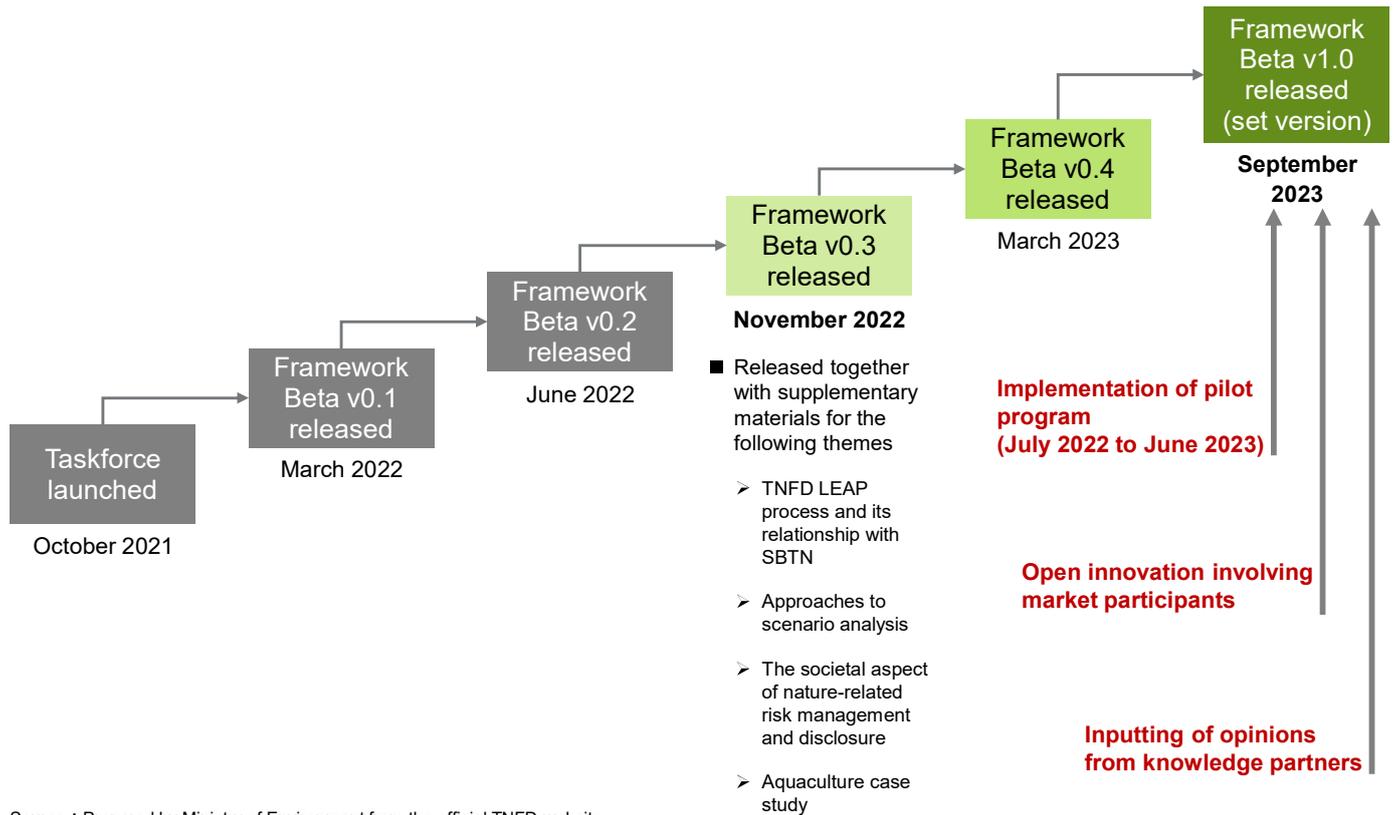
Online portal

An overview of the TNFD and the latest information are posted on the online portal. Creating an account allows users to share feedback and receive information on the latest trends



(Reference) [TNFD framework development schedule]

Aiming to release the set version in September 2023. In the version released in November 2022, a guidance on scenario analysis was included



Source : Prepared by Ministry of Environment from the official TNFD website