

Guidance for Companies on Nature-related Financial Disclosures concerning the Multiple Functions of Forests



<Guidance on TNFD-aligned Disclosures for Forests>

Forestry Agency

April 2025

[Introduction]

- Corporate management depends on natural capital such as forests. In addition, some corporate activities have adverse effects on natural capital, and the deterioration of natural capital makes it difficult to continue corporate management itself.
- For this reason, it is essential for companies themselves to assess the degree of dependency on natural capital and its risks and apply the results of assessment to their management strategies.
- The degradation of natural capital is a serious issue for the entire planet, and corporate activities that cause this problem are regarded as a risk by consumers, investors, and society as a whole.
- Sustainable corporate activities, on the other hand, can provide opportunities to avoid management risks and build new business models.
- TNFD disclosures, which evaluate and disclose involvement in natural capital, are recommended universally.
- This guidance has been prepared as a reference for companies involved in natural capital, especially forests, in disclosing TNFD information.
- In particular, examples are given for the forestry, pulp and paper, wood, construction, real estate, and beverage sectors. It is important that all companies make efforts to disclose TNFD information by referring to these examples.
- For small and medium enterprises, it is important to start with what they can do, considering resources such as funds and personnel.

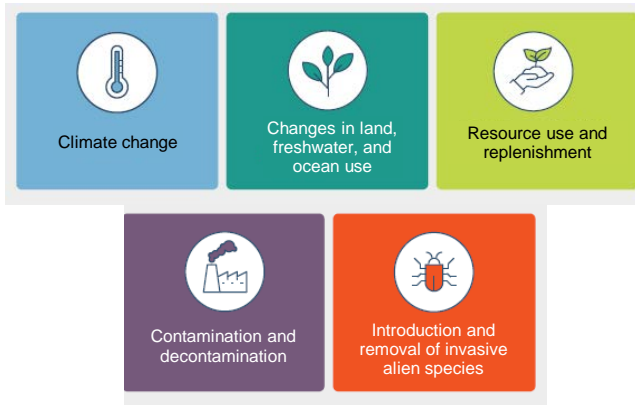
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1. Purpose of the guidance and the target entities

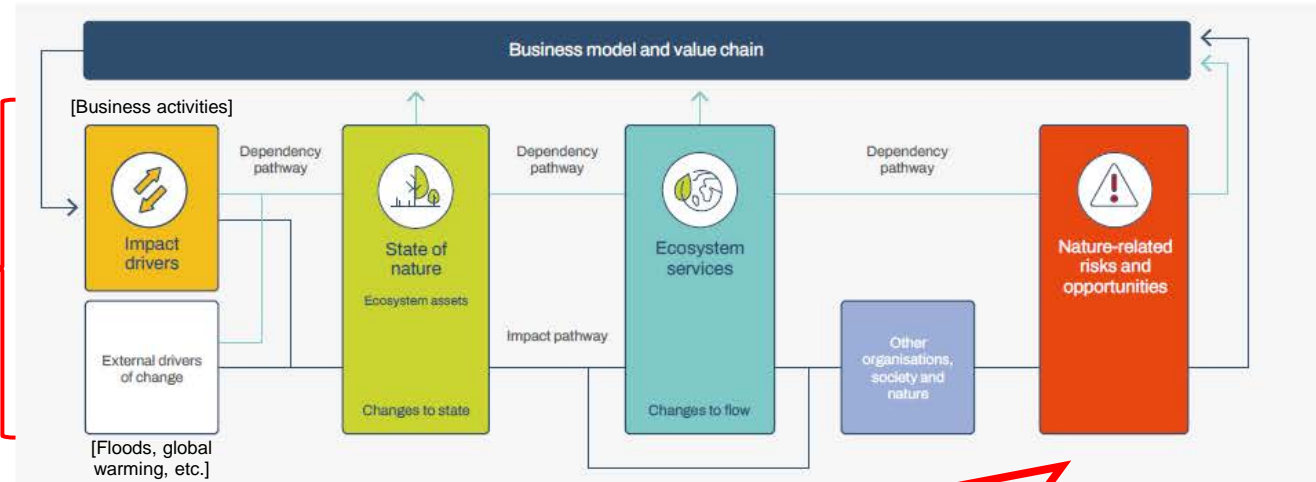


1-1. Purpose (nature and business)

- Natural capital provides essential air and water for humanity, regulates the climate, and mitigates the effects of natural disasters.
- Our economic activities have affected nature and caused losses. This has led to climate change and the degradation of biodiversity, affecting humanity's survival and various economic activities, as well as increasing risks.
➔ For details, see page 43.
- TNFD disclosures aim to change global financial flows so that they can contribute to "nature positive" by encouraging companies to identify management risks derived from nature and improving decision-making on corporate strategies, including capital allocation.



- Impact factors are classified into five natural change factors.
- It is necessary to consider that measures available only for climate change may have negative impacts on other impacts such as biodiversity.
➔ For details, see page 44.



Management risks consist of physical risks and transition risks.

- **Physical risks**
Risks of business continuity due to loss of ecosystem services
- **Transition risks**
Risks posed by changes in regulations, policies, precedents, technology, investor sentiment, and consumer preferences

1-1. Purpose (nature and business)

- The Sustainable Development Goals (SDGs) consist of 17 goals and 169 targets, and the “SDG wedding cake” model shows the interrelationships between these goals.
- This model consists of the 17 SDGs at the top and the three levels below it: the economic zone, social zone, and biosphere. The development of economy is made up of the social sphere such as life and education, and the social sphere is made up of the lower biosphere. In other words, this indicates that the human economy and society are supported by the biosphere.

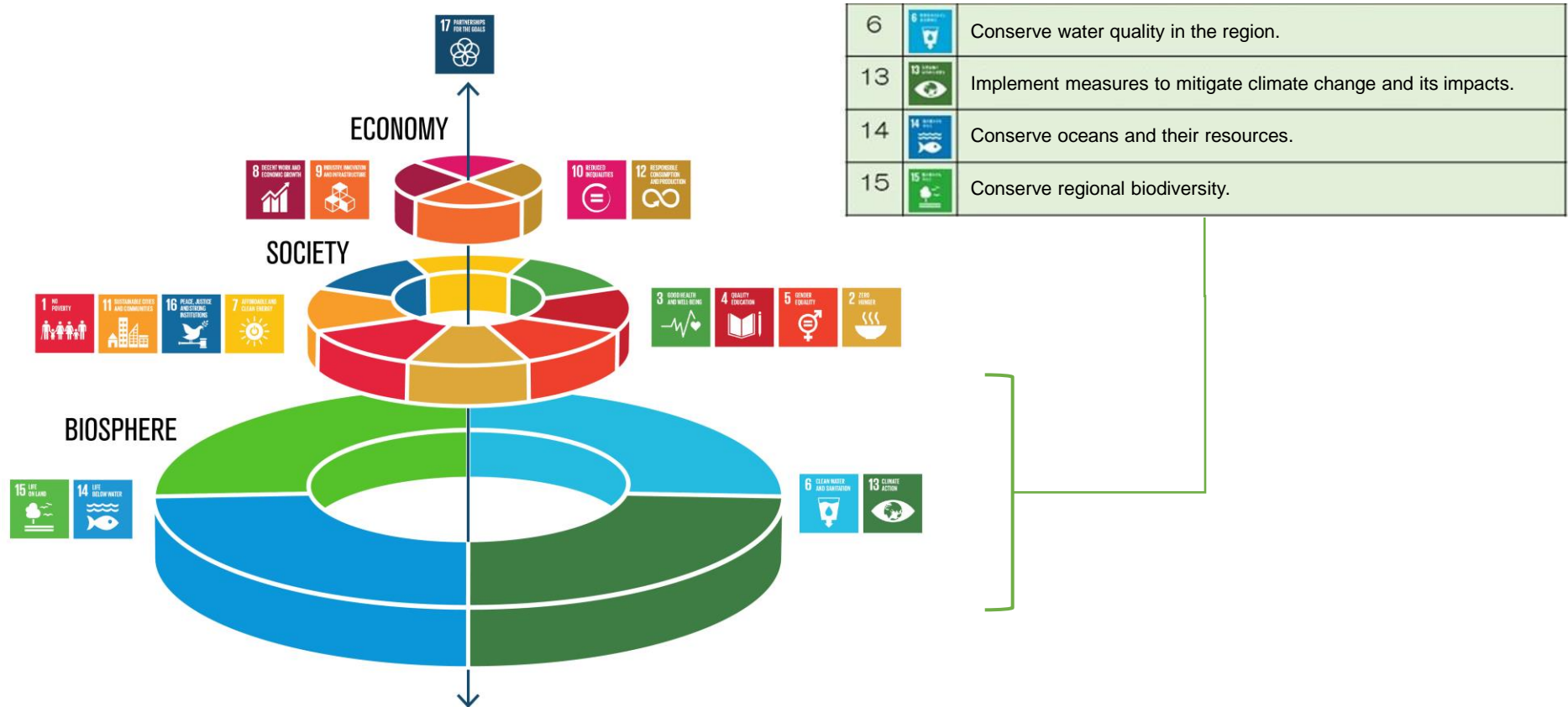


Figure: The SDG Wedding Cake

1-2. Purpose and target entities of the guidance



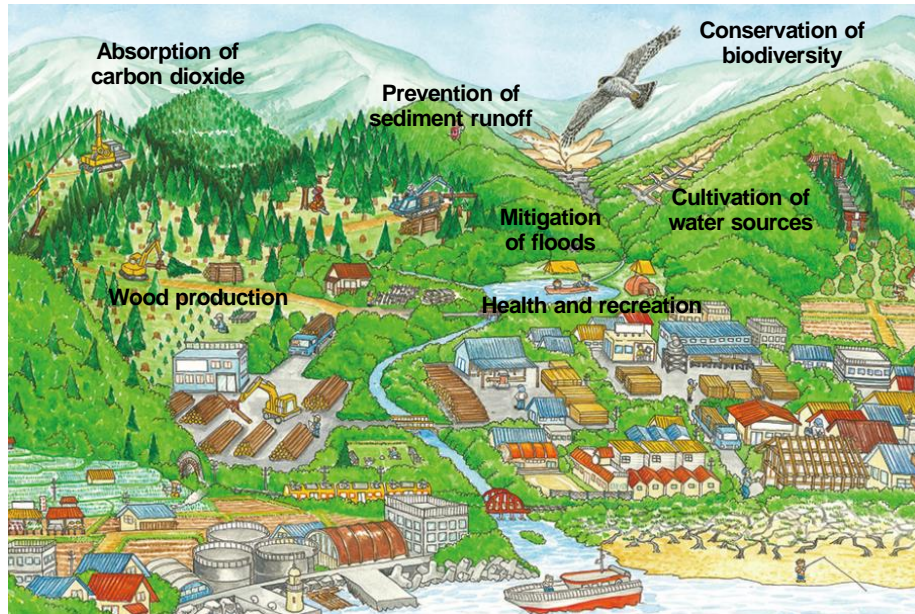
Purpose of the guidance

- The guidance covers domestic business activities and addresses assessments of their dependence on domestic forests, impacts, risks, and opportunities. The risks involved in the procurement of wood and wood products from overseas* will also be discussed.
- Examples of analysis methods, disclosure items, and disclosure indicators based on the LEAP approach required by TNFD disclosures are provided to appropriately analyze and evaluate the relationship between corporate activities and the multifunctionality of forests.
- In addition, examples of TNFD disclosures by pioneering companies engaged in wood use, forest improvement and conservation, etc. are presented as a reference.

* This document covers only wood among high-risk primary natural commodities whose production could have significant negative impacts on nature. TNFD disclosures need to cover all high-risk primary natural products.

Target entities of the guidance

- The guidance targets all companies that are responsible for sustainable social and economic development and strive to review their management strategies.
- In particular, the forestry, pulp and paper, wood, construction, real estate, and beverage sectors are shown as examples.



[Relationship between corporate business and the multifunctionality of forests]

- Appropriate management and use of forests contribute to the sustainable supply of wood and water, the formation of beautiful landscapes, etc. and reduce the risk of natural disasters such as floods, global warming, etc.
- Companies use wood, water resources, and forest landscapes provided by forests as described above to conduct business activities.
- In order to reduce the risk of business continuity due to global warming and select business sites with a low risk of natural disasters, it is essential to ensure that forests demonstrate their multifunctionality.

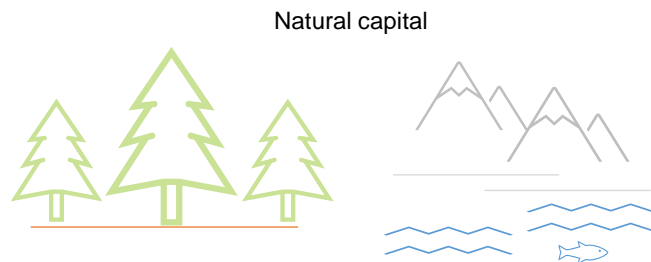
2. Background



2-1. Increased economic risk due to disappearance of nature

- It is estimated that the creation of economic value of more than half of world GDP (equivalent to \$44 trillion) depends on natural capital and is exposed to economic risks from natural loss.
- The World Economic Forum's Global Risks Report (2025 edition) recognized the seriousness of nature-related risks, listing "loss of biodiversity and ecosystem collapse" and "natural resource crisis" as the second and fourth most serious global risks likely to occur over the next ten years, respectively.
- The Kunming-Montreal Global Biodiversity Framework adopted at the 2022 Conference of the Parties to the Convention on Biological Diversity put forward the concept of "nature positive" as the mission for 2030 and encouraged business operators to take measures for assessing and disclosing biodiversity-related risks, along with their dependencies and impacts on biodiversity, and providing information necessary for sustainable consumption.
- At the Davos Forum in 2019, the idea for the TNFD, a framework for management and disclosure by companies of risks involved in natural capital, etc., was conceived. In September 2023, an informal working group of the TNFD was formed by four organizations, including international environmental organizations, and the Disclosure Framework v 1.0 was announced.

More than half of global GDP (about \$44 trillion) depends on natural capital.



Natural capital refers to the stock of renewable and non-renewable natural resources (examples: plants, animals, air, water, soil, and minerals) that provide a range of benefits to people.

(Source: Atkinson and Pearce 1995; Jansson et al 1994, cited by the Natural Capital Coalition 2016, www.naturalcapitalcoalition.org/protocol)

Ranking of seriousness of risk over ten years	
1	Abnormal weather
2	Biodiversity loss and ecosystem collapse
3	Critical changes in the earth system
4	Scarcity of natural resources
5	Misinformation and disinformation
6	Negative impact of AI technology
7	Disparity
8	Social polarization
9	Cyber espionage and cyber warfare
10	Contamination

In addition to climate change, risks related to biodiversity, ecosystems, and natural resources rank high.

Legend: Risk classification

- █ Environment
- █ Technology
- █ Society
- █ Economy
- █ Geopolitics

Source: This ranking has been created based on the World Economic Forum (2025) Global Risks Report.

2-2. What are sustainability information disclosures?

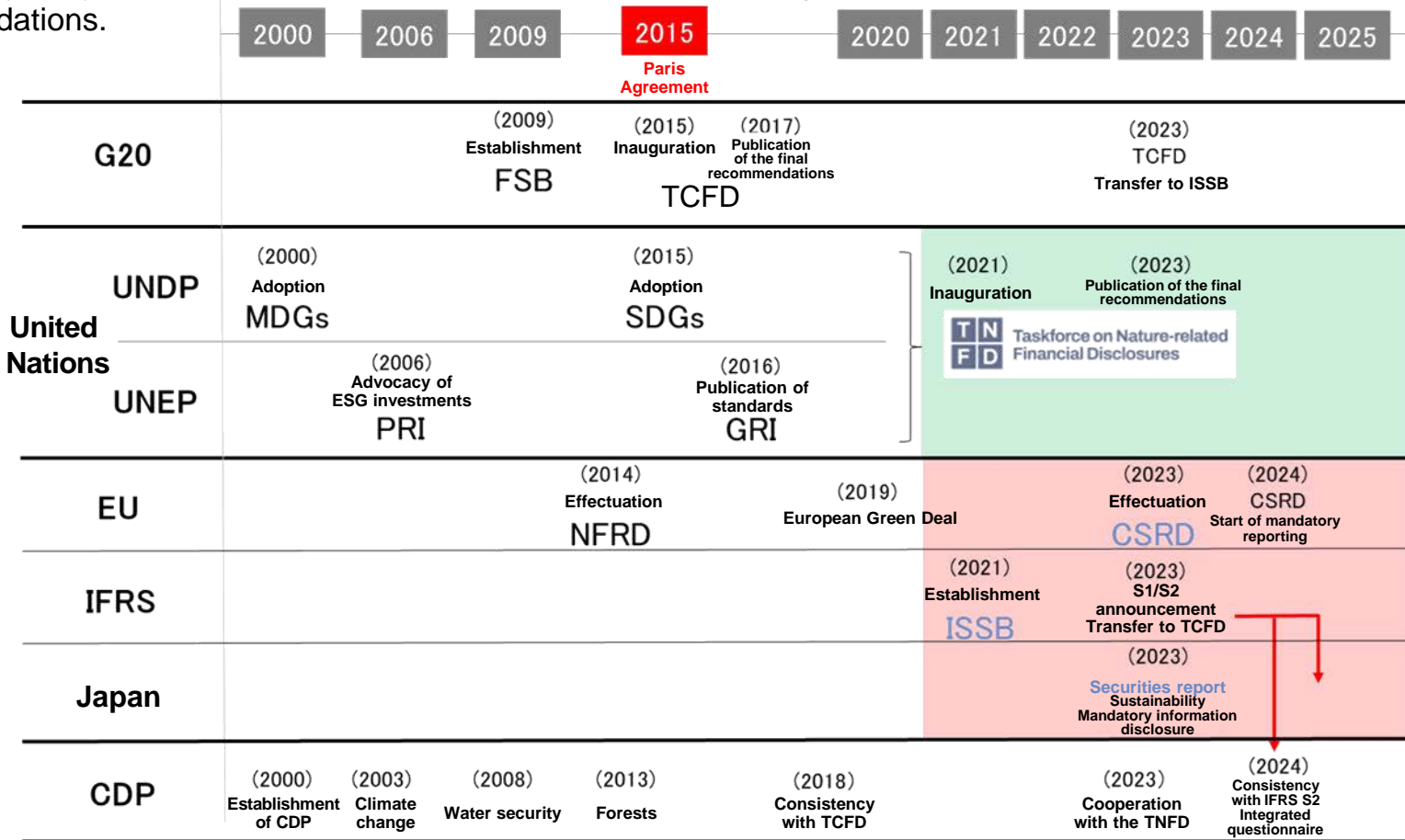
- Information disclosures not only enable investors to make appropriate investment decisions but also encourage constructive dialogues between companies and investors, which play an important role in improving the quality of corporate management and corporate value.
- There are two types of disclosed information: financial information and non-financial information. Sustainability information such as climate change and natural capital mainly falls under non-financial information.
- Financial information must be disclosed in financial statements. Since 2023, non-financial information (sustainability information) has also been required to be disclosed, due to amendments to the Cabinet Office Order on Disclosure of Corporate Affairs and other regulations.
- Although TNFD disclosures are not obligatory, (1) they encourage private capital investment for “nature positive,” and (2) evaluating dependencies and impacts on natural capital, which provides the foundation for the business of a company, is essential to improve the company’s management strategies and business continuity.

Type of disclosed information	Example of information to be disclosed
Financial Information	<ul style="list-style-type: none">• Income statement• Balance sheet• Cash flow statement, etc.
Non-financial information	<ul style="list-style-type: none">• Environmental data (GHG emissions, etc.)• Future risks and opportunities• Environmental targets, KPIs, etc.

**Information disclosed under the TNFD is included in non-financial information.
(Information disclosures recommended by TNFD are described in Chapter 3)**

2-3. Publication of international sustainability standards

- ESG investments expanded due to the adoption of the 2015 Paris Agreement. With the publication of the final recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in 2017, the movement of companies to disclose information related to climate change is accelerating.
- As a framework following the TCFD recommendations, the Taskforce on Nature-related Financial Disclosures (TNFD) was launched in 2021 with a view to shifting the flow of funds to “nature positive.” The final recommendations were published in 2023, and the move to disclose information related to natural capital was initiated.
- Furthermore, the International Sustainability Standards Board (ISSB) was established by the International Financial Reporting Standards (IFRS) Foundation, and disclosure standards have been published in a manner consistent with the TCFD recommendations.

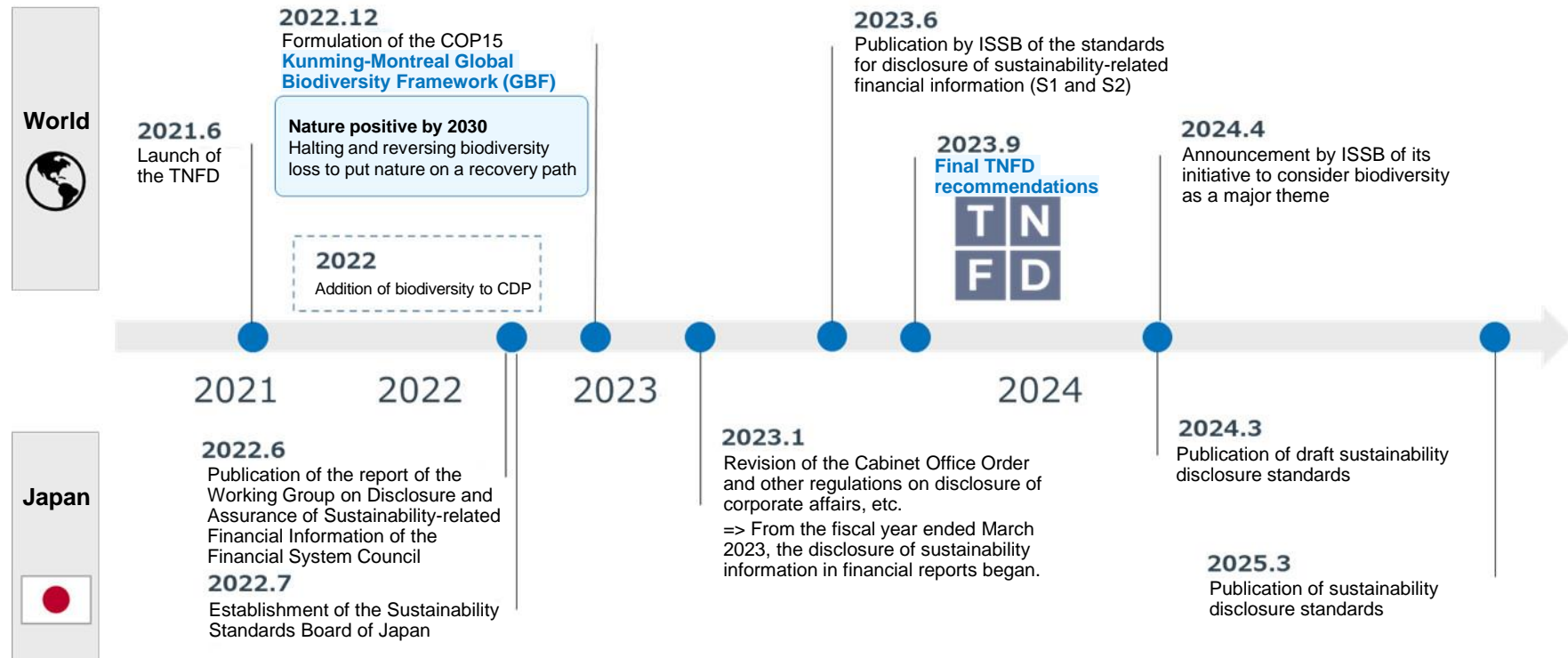


Climate-related information ⇒
Information related to natural capital

Voluntary disclosure ⇒
Regulatory disclosure

2-4. Publication of domestic sustainability standards

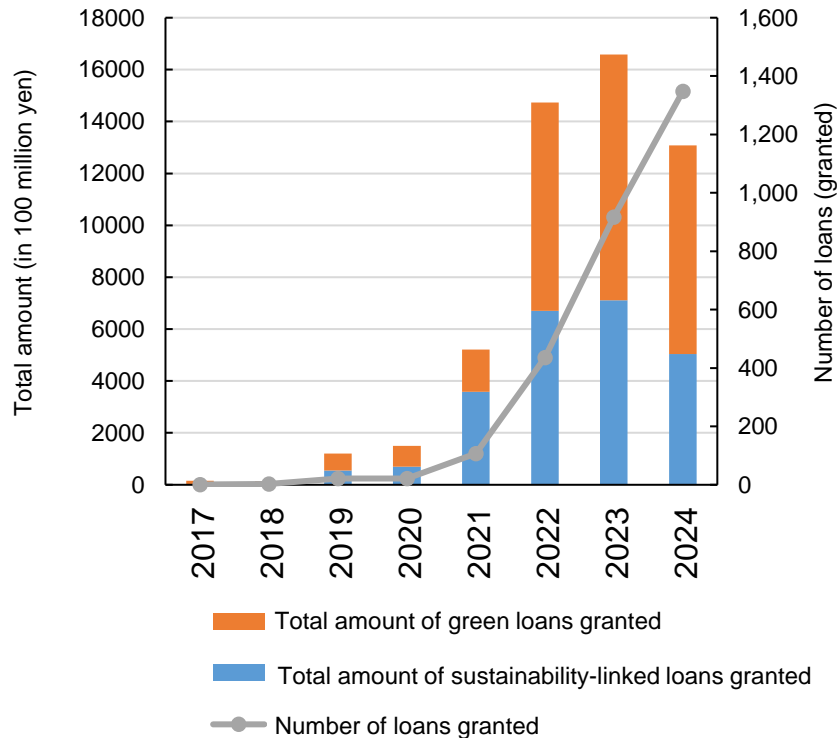
- The International Sustainability Standards Board (ISSB) of the IFRS Foundation has published the General Requirements for Disclosure of Sustainability-related Financial Information (S1) and Climate-related Disclosures (S2). It is expected that the movement toward the application of these standards will progress in various countries in the future.
- In Japan, too, companies began disclosing sustainability information in their financial reports in the fiscal year ended March 2023. Furthermore, in March 2025, the standards for information disclosures based on ISSB were published. In the future, it is expected that sustainability information will be disclosed in securities reports based on these standards.
- In April 2024, ISSB set biodiversity, ecosystems, and ecosystem services as research themes for the next two years. ISSB has declared harmonization with the previous information disclosure frameworks and standards. Therefore, if the IFRS Foundation establishes disclosure standards for biodiversity in the future, they will be consistent with the TNFD information disclosure framework.



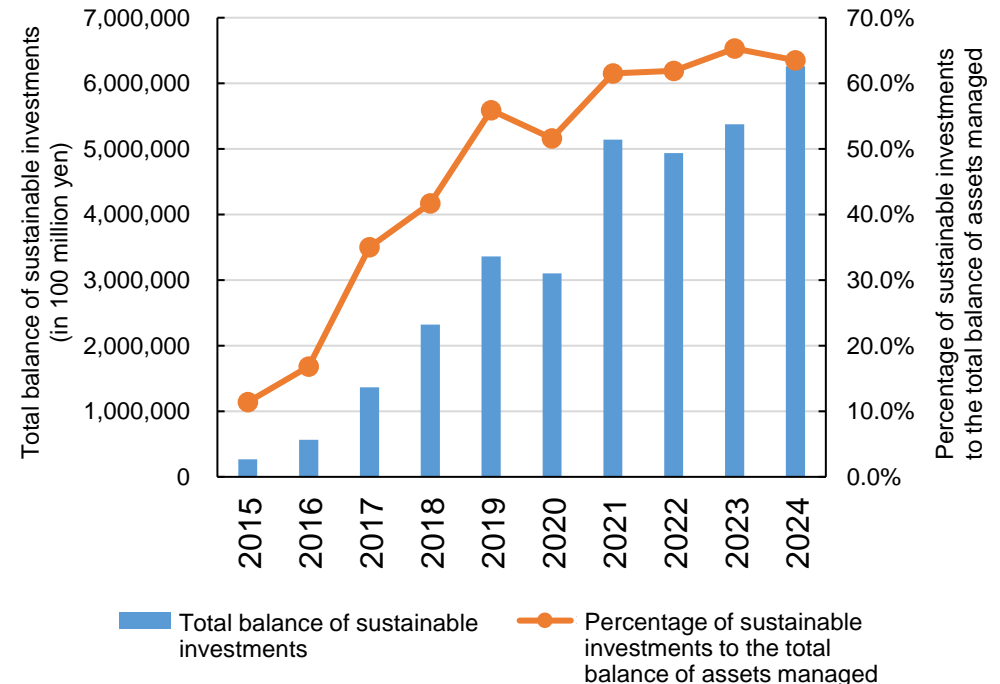
2-5. Trends in sustainability finance

- Financial institutions such as megabanks are also making efforts to disclose TNFD information and have set targets for sustainable finance, including the conservation of natural capital, in response to risks and opportunities of borrowers.
- The number of sustainability-linked loans and green loans granted in Japan as well as the balance of sustainable investments by domestic financial institutions are increasing, and in 2024, the total amount of sustainable investments exceeded 600 trillion yen.
- Disclosure of TNFD information and efforts to conserve natural capital such as forests are important from the perspective of raising necessary funds for business.

Changes in the total amount and number of sustainability-linked loans and green loans granted



Trends in the balance of sustainable investments



3. What are the TNFD recommendations?



3-1. Outline of TNFD disclosures

- TNFD disclosures consist of basic concepts; general requirements, which are six cross-sectionally required viewpoints; recommendations, which comprise four pillars of disclosure fields; and disclosure recommendations, which indicate specific disclosure items.

ISSB



Outline of the general requirements (Six perspectives)

- 1. Application of materiality**
Companies should specify the materiality approach adopted to ensure clarity and transparency for key users of general-purpose financial reports and other stakeholders.
- 2. Scope of disclosure**
Companies should describe the scope of nature-related assessments and disclosures and the process followed in determining the scope, including the items listed below.
- 3. Locations with nature-related issues**
Consideration of not only the organization's direct operations but also the geographical locations of its interface with nature through upstream and downstream value chains should be the focus of assessments, and, if they are material, they should be the core of disclosures.
- 4. Integration with other sustainability-related disclosures**
Wherever possible, companies should show the financial condition and outlook of their organization to report users in an integrated and holistic way by combining TNFD disclosures with other business- and sustainability-related disclosures. Integration of climate- and nature-related disclosures is particularly important.
- 5. Period covered under consideration**
Considering that nature-related risks and opportunities often manifest themselves in the medium to long run, companies should describe how they consider the relevant short, medium, and long periods covered.
- 6. Engagement with indigenous peoples, local communities, and affected stakeholders in the identification and assessment of the organization's nature-related challenges**
Companies should describe processes for engaging indigenous peoples, local communities, and affected stakeholders on concerns and priorities in nature-related dependencies, impacts, risks, and opportunities in direct operations and value chains.

(Reference) The TNFD has launched Learning Lab, a free platform to support learning about TNFD information disclosure recommendations and additional guidance. TNFD Learning Lab <https://tnfd.global/dashboard/tnfd-learning-lab/>

3-2. Disclosure items required by TNFD disclosures

- The TNFD has established 14 disclosure recommendations under four pillars: governance, strategy, risk and impact management, and measuring indicators and targets.
- In addition to the TCFD, which discloses climate-related information, the TNFD covers disclosure of nature-related risks and opportunities and dependencies and impacts, as well as disclosure of local stakeholders and upstream and downstream value chains.

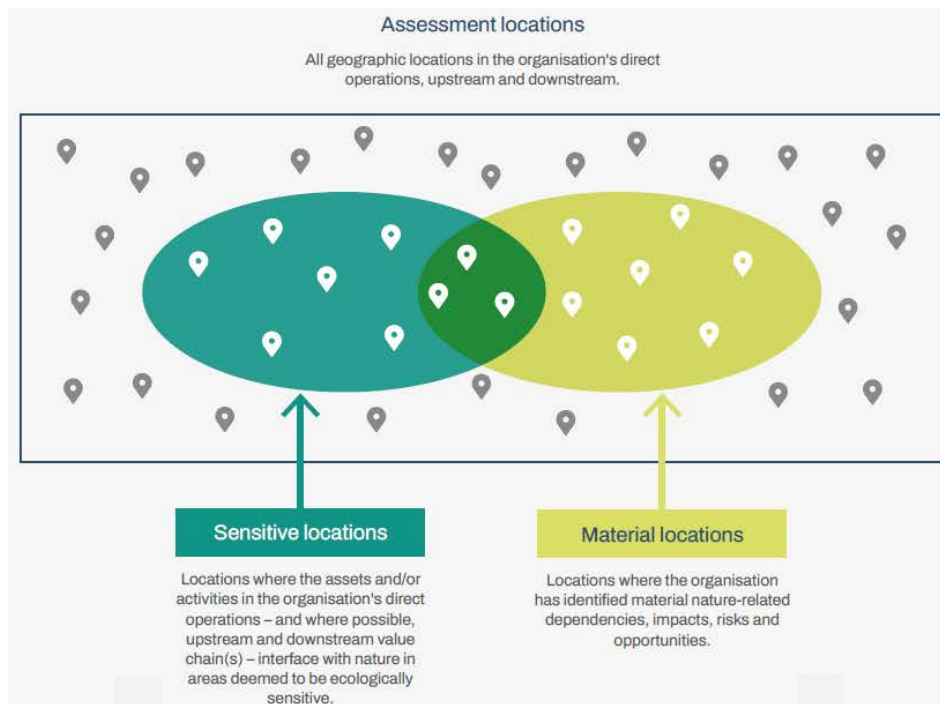
	Governance	Strategy	Risk and impact management	Indicators and targets
Four pillars	Disclose the organization's governance of nature-related dependencies and impacts , and risks and opportunities.	Disclose the effects of nature-related dependencies and impacts , and risks and opportunities on the organization's business, strategy, and financial plans if information on them is important.	Describe how the organization identifies, assesses, prioritizes, and monitors nature-related dependencies and impacts , and risks and opportunities.	Disclose the measuring indicators and targets used to assess and manage nature-related dependencies and impacts , and risks and opportunities if they are important.
Disclosure recommendations	<p>A. Describe the board's oversight of nature-related dependencies, impacts, risks, and opportunities.</p> <p>B. Describe the role of management in assessing and managing nature-related dependencies, impacts, risks, and opportunities.</p> <p>C. Describe the organization's human rights policies and engagement activities for indigenous peoples, local communities, affected stakeholders, and other persons concerned as well as oversight by the board and management in the organization's assessment of and response to nature-related dependencies, impacts, risks, and opportunities.</p>	<p>A. Describe the nature-related dependencies, impacts, risks, and opportunities identified by the organization from a short-, medium-, and long-term perspective.</p> <p>B. Describe the effects of nature-related dependencies, impacts, risks, and opportunities on the organization's business model, value chain, strategy, and financial plan as well as its transition plan and analysis.</p> <p>C. Describe the resilience of the organization's strategy to nature-related risks and opportunities while considering different scenarios.</p> <p>D. Disclose the locations where assets and activities are in the organization's direct operations and, where possible, in upstream and downstream value chains that meet criteria for priority locations</p>	<p>A (i) Describe the organization's process for identifying, assessing, and prioritizing nature-related dependencies, impacts, risks, and opportunities in direct operations.</p> <p>A (ii) Describe the organization's process for identifying, assessing, and prioritizing nature-related dependencies, impacts, risks, and opportunities in upstream and downstream value chains</p> <p>B. Describe the organization's process for managing nature-related dependencies, impacts, risks, and opportunities</p> <p>C. Describe how the process of identifying, assessing, and managing nature-related risks is integrated into organization-wide risk management.</p>	<p>A. Disclose the measuring indicators that the organization uses to assess and manage significant nature-related risks and opportunities in line with its strategy and risk management processes.</p> <p>B. Disclose the measuring indicators used by the organization to assess and manage its dependence and impacts on nature.</p> <p>C. Describe the targets and objectives that the organization uses to manage nature-related dependencies, impacts, risks, and opportunities as well as the organization's performance against them.</p>

* The descriptions surrounded by red lines show the difference from the TCFD disclosure.

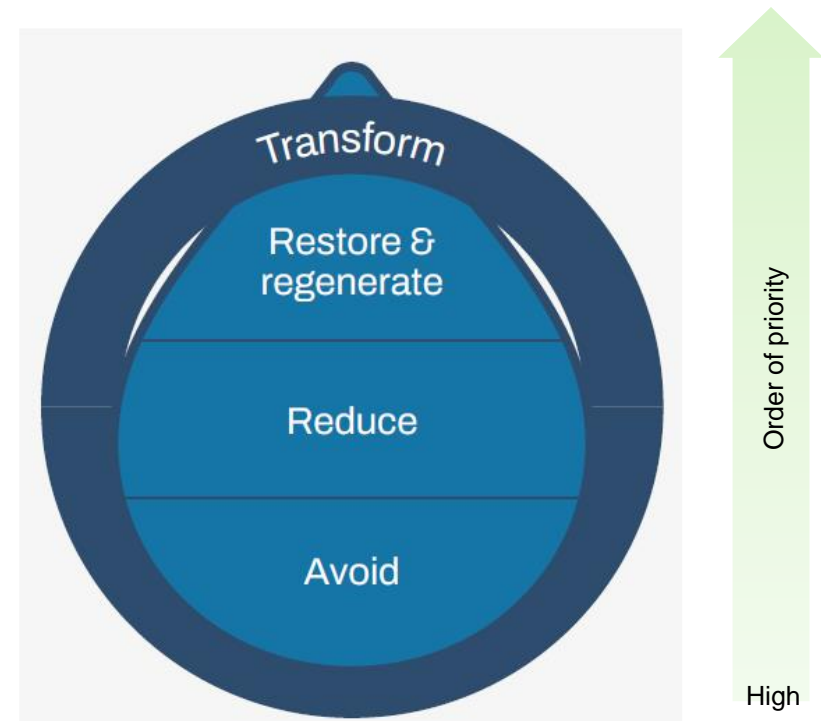
3-3. Matters to be noted in information disclosures

- The TNFD requires companies to describe the processes they prioritize when identifying and assessing their dependencies and impacts on nature, and risks and opportunities involved therein. [Dependencies, impacts, risks, and opportunities](#) → For details of , see page 43.
- In identifying areas where their activities have impacts on nature, the TNFD requires companies to consider material locations for corporate management, including the value chain, and locations to which they should pay attention for ecosystem services by superposing the former on the latter, and to disclose information starting with priority locations.
- Companies that disclose information should give top priority to avoiding and minimizing negative impacts on nature.
- It should be noted that disclosures not based on this idea and giving priority to the convenience of the company may be criticized as "green washing."
- The TNFD recommends that companies use the methods developed by the Science Based Targets Network (SBTN), which sets targets based on scientific evidence, when making recommendations for TNFD disclosures. → For details, see page 45.

identification of priority locations

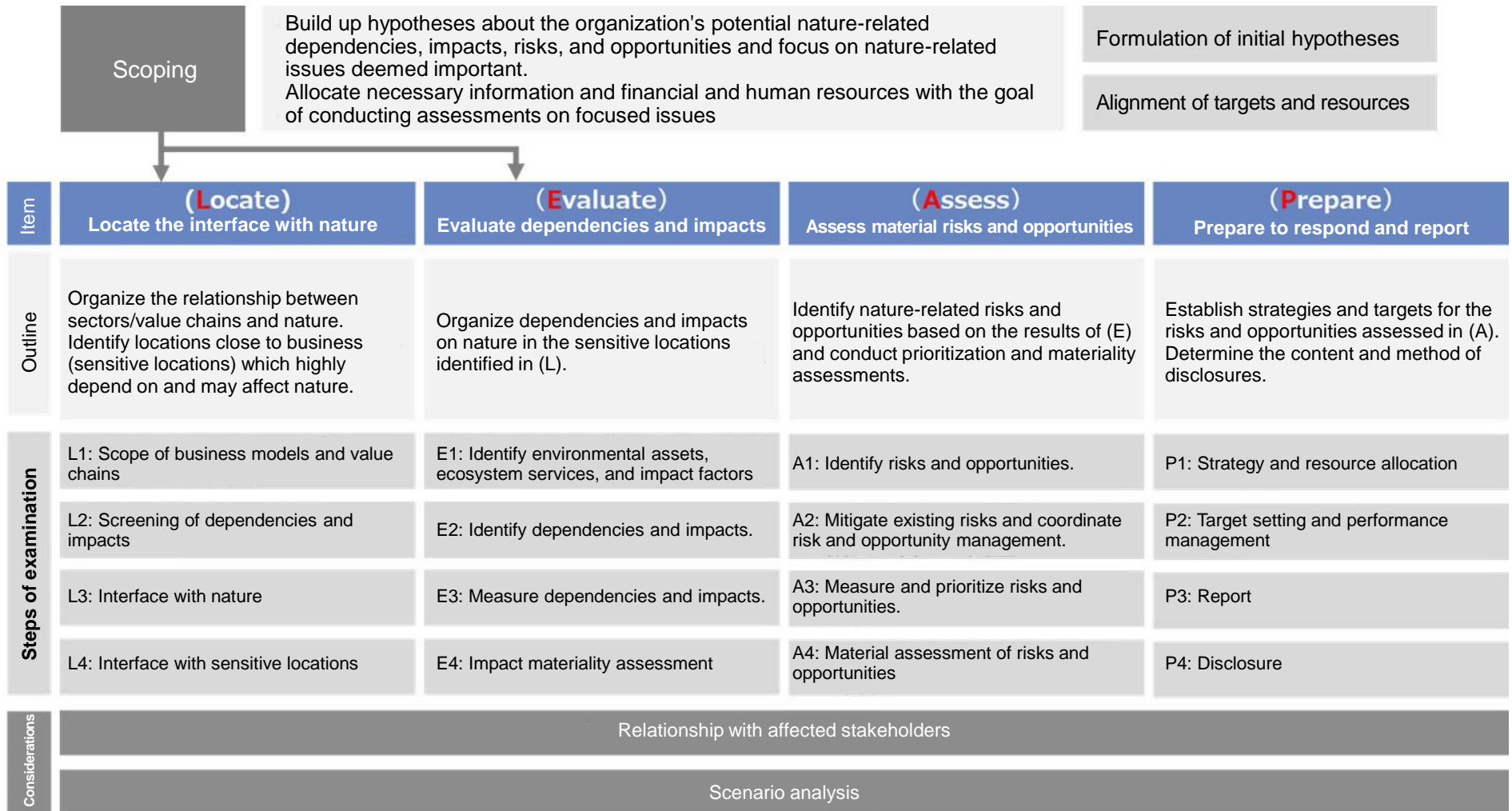


Mitigation hierarchy



3-4. LEAP approach

- The LEAP approach (outlined below) is shown as a method for examining details of TNFD disclosures.
- This approach grasps the company's relationships with nature and considers diagnosing dependencies and impacts, assessing critical risks and opportunities, and setting targets and indicators.



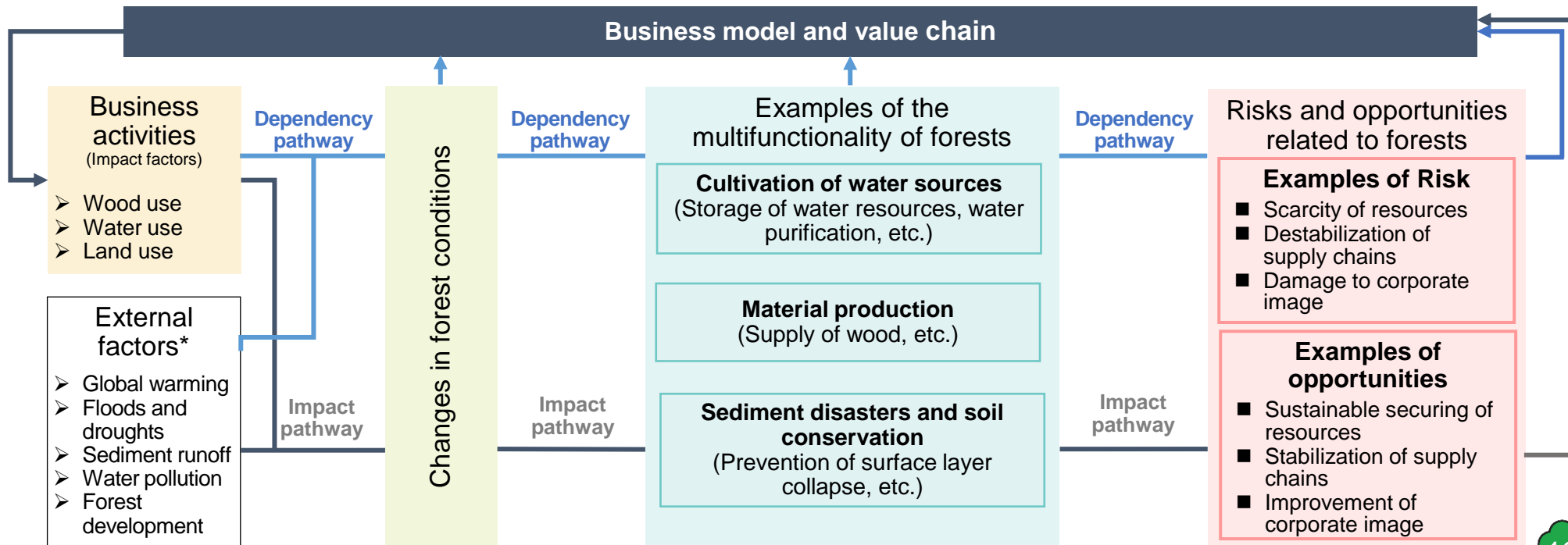
* References provide examples of tool datasets that can be used in each phase of the TNFD guidance.

4. Method of disclosure of TNFD information in the forest sector

4-1. Multifunctionality of forests and disclosure of TNFD information

- Business activities depend on and affect the multifunctionality of forests. Understanding these relationships is essential for disclosure of TNFD information.
- The sustainable demonstration of the multifunctionality of forests makes it possible to secure wood, water resources, etc. and reduces the risk of business interruption due to mountain disasters.
- On the other hand, CO₂ emissions from corporate activities, heavy water use, and forest development through construction work have negative impacts on nature.
- A decline in the multifunctionality of forests poses a risk to corporate management and destabilizes not only the company itself but also its supply chain.
- Efforts to enhance the multifunctionality of forests not only (1) avoid and mitigate risks by strengthening natural capital, which provides the foundation of corporate management, and stabilizing supply chains but also (2) lead to the construction of new business models. Therefore, they can be a management strategy or opportunity to enhance corporate value.

Multifunctionality of forests → For details, see pages 51-56.



* Including changes in forest conditions caused by the business activities of other companies

4-1. Multifunctionality of forests and disclosure of TNFD information

- Corporate activities are made up not only activities of the company itself but also those of its entire value chain. Since the scope of such activities is wide, they affect various stakeholders.
- Forests and their functions on which corporate activities depend and affect extend to the entire watershed, and their global environmental conservation and other functions are even broader.
- For this reason, the landscape approach based on watersheds, etc. and the stakeholder engagement approach, which requires the involvement of various stakeholders, are effective approaches.

→ For details, see pages 64-69.

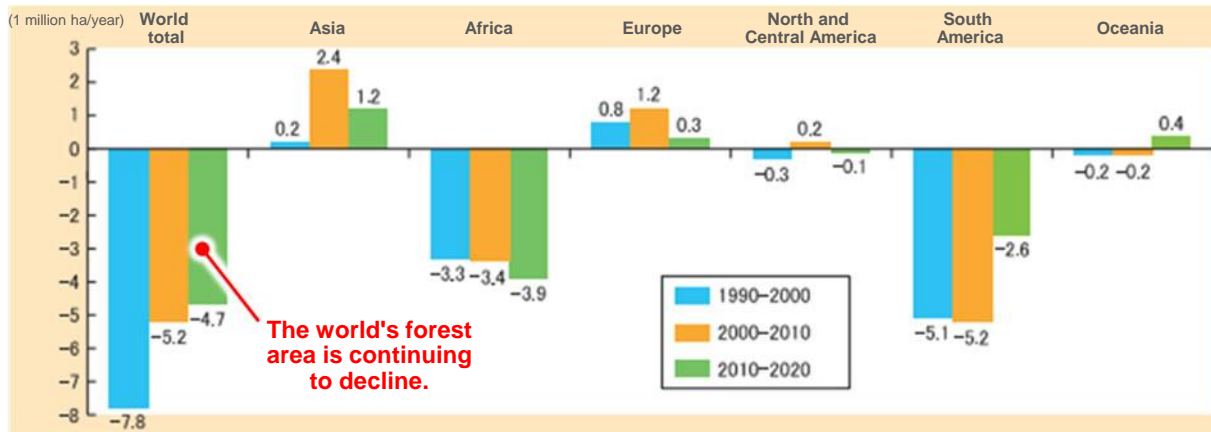
- The multifunctionality of forests is displayed when forests composed of various growth stages and tree species are arranged in a well-balanced manner and managed appropriately.
- In particular, if planted forests are not properly maintained by humans, there is a risk of hindering the maintenance and performance of their multifunctionality.
- From this point of view, in addition to the delay in thinning, there are problems in the maintenance* of forest resources such as the low level of reforestation after logging.
- On the other hand, as planted forest resources enter the period of full-scale utilization, there are growing expectations for economic and social development through wood utilization and CO₂ absorption and fixation.
- In view of the above situation, when identifying the dependencies and impacts between corporate activities and the multifunctionality of forests and considering responses to risks and opportunities, it is important to (1) increase biodiversity in the area from the perspective of watersheds, etc. and (2) maintain forest resources and absorb and fix CO₂ through sustainable forest management and wood use.

* This means that the functions and harvests of forests are permanently maintained through the continuous use of land for the growth of forest trees and through appropriate renewal and forest management practices.

(Reference) Forests of the world

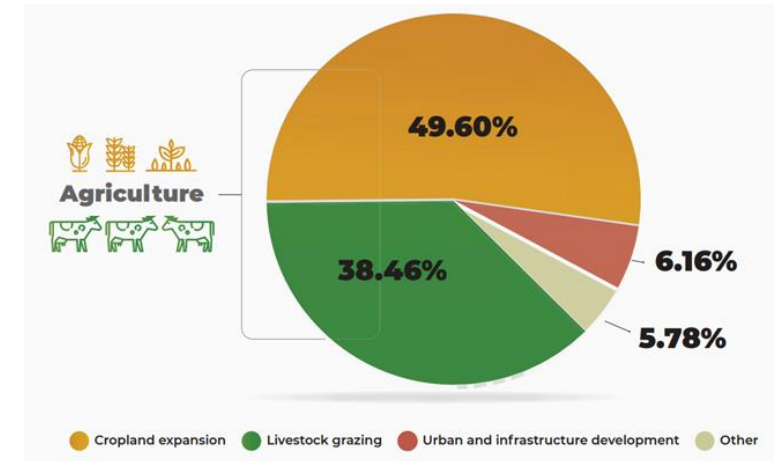
- Forests account for approximately 4.06 billion hectares of the world (31% of the land mass), and there has been a reduction of 178 million hectares since 1990, particularly in tropical forests in Africa and South America.
- The main factor of deforestation is land diversion for agricultural use. The EUDR* plans to make it mandatory to confirm that the production of certain products (seven products and their derivatives: cattle, cacao, coffee, oil palm, rubber, soybeans, and wood) distributed in the EU region has not caused deforestation (forest due diligence). → For details, see page 58.
- SBTN provides a list of key products that typically have environmental impacts in the production stage (High Impact Commodity List (HICL)). One of such products is wood. → For details, see page 59.
- According to the non-profit organization CDP, industries that have significant impacts on forests include food, beverage, agriculture, tourism services, manufacturing, power generation, and retail.

▣ Changes in forest area by region of the world (1990-2020)



Source: This figure has been created by the Forestry Agency Planning Division based on data from FAO's Global Forest Resources Assessment 2020.

▣ Factor analysis of deforestation (2000-2018)

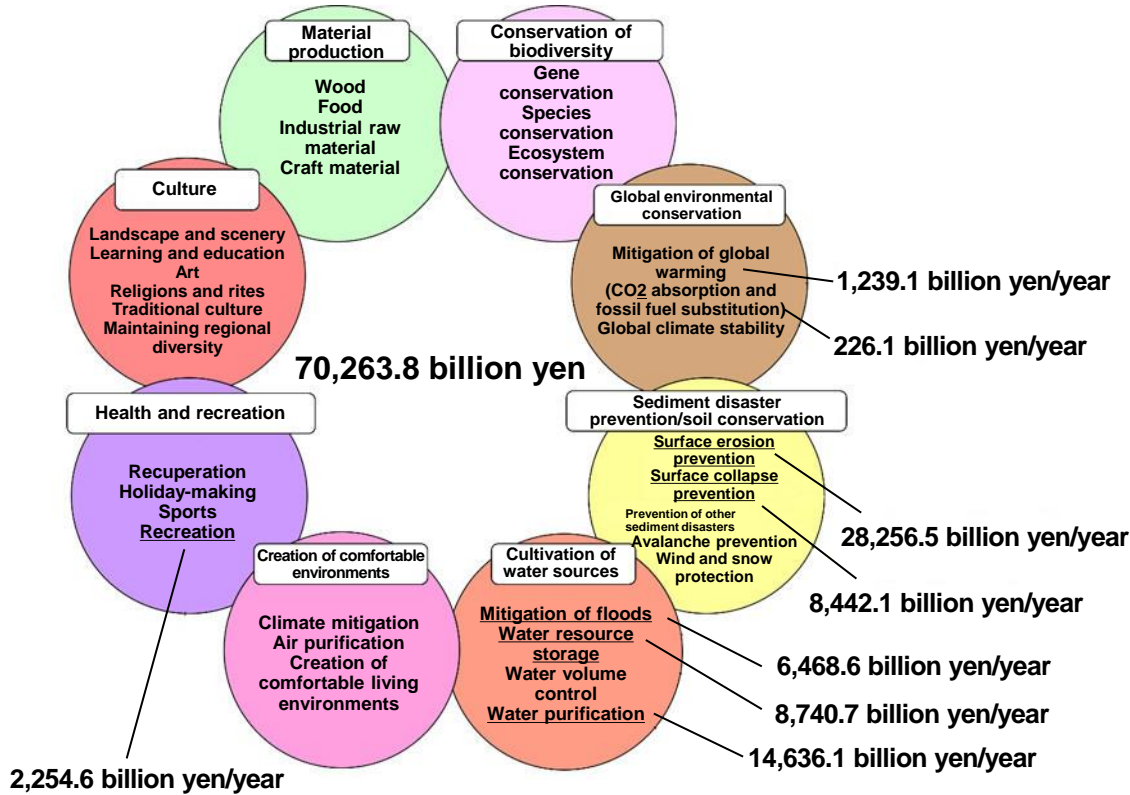


Source: FAO (2022) FRA 2020 Remote Sensing Survey

* The EUDR refers to the EU regulation on deforestation. Suppliers of certain products covered by the regulation in the EU region are required to (1) ensure that they are deforestation-free; (2) confirm that they are produced in accordance with the relevant laws and regulations of the producing country; and (3) prepare and submit a due diligence statement to demonstrate (1) and (2). EUDR is expected to be applied from December 2025.

(Reference) Forests in Japan

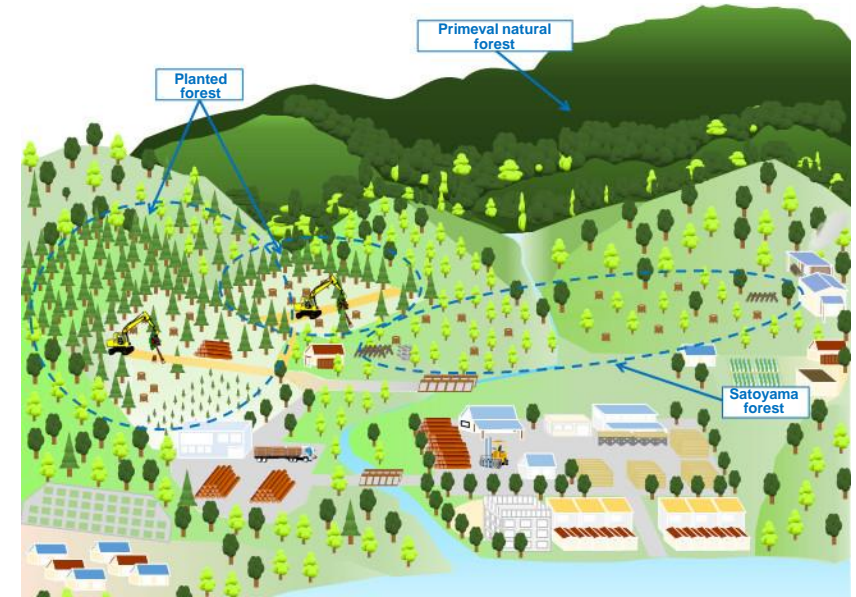
■ Multifunctionality and evaluation of forests



Science Council of Japan report "Evaluation of the multifunctionality of agriculture and forests related to the global environment and human life" and related materials (November 2001)

Note: The amount is based on the assessment of a part of the functions that can be valued in monetary terms, mainly physical functions. All valuation methods present figures calculated within a range of assumptions.

■ Illustration of diverse forest arrangements

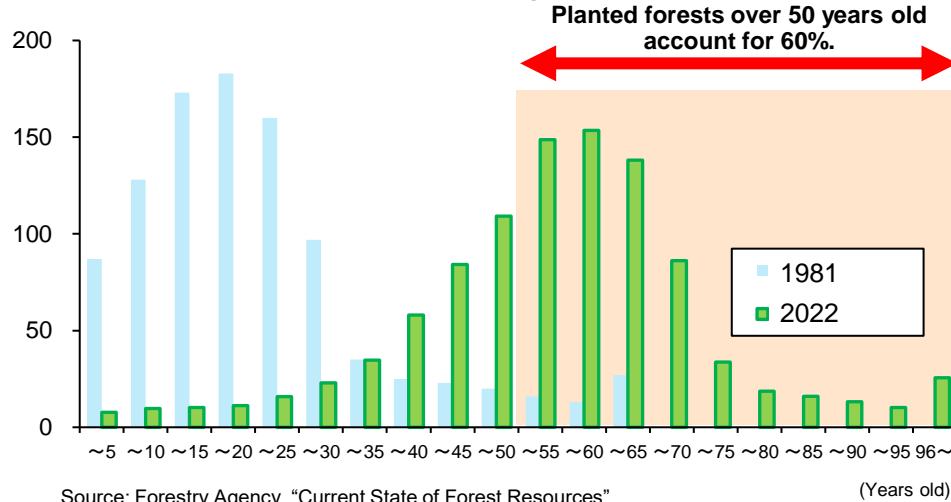


■ Planted forest that is not properly maintained



(Reference) Forests in Japan

Area of planted forests by age class



Source: Forestry Agency, "Current State of Forest Resources"
Note: For 1981, data are compiled for all forests over 61 years old.

Examples of mid- to high-rise wooden buildings

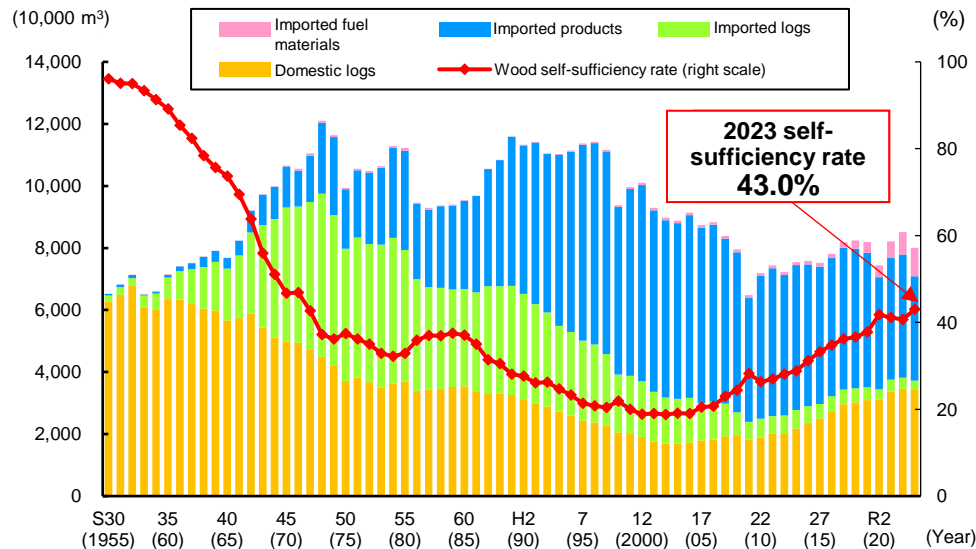


Nomura Real Estate Tameike Sanno Building (2023)

HULIC & New GINZA 8 (2021)

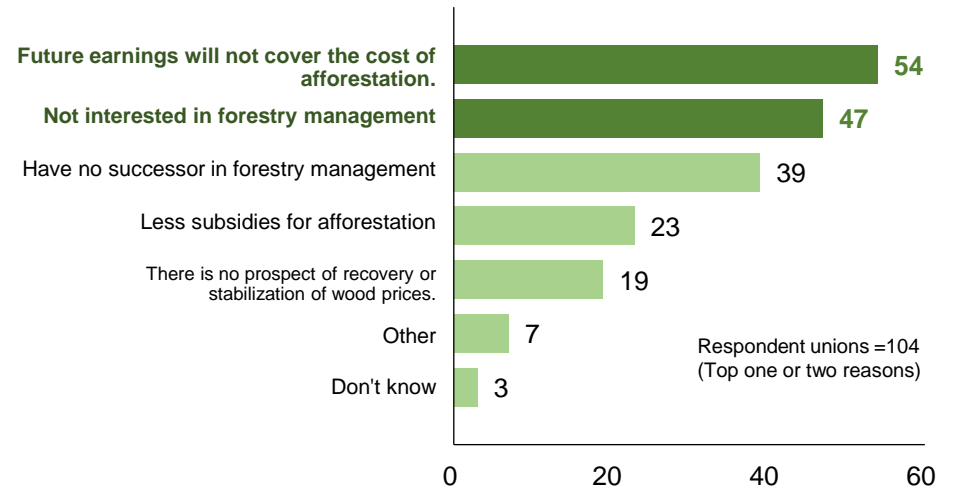
Takaso wooden building (2021)

Trends in wood supply and self-sufficiency



Source: Wood supply and demand sheet (Forestry Agency)

Reasons for not reforesting



* Norinchukin Research Institute, "Soken Report 'Results of the 29th Questionnaire Survey on Forest Owners' Cooperatives'"

* Intentions of union members as grasped by the forest owners' cooperatives

4-2. Wood use and TNFD disclosures

- Deforestation due to land conversion and illegal logging is the major factor of natural degradation worldwide, and TNFD disclosures require disclosure of the amount of wood and wood products procured under a sustainable management plan or certification program..
- Illegal logging causes deforestation and may have negative impacts on the mitigation of global warming and the formation of fair lumber markets.
- For this reason, it is important that the wood is checked for legality based on the Clean Wood Law. → For details, see page 60.
- Timber from forests covered by forest management plans* or from national forests as well as certified materials such as SGEC/PEFC and FSC can be wood whose legality is confirmed and wood from sustainable forest management.
- Domestic logs have almost no risk of deforestation and are rated as low risk. → For details, see page 61.

* If it can be confirmed that the forest can be renewed after felling by a forest management planning system or a protection forest system based on the Forest Act for the purpose of sustaining and cultivating forests, it can be confirmed that timber from the forest is produced from a sustainable forest.

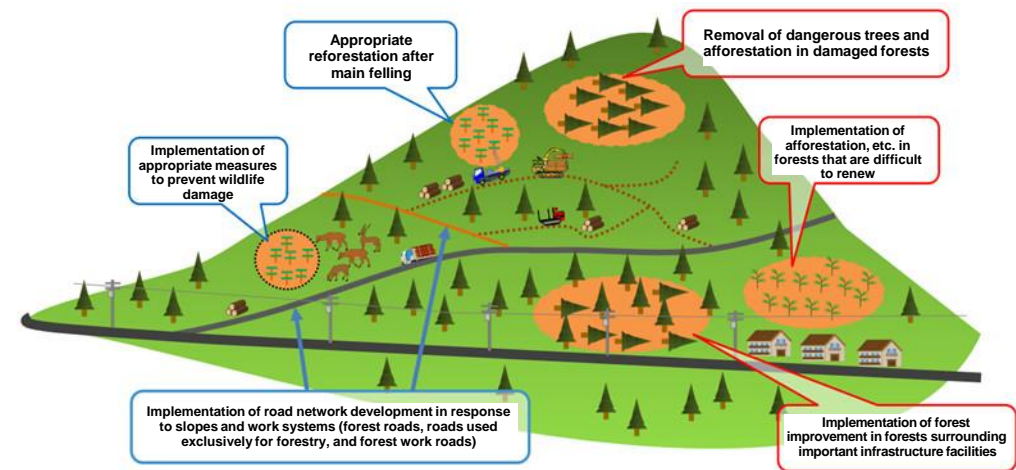
Outline of forest management planning

[Purpose]

- A forest management plan is a five-year plan for the management and protection of forests prepared by forest owners or persons entrusted with forest management for the purpose of enabling them to fully demonstrate the various functions of forests in substantial forests under their own management.

[Features of forest management plans]

- Prepare a plan that meets the criteria for the appropriate amount and scale of logging, planting, etc., and complies with the municipal forest improvement plan.
- Efforts to increase forest biodiversity (including monitoring) may be optionally described.



4-3. LEAP approach | Scoping

- The LEAP approach is a method of setting targets for a company's corporate activities by assessing its dependencies, impacts, risks, and opportunities in its relationship with nature.
- A company's capital and human resources are not unlimited. It is also important to narrow down information to be disclosed so that it is useful for investors and other users. The first step is to conduct scoping work to identify key issues.

STEP1:

Prioritize issues to be addressed while considering the company's financial and human resources.

What business activities depend on and affect forests and their functions (wood, water resources, sediment disaster prevention, etc.) and can lead to management risks and revenue opportunities?

STEP2:

Identify potential problematic activities and locations in the places of direct operations (offices, factories, etc.) and throughout the value chain (procurement of raw materials, processing of products, shipping and logistics, consumption, etc.)

STEP3:

Determine nature-related issues deemed important to the company, the time frame for consideration, and expected outcomes

Organize project teams and determine evaluators as necessary
Examine the method of obtaining budgets for initiatives and data used for evaluation

Perspectives by sector

- All companies
Forests and their functions cover a wide range of areas, including prevention of landslides and CO₂ fixation by using wood, and it is important to identify corporate activities related to these areas.
- Forestry
Logging, afforestation and nurturing, road network maintenance, etc. are the activities of forestry, and the places of operation are basically direct operations. It is necessary to pay attention not only to individual places of operation but also to area-wide forest management and maintenance of forest resources.
- Paper, pulp, and wood industries
The location of offices, factories, etc. is the location of direct operations, but it is necessary to consider the entire value chain, including the procurement of raw timber and product transport.
The raw timber procurement is especially essential for corporate activities, and it is important to confirm its legality and pay attention so that it does not adversely affect the maintenance of forest resources.
- Construction and real estate
The location of offices, construction sites, etc. is the location of direct operations, but it is necessary to pay attention to the breadth of the value chain from the forestry and wood industries to clients.
It is important to ensure that the procurement of wood products does not adversely affect the maintenance of forest resources, to confirm their legality, and to pay attention to reducing, fixing, and otherwise treating CO₂ emissions, including the selection of construction methods and materials.
- Beverages
The locations of offices, factories, etc. is the location of direct operations. In particular, the impact of groundwater pumping needs to be considered. It is important to pay attention to the entire value chain, including product transport and logistics.

4-4. LEAP approach | Locate

- Once scoping is complete, companies move on to “Locate,” which identifies areas where they may depend on and have impacts on nature. In particular, identify locations that are closely related to corporate activities as sensitive locations* and set priority locations where such areas and the company’s material locations overlap each other (→ For details, see page 16).

L1:

Identify the locations of the company's direct operations (offices, factories, etc.) and the scope of their activities in the entire value chain (procurement of raw materials, processing of products, shipping and logistics, consumption, etc.).

For example, (1) forest management for forestry, (2) raw timber procurement and product shipment for the timber industry, and (3) construction sites + (1) and (2) as part of the value chain for construction and real estate



L2:

Understand the degree of dependency and impact of the identified activities.

One way to do this is to use a tool called ENCORE for analysis. <https://encorenature.org/en>

Illustration of ENCORE analysis

SASB Sectors	Dependencies		Impacts						
	Soil quality	Water quality	Land use		Water use		Pollution		
			Land use	Water use	Air pollution	Solid waste pollution	Soil pollution	Water pollution	
1 Agricultural products and tobacco	High	High	High	High	Low	Low	Low	High	High
2 Consumer goods	Low	Low	Low	High	Moderate	Low	Moderate	Moderate	Moderate
3 Extractives and minerals processing	Low	Moderate	High	High	High	High	Moderate	High	High
4 Financials	Low	Low	Low	Low	Low	Low	Low	Low	Low
5 Food and beverage (ex. agriculture and tobacco)	Low	Moderate	Low	High	Low	Moderate	Low	Low	Low
6 Health care	Low	High	Low	High	Low	Moderate	High	High	High
7 Infrastructure (ex. utilities and generators)	Low	High	High	Low	Low	High	Low	Low	Low
8 Renewable resources and alternative energy	Low	High	Low	High	Low	Low	High	High	High
9 Resource transformation	Low	Low	Low	High	Moderate	High	High	High	High
10 Services	Low	Low	Low	Moderate	Low	Low	Moderate	High	High
11 Technology and communications	Low	Low	Low	Low	Low	Low	High	High	High
12 Transportation	Low	Low	Moderate	High	Moderate	Moderate	Moderate	High	High
13 Utilities and electricity generators	High	High	High	High	High	High	High	High	High

L3:

Identify the locations of corporate activities that are evaluated as moderate or higher in terms of dependencies and impacts by analysis such as ENCORE.

For example, (1) operation areas for forestry, (2) raw timber procurement and product shipping areas for the wood industry, and (3) construction sites + (1) and (2) for construction and real estate



L4:

Identify locations that meet one or more of the below-listed criteria as sensitive locations and establish priority locations where such areas and the company’s material locations overlap each other.

- Material locations for biodiversity
Legally protected locations, material locations for endangered species, etc.
- Locations with high ecological integrity
Locations, etc. that may contain significant opportunities for maintaining the provision of ecosystem services
- Locations with rapidly declining ecosystem integrity
Locations where forest management is not being conducted properly and the functions of forests are deteriorating, locations where business activity risks are high due to the deterioration of functions, etc.
- High physical water risk
Locations with a high risk of water shortage, flooding, and deterioration of water quality
- Locations where ecosystem services are of high importance to local stakeholders
Locations bioculturally important for indigenous peoples and local communities, locations where healthy ecosystems and biodiversity support local community lives, etc.

(Reference) LEAP approach | Locate: Identification of sensitive locations

Sector	Considerations in Identifying sensitive locations	
All industries	<ul style="list-style-type: none"> Identify corporate activities and their scope in direct operations (offices, factories, etc.) and in the entire value chain (procurement of raw materials, processing of products, shipping and logistics, consumption, etc.) and check whether the locations of activities meet the criteria for sensitive locations. 	
Forestry	(1) Importance of biodiversity	<ul style="list-style-type: none"> Check whether there are legally protected locations, locations that link protected locations to ensure continuity, and locations that are highly related to endangered or endemic species.
	(2) (3) Ecosystem integrity	<ul style="list-style-type: none"> Check whether, in business areas, there are locations that are at high risk in terms of deforestation and forest resource conservation (even if the state of the ecosystem of the forest concerned is evaluated as favorable, it is necessary to consider whether the forest should be designated as a sensitive location if the functions of surrounding forests are deteriorating).
	(4) High physical water risk	<ul style="list-style-type: none"> Check whether there are high-risk locations as typified by the drying of springs and streams in the past (including changes in rainfall patterns related to climate change) Consider impacts on the use of water resources by other stakeholders (water supply, aquaculture, agriculture, industry, etc.).
	(5) Importance of providing ecosystem services	<ul style="list-style-type: none"> Check whether there are matters to be considered in particular in terms of relationship with stakeholders in the local community, as forest ecosystems play an important role culturally and economically.
Paper and pulp Wood industry	(1) Importance of biodiversity (2) (3) Ecosystem integrity	<p>(Entire value chain)</p> <ul style="list-style-type: none"> Check whether suppliers of wood and wood products operate in high-risk locations or forests where legality and sustainability cannot be confirmed, whether in Japan or overseas. Check whether suppliers of wood and wood products operate in locations or forests that have not followed necessary renewal procedures properly to maintain forest resources (when procuring wood and wood products, it is necessary to consider whether forest owners trade at price levels that allow them to appropriate profits to reforestation after logging).
Construction and real estate	(4) High physical water risk (5) Importance of providing ecosystem services	
Beverages	<p style="text-align: center;">↓</p> <p>Common to forestry</p>	

* In addition to the TNFD guidance, what may need to be considered in relation to forests (such as checking of suppliers of wood and wood products) was added.

4-5. LEAP approach | Evaluate

- The Evaluate work assesses dependencies and impacts on nature in the priority locations set.
- The seriousness and scope of corporate activities' dependencies and impacts on nature in priority locations are assessed.

E1:

List the activities of the company and its value chain (procurement of raw materials, processing of products, shipping and logistics, consumption, etc.) and their impacts.



E2:

Organize specific details of impacts on ecosystem services based on a list of corporate activities, impacts on nature, etc.

E3:

Assess the seriousness and scope of corporate activities' dependencies and impacts on nature.

* If it is difficult to quantify, it is important to describe in qualitative terms.



E4:

Identify important items to be disclosed in consideration of the seriousness of corporate activities' dependencies and impacts on nature.

List of corporate activities and their dependencies and impacts on forests (examples)

Sector	Process	Forest functions on which corporate activities depend	Forest functions which corporate activities affect	Negative impacts	Positive impacts
Wood industry	Raw timber procurement	Material production	All functions	Forest functions decline if corporate activities are conducted unsustainably.	Forest functions improve if corporate activities are conducted sustainably.
	Processing and manufacturing (drying)	–	Global environmental conservation	CO ₂ emissions from heavy oil use	– (CO ₂ emissions are suppressed to a certain extent by using scrap materials, etc. for fuel)
	Product distribution	–	Global environmental conservation	CO ₂ emissions during transport	–
Construction and real estate	Land development	–	All functions	Deforestation	–
	Procurement of raw materials	Material production	Material production	Forest functions decline if corporate activities are conducted unsustainably.	Forest functions improve if corporate activities are conducted sustainably.
	Construction work	–	Global environmental conservation	CO ₂ emissions during construction	– (CO ₂ is fixed by selecting wooden structures)

* It should be kept in mind that when considering the TNFD in practice, it is necessary to assess the degree of dependencies and impacts on nature, not only forests.

➔ For specific examples, see pages 29-31.

(Reference) Multifunctionality of forests on which each sector depends

- Examples of the multifunctionality* of forests on which corporate activities depend by sector and business process are as shown below.

Sector/process		Multifunctionality of forests							
		Conservation of biodiversity	Global environmental conservation	Sediment disaster prevention/soil conservation	Cultivation of water sources	Creation of comfortable environments	Health and recreation	Culture	Material production
Forestry	Forest management	○	○	○	○	○			○
	Raw timber transport		○	○					○
Paper, pulp, and wood industries	Procurement of raw materials	○	○	○	○	○			○
	Processing and manufacturing			○	○				○
	Product distribution		○	○					○
Construction and real estate	Procurement of materials	○	○	○					○
	Construction				○				○
	Real estate management		○	○	○	○	○	○	
Beverages	Procurement of raw materials for beverages	○	○	○	○				
	Beverage production			○	○				
	Product distribution		○	○					

[*Types of multiple functions of forests]

- Biodiversity conservation functions: Conservation of genes, species, and ecosystems
- Global environment conservation functions: Mitigation of global warming and stabilization of the global climate
- Sediment disaster prevention/soil conservation functions: Prevention of surface erosion, surface layer collapse, and other sediment disasters as well as of avalanches of snow, winds, and snow
- Water source cultivation functions: Flood mitigation, water resource storage, and water purification
- Comfortable environment formation functions: Climate mitigation, air purification, and comfortable living environment formation
- Health and recreation functions: Recuperation, recreation, holiday-making, and sports
- Cultural functions: Landscape and scenic beauty, learning and education, arts, religion and festivals, traditional culture, and maintenance of regional diversity
- Material production functions: Wood, food, industrial raw materials, and craft materials

(Reference) Multifunctionality of forests affected by activities in each sector (1)

- Examples of activities that have negative impacts on the multifunctionality of forests by sector and business process are as shown below.

Sector/process		Conservation of biodiversity	Sediment disaster prevention/soil conservation	Cultivation of water sources	Global environmental conservation	
Forestry	Forest management	Degradation of multiple functions due to lack of appropriate forest maintenance and conservation				CO ₂ emissions from the use of forestry equipment
	Raw timber transport	<ul style="list-style-type: none"> Genetic disruption by planting invasive alien species Decline of vegetation due to failure to implement measures against damage by wild animals Decline of vegetation and soil runoff due to the construction of rough logging roads, etc. Decline of vegetation and soil runoff due to uncontrolled and large-area clear cutting 	<ul style="list-style-type: none"> Soil runoff due to the construction of rough logging roads, etc. Soil runoff due to uncontrolled and large-area clear cutting 	<ul style="list-style-type: none"> Soil runoff due to the construction of rough logging roads, etc. Oil leakage mainly due to failure of forestry equipment Pollution caused by improper use of agricultural chemicals and fertilizers 	Oil leakage mainly due to failure of transport vehicles, etc.	
Paper, pulp, and wood industries	Procurement of raw materials	Degradation of multiple functions due to the unsustainable procurement of raw timber (legality and maintenance of forest resources are not guaranteed)				CO ₂ Emissions from the procurement of raw timber from remote locations
	Processing and manufacturing	Disorderly development associated with plant construction	Disorderly development associated with plant construction	Pollution caused by improper use of agricultural chemicals and fertilizers	Improper wastewater treatment	
	Product distribution					CO ₂ emissions from fossil fuel use in wood drying and paper manufacturing processes
Construction and real estate	Procurement of materials	Degradation of multiple functions due to the unsustainable procurement of wood products (legality and maintenance of forest resources are not guaranteed)				CO ₂ emissions from delivery
	Construction	Uncontrolled land development	Uncontrolled land development	Uncontrolled land development Inadequate wastewater treatment	Uncontrolled land development CO ₂ emissions during construction	
	Real estate management	Decrease in native vegetation, etc. due to greening using non-native plants			CO ₂ emissions from air-conditioning facilities, etc.	
Beverages	Procurement of raw materials for beverages			Pollution caused by improper use of agricultural chemicals and fertilizers	CO ₂ emissions from the use of manufacturing machinery	
	Beverage production	Disorderly development associated with plant construction	Disorderly development associated with plant construction	Shortage of water sources due to heavy water intake Improper wastewater treatment	CO ₂ emissions from the use of manufacturing machinery	
	Product distribution				CO ₂ emissions from transport to remote areas	

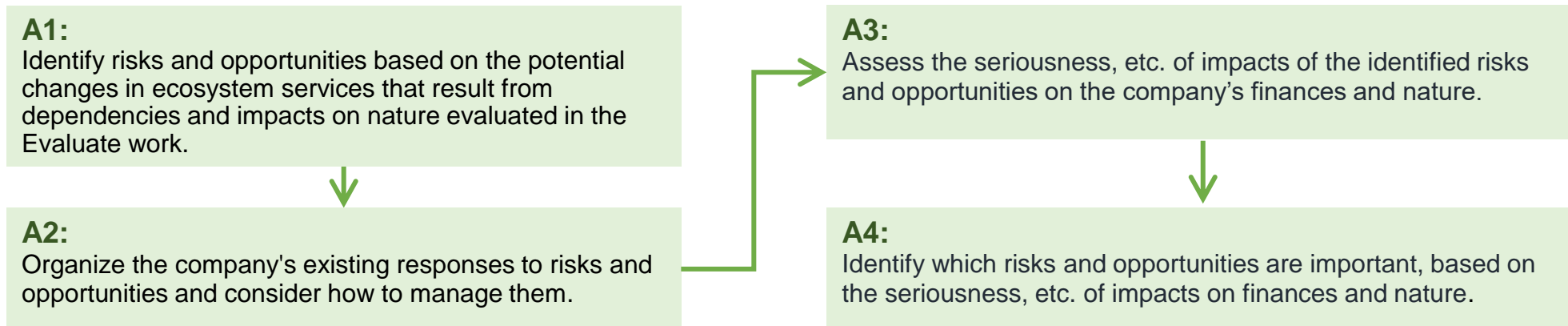
(Reference) Multifunctionality of forests affected by activities in each sector (2)

- Examples of activities that have negative impacts on the multifunctionality of forests by sector and business process are as shown below.

Sector/process		Creation of comfortable environments	Health and recreation	Culture	Material production	
Forestry	Forest management	Degradation of multiple functions due to lack of appropriate forest maintenance and conservation				
		Exhaust gas emissions from forestry equipment				Decrease in forest resources due to lack of reforestation
	Raw timber transport	Exhaust gas emissions from transport vehicles	Noise generated by vehicle traffic			
Paper, pulp, and wood industries	Procurement of raw materials	Degradation of multiple functions due to the unsustainable procurement of raw timber (legality and maintenance of forest resources are not guaranteed)				
						Suppression of reforestation through the procurement of raw timber at inappropriate prices
	Processing and manufacturing					
	Product distribution	Exhaust gas emissions from transport vehicles				
Construction and real estate	Procurement of materials	Degradation of multiple functions due to the unsustainable procurement of wood products (legality and maintenance of forest resources are not guaranteed)				
						Suppression of reforestation through procurement of wood products at inappropriate prices
	Construction	Uncontrolled land development				
	Real estate management					
Beverages	Procurement of raw materials for beverages					
	Beverage production					
	Product distribution	Exhaust gas emissions from transport vehicles				

4-6. LEAP approach | Assess

- After the Evaluate work is complete, the Assess work is performed. Based on the changes in ecosystem services caused by dependencies and impacts, potential risks of corporate management and opportunities such as risk measures and profit opportunities are listed.
- Important items are assessed mainly based on the degree of impacts on finances and nature.



List of corporate management risks and responses, etc. (examples of details related to forests and their functions*)

Sector	Process	Risk	Opportunity
Wood industry	Raw timber procurement	Decrease in forest resources due to lack of reforestation (raw timber procurement risk)	Securing forest resources sustainably through raw timber transactions with foresters on the premise of reforestation after felling
	Processing and manufacturing (drying)	Cost increase due to high fuel oil prices	Reduction in power purchase costs and Improvement of revenue from power sales due to woody biomass power generation
	Product distribution	Suspension of distribution due to severe flood damage such as heavy rain	
Construction and real estate	Land use	Deforestation due to uncontrolled development (decline in corporate value)	<ul style="list-style-type: none"> • Enhancing corporate value through biodiversity conservation and OECM registration, efforts that are not limited to conservation of green belts • Increase in revenue by creating carbon credits
	Procurement of raw materials	Soaring steel prices	<ul style="list-style-type: none"> • Reducing and fixing CO₂ emissions by choosing wooden materials and wooden buildings
	Construction work	Increase in CO ₂ emissions during construction (mandatory depreciation of emission allowances)	<ul style="list-style-type: none"> • Enhancing brand value and real estate value by using wooden buildings and wooden materials to contribute to improvement of well-being

* It should be noted that, when considering the TNFD in practice, it is necessary to identify risks and opportunities related not only to forests but also to nature.

Source: This slide has been created based on TNFD, "Guidance on the identification and assessment of nature-related issues: the LEAP approach" <https://tnfd.global/publication/additional-guidance-on-assessment-of-nature-related-issues-the-leap-approach/>.

4-7. LEAP approach | Prepare

- In the Prepare work, after measures to address the risks and opportunities examined in the Assess process are determined, indicators and targets are set to measure progress, and information is disclosed in accordance with the TNFD disclosure items.

P1:

Consider the allocation of corporate funds and human resources and formulate measures such as risk management and management strategy

The matters listed below should be considered when formulating the measures.

- Impacts on corporate management strategy and risk management
- Impacts on governance such as board oversight
- Impacts on capital and personnel allocation and finance

In determining the measures, top priority is given to avoiding and minimizing negative impacts on nature.

P2:

Establish indicators to measure progress and targets to be achieved for response measures

Examples of indicators and targets are:

- Forestry: 100% reforestation rate by 20XX
- Wood, construction, and real estate industries: 100% of the wood should be sustainably sourced by 20XX.
- Beverage industry: Increasing the volume of water sources cultivated to total water intake to XX% by 20XX

P3:

Select information and indicators to be disclosed and formulate a plan to achieve the targets
Prepare for disclosure mainly by strengthening corporate governance and confirming the transparency and appropriateness of information to be disclosed

TNFD disclosures lead to improved decision-making on corporate strategy, risk management, capital allocation, and asset valuation. In addition, nature-related risks and opportunities can be deepened further based on assessments of dependencies and impacts on nature.

P4:

Determine where and how information should be disclosed.

Disclosures must satisfy the following requirements:

- (1) Be in line with the TNFD Recommendations published by the TNFD
- (2) Be in conformity with IFRS's General Requirements for Disclosure of Sustainability-related Financial Information (S1)

4-8. TNFD disclosure items and indicators (common to all industries)

- The TNFD presents Global Core Disclosure Indicators for all industries and Sector Core Disclosure Indicators for each industry.
- It is recommended to establish and publish disclosure indicators common to all industries. However, the TNFD does not require all of these indicators to be disclosed immediately, because the characteristics of each industry differ and companies have different systems.
- In this case, it is important to describe the reasons why particular indicators cannot be established or publicly announced.

Table: Global Core Disclosure Indicators

Disclosure indicators related to dependencies and Impacts		Disclosure Indicators related to risks and opportunities	
Climate change	<ul style="list-style-type: none"> • GHG emissions 	Risks	<ul style="list-style-type: none"> • Amount of assets, liabilities, revenues, and expenses assessed as vulnerable to nature-related transition risks (total, and percentage of total) • Amount of assets, liabilities, revenues and expenses assessed as vulnerable to nature-related physical risks (total, and percentage of total) • Details of large fines, petty fines, and lawsuits incurred in the fiscal year concerned due to nature-related negative impacts, and the amount of each
Changes in land, freshwater, and marine use	<ul style="list-style-type: none"> • Total spatial footprint • Scope of changes in land, freshwater, and marine use 		
Contamination and decontamination	<ul style="list-style-type: none"> • Total amount of pollutants released to soil by type • Wastewater discharge • Generation and disposal of waste • Plastic pollution • Total amount of non-GHG air pollutants 	Opportunities	<ul style="list-style-type: none"> • Amount of capital expenditures defrayed, funds raised, or investments made for nature-related opportunities by type of opportunity with reference to the green investment taxonomy of governments or regulators or third-party industry or NGO taxonomies, where relevant
Resource use and replenishment	<ul style="list-style-type: none"> • Water intake and consumption from water-scarce areas • Volume of high-risk natural primary products procured from land, freshwater, and marine sources* 		
Invasive alien species, etc.	<ul style="list-style-type: none"> • Placeholder index (measures against unintentional introduction of invasive alien species) 		
State of nature	<ul style="list-style-type: none"> • Placeholder index (state of ecosystems and species extinction risk) 		

* Volume (tons) of high-risk natural primary products: Broken down by type and including their share in natural primary products They should be procured under a sustainable management plan or certification program. The percentage of such products to total high-risk natural primary products is included.

(Note) Disclosure indicators in bold are those related to the examples of indicators and targets shown below by sector.

4-9. TNFD disclosure items and indicators by sector

- Examples of disclosure items and indicators that correspond to the four pillars of the TNFD are shown below taking into consideration examples of disclosures, the characteristics of forests and forestry in Japan, and the situation of forests in Japan and abroad.
- When determining disclosure items and indicators in practice, companies should describe them based on their overall activities related to nature, not just forests.

Forestry			
Governance	Clarify a system for examining nature-related issues and measures to cope with them and reflecting them on business execution (oversight by the board of directors, role of management, policy for dialogue with stakeholders, etc.). (Addressing nature-related issues includes the organization's policies on indigenous peoples, local communities, and affected stakeholders)	Risk and impact management	Clarify the process of determining priority issues to be addressed such as the risks and profit opportunities faced by the company, the basis data, and the measures related to risk management.
	Describe (1) the extent to which corporate activities depend on and affect forests and their functions and (2) the effects of such dependencies and impacts on strategy and financial planning. Also disclose information on places of activities that fall under priority locations.		<ul style="list-style-type: none"> • Assess dependencies and impacts at internal meetings using data and other materials on the amount of profit and loss in the forest improvement unit and the amount of loss due to landslides. • Assess the relationship between the quality of materials and their unit price by comparing the unit price of wood sold with the history of forest management. • Identify appropriate forest management as a priority issue to realize both the demonstration of forest functions and the securing of revenues. • Assign staff responsible for managing risks and opportunities and set the rate of afforestation and thinning based on forest management plans as a monitoring indicator.
Strategy	<ul style="list-style-type: none"> • High degree of dependency and impact, because forest operations are conducted within forests • Select a method of operation according to zoning under the municipal forest improvement plan. Prepare forest management plans for all areas to ensure appropriate management and maintenance of forest resources. • The basic principle is to treat the riparian forest of the ○○ district as a sensitive location, because rare plants grow, and leave it to natural succession. • Increase profitability by selecting suitable forestry sites and implementing afforestation and wood production, and secure new profit opportunities through J-Credit. • Utilize the framework of the Forest Management and Administration Act for dialogues with stakeholders to create and share plans for forest development. 	Indicators and targets	Set indicators* and targets for managing dependencies and impacts on forests as well as risks and opportunities.
			<ul style="list-style-type: none"> • Area of sustainably managed forests (rate of formulation of forest management plans), area of OECD-registered areas, and area of protection forests for fish breeding • Ratio of thinning and reforestation to forests targeted for planned thinning. • Volume of wood produced from forests covered by management plans, certified forests, etc. • Whether there is vegetation with invasive alien species. • Profit from J-Credit, etc.

* Disclosure indicators need to be established based on the Global Core Disclosure Indicators shown on page 34, but only some of them are shown here.

4-9. TNFD disclosure items and indicators by sector

- Examples of disclosure items and indicators that correspond to the four pillars of the TNFD are shown below taking into consideration examples of disclosures, the characteristics of forests and forestry in Japan, and the situation of forests in Japan and abroad.
- When determining disclosure items and indicators in practice, companies should describe them based on their overall activities related to nature, not just forests.

Paper, pulp, and wood industries, etc. (companies using wood)			
Governance	Clarify a system for examining nature-related issues and measures to cope with them and reflecting them on business execution (oversight by the board of directors, role of management, policy for dialogue with stakeholders, etc.). (Addressing nature-related issues includes the organization's policies on indigenous peoples, local communities, and affected stakeholders)	Risk and impact management	Clarify the process of determining priority issues to be addressed such as the risks and profit opportunities faced by the company, the basis data, and the measures related to risk management.
	Describe (1) the extent to which corporate activities depend on and affect forests and their functions and (2) the effects of such dependencies and impacts on strategy and financial planning. Also disclose information on places of activities that fall under priority locations.		<ul style="list-style-type: none"> • Assess dependencies and impacts on forests and priorities at the board of directors mainly based on sales at the forest management, lumber, housing, and energy divisions. • Check regularly with suppliers for traceability to ensure that wood is legal wood and is sourced from sustainable forest management when it is procured. • Check the status of reforestation within the collection area based on administrative data to understand raw material procurement risks.
Strategy	<ul style="list-style-type: none"> • High degree of dependency and impact, because almost of the raw materials are raw timber. • Procure raw timber from sustainably managed forests, because procurement of raw materials is the foundation of corporate management. • Thoroughly confirm that the wood is legal and derived from sustainable forest management, both in Japan and overseas. • Trade domestic logs at a reasonable price for reforestation to ensure the preservation of forest resources. 	Indicators and targets	Set indicators* and targets for managing dependencies and impacts on forests as well as risks and opportunities.
	<ul style="list-style-type: none"> • Convert the boilers of drying facilities from fossil fuels to wood biomass to reduce CO₂ emissions. Improve profitability through cogeneration. • Increase the added value of wood products by handling wood from certified forests and forest management plans addressing biodiversity. • Enter into agreements with forest owners' cooperatives responsible for forest management and build networks with various stakeholders and coordinate them. 		<ul style="list-style-type: none"> • Area of green zones and OECM-registered areas at factory sites under management, etc. • Amount of wood produced from forests covered by management plans, certified forests, etc. that procure legal wood and wood derived from sustainable forest management among the consumption of raw timber. • Compare raw material procurement prices (converted per hectare based on standard storage) and reforestation costs.

* Disclosure indicators need to be established based on the Global Core Disclosure Indicators shown on page 34, but only some of them are shown here.

4-9. TNFD disclosure items and indicators by sector

- Examples of disclosure items and indicators that correspond to the four pillars of the TNFD are shown below taking into consideration examples of disclosures, the characteristics of forests and forestry in Japan, and the situation of forests in Japan and abroad.
- When determining disclosure items and indicators in practice, companies should describe them based on their overall activities related to nature, not just forests.

Construction and real estate (companies involved in land development and using wood products)			
Governance	Clarify a system for examining nature-related issues and measures to cope with them and reflecting them on business execution (oversight by the board of directors, role of management, policy for dialogue with stakeholders, etc.). (Addressing nature-related issues includes the organization's policies on indigenous peoples, local communities, and affected stakeholders)	Risk and impact management	Clarify the process of determining priority issues to be addressed such as the risks and profit opportunities faced by the company, the basis data, and the measures related to risk management.
	Strategy		Describe (1) the extent to which corporate activities depend on and affect forests and their functions and (2) the effects of such dependencies and impacts on strategy and financial planning. Also disclose information on places of activities that fall under priority locations.
		<ul style="list-style-type: none"> • Measure the impact of land development on groundwater at the planning stage and reflect it on planning. • Enhance corporate value mainly by contributing to local environmental conservation, etc. through utilization of green infrastructure, thus winning favorable evaluations among customers, shareholders, and other stakeholders. • Thoroughly confirm that wood is legal wood and derived from sustainable forest management when it is procured, whether in Japan and abroad. • Strive for carbon fixation through the conversion of offices to wood and wood materials, and improve the well-being of employees, etc. and labor productivity. • Enhance corporate image by entering into agreements with local governments and promoting the use of local resources. 	Indicators and targets
			<ul style="list-style-type: none"> • Volume of wood substituted for construction materials (iron, concrete, etc.) • Amount of wood used which is produced from forests covered by management plans, certified forests, etc. so that it is legal and procured from sustainable forest management • Area of green zones and OECM-registered areas at factory sites under management, etc. • New businesses resulting from the substitution of forest resources from fossil resources and increase in and the percentage of their revenues, etc.

* Disclosure indicators need to be established based on the Global Core Disclosure Indicators shown on page 34, but only some of them are shown here.

4-9. TNFD disclosure items and indicators by sector

- Examples of disclosure items and indicators that correspond to the four pillars of the TNFD are shown below taking into consideration examples of disclosures, the characteristics of forests and forestry in Japan, and the situation of forests in Japan and abroad.
- When determining disclosure items and indicators in practice, companies should describe them based on their overall activities related to nature, not just forests.

Beverages (companies that use a lot of water)			
Governance	Clarify a system for examining nature-related issues and measures to cope with them and reflecting them on business execution (oversight by the board of directors, role of management, policy for dialogue with stakeholders, etc.). (Addressing nature-related issues includes the organization's policies on indigenous peoples, local communities, and affected stakeholders)	Risk and impact management	Clarify the process of determining priority issues to be addressed such as the risks and profit opportunities faced by the company, the basis data, and the measures related to risk management.
	Describe (1) the extent to which corporate activities depend on and affect forests and their functions and (2) the effects of such dependencies and impacts on strategy and financial planning. Also disclose information on places of activities that fall under priority locations.		<ul style="list-style-type: none"> • Assess the priority of dependencies and impacts on the water source cultivation functions of forests at the board of directors using data and other materials on total water consumption for production and water intake at factories. • Monitor groundwater level fluctuations and manage water intake to ensure sustainable water supply. • Visualize and publicize the effects of water source cultivation and biodiversity conservation through forest improvement upstream of water sampling sites.
Strategy	<ul style="list-style-type: none"> • Work on the maintenance and conservation of forests in the upper reaches of the watershed to ensure stable and high-quality water supply to secure groundwater and other water resources. • Strive for better corporate image and product branding by promoting the cultivation of good quality water. • Reduce water consumption by introducing water-saving facilities and reusing water. • Prevent natural disasters in plant areas through appropriate forest improvement and conservation in the water intake basin of the plant. • Establish a forum for regular exchange of opinions on water management in cooperation with various stakeholders, including local community residents, governments, and forest owners' cooperatives responsible for forest management, in order to secure stable water resources. 	Indicators and targets	Set indicators* and targets for managing dependencies and impacts on forests as well as risks and opportunities.
			<ul style="list-style-type: none"> • Water conservation ratio based on data on water intake and water consumption • Area of protected forests for water source cultivation, area of OECM registered areas, and area of water source cultivation activity areas in surrounding forests at managed factories and other sites • Increase in revenue and the percentage of revenue due to product branding through forest improvement and conservation efforts

* Disclosure indicators need to be established based on the Global Core Disclosure Indicators shown on page 34, but only some of them are shown here.

4-9. TNFD disclosure items and indicators by sector

- Examples of disclosure items and indicators that correspond to the four pillars of the TNFD are shown below taking into consideration examples of disclosures, the characteristics of forests and forestry in Japan, and the situation of forests in Japan and abroad.
- When determining disclosure items and indicators in practice, companies should describe them based on their overall activities related to nature, not just forests.

All companies			
Governance	<p>Clarify a system for examining nature-related issues and measures to cope with them and reflecting them on business execution (oversight by the board of directors, role of management, policy for dialogue with stakeholders, etc.). (Addressing nature-related issues includes the organization's policies on indigenous peoples, local communities, and affected stakeholders)</p>	Risk and impact management	<p>Clarify the process of determining priority issues to be addressed such as the risks and profit opportunities faced by the company, the basis data, and the measures related to risk management.</p> <div style="border: 1px dashed black; padding: 10px;"> <ul style="list-style-type: none"> • Assess the degree of dependencies and impacts on forests and priorities at the board of directors mainly based on sales at the procurement division. • Check regularly with suppliers for traceability to ensure that wood is legal wood and is sourced from sustainable forest management when it is procured. • Select materials and construction methods by grasping the amount of CO₂ generated during the entire life cycle of buildings. • Visualize and publicize the effects of forest improvement, etc. </div>
Strategy	<p>Describe (1) the extent to which corporate activities depend on and affect forests and their functions and (2) the effects of such dependencies and impacts on strategy and financial planning. Also disclose information on places of activities that fall under priority locations.</p> <div style="border: 1px dashed black; padding: 10px;"> <ul style="list-style-type: none"> • Thoroughly confirm that wood is legal wood and derived from sustainable forest management when it is procured, whether in Japan and abroad. • Strive to fix carbon and replace materials with renewable ones, and improve the well-being of employees, etc. and labor productivity by converting offices to wood and wood materials. • Established a forum for regular exchange of opinions to conserve the environment of the entire watershed, including forest improvement, in cooperation with various stakeholders such as governments, companies, residents, and forest owners' cooperatives to avoid the risk of floods, droughts, and sediment disasters caused by surface layer collapse in business areas that provide the foundation of management. • Generate J-Credit by entering into agreements with local governments, etc. to work for forest improvement and conservation, thereby reducing CO₂ emissions from the company and contributing to sales to local industries. </div>	Indicators and targets	<p>Set indicators* and targets for managing dependencies and impacts on forests as well as risks and opportunities.</p> <div style="border: 1px dashed black; padding: 10px;"> <ul style="list-style-type: none"> • Volume of wood substituted for construction materials (iron, concrete, etc.) • Amount of wood used which is produced from forests covered by management plans, certified forests, etc. so that it is legal and procured from sustainable forest management • Area of OECM-registered areas among managed factory and other sites • Increase in new revenues such as J-Credit generation through forest improvement and conservation and the percentage of such revenues </div>

* Disclosure indicators need to be established based on the Global Core Disclosure Indicators shown on page 34, but only some of them are shown here.

4-9. TNFD disclosure items and indicators by sector

- Details of forest-related indicators in the examples of indicators shown on pages 35 to 39 are as indicated below.

Category	Examples of indicators	Sectors describing indicators	References, etc.
Sustainable forest management	Percentage of forests covered by forest management plans under the Forest Act (Act No. 249 of 1951) to the area of forests owned or managed under contract management	Forestry and companies that own forests	
	Percentage of thinning area to the area of forests subject to systematic thinning under forest management plans	Forestry	
	Percentage of reforestation area to the main felling area	Forestry	
Promotion of biodiversity	Percentage of those of certified forest management plans which include efforts to increase biodiversity as part of their long-term policy	Forestry	
	Percentage of OECM-registered areas to total forests owned or managed under contract management, etc.	Forestry and companies that own forests	Those of sites designated as Nationally Certified Sustainably Managed Natural Sites under the Act on Promoting Activities to Enhance Regional Biodiversity (Act No. 18 of 2024) which are of maintenance type
	Area of forests on owned or managed land (plants, office buildings, etc.) and the percentage of OECM-registered areas in the forests	All companies, including forestry, pulp and paper, wood, construction, real estate, and beverage	
	Percentage of native plants used in greening operations	Construction and real estate	Guidelines for Slope Greening in Natural Parks (Ministry of the Environment)
Sustainable use of wood	Percentage of raw timber produced from forests covered by forest management plans, certified forests, etc. to the total amount of raw timber procured	Paper, pulp, and wood industries	
	Percentage of wood and other products whose legality has been confirmed in accordance with the Act on Promotion of Use and Distribution of Legally Harvested Wood and Wood Products (Act No. 48 of 2016) to the total wood and other products handled	Wood-related businesses such as pulp and paper, wood, construction, and real estate	
	Percentage of raw timber procurement prices (converted per hectare using standard forest stocks) to standard reforestation and nursery costs	Paper, pulp, and wood industries	<ul style="list-style-type: none"> • Standard unit price for forest improvement projects (prefectures) • Forest accumulation by age class (Forestry Agency)
CO ₂ reduction, absorption, and fixation	Amount of J-Credit forest absorption yields and profits from forests owned or managed under contract management	Forestry and companies that own forests	
	Amount of carbon stored through wood use in owned or managed buildings (or constructed)	All companies, including forestry, pulp and paper, wood, construction, real estate, and beverage	Guidelines for indication of the amount of carbon stored for wood used in buildings (Forestry Agency)
	Amount of CO ₂ emissions reduced by replacing fossil fuels with woody biomass-derived fuels in heat source facilities (boilers, etc.) at company buildings, factories, etc.	All companies, including forestry, pulp and paper, wood, construction, real estate, and beverage	J-Credit Methodology No. EN-R-001 (substitution of fossil fuels or grid electricity by biomass solid fuel (woody biomass)), etc.
	Amount of CO ₂ emitted during the entire life cycle of buildings from material production to construction to use (renovation, etc.) to demolition	Construction, real estate, and other companies	J-CAT (Institute for Built Environment and Carbon Neutral for SDGs), etc.
Cultivation of water sources	Groundwater level of observation wells in the vicinity of sampling sites	Beverages	
	Amount of forest development upstream of water sampling areas	Beverages	
	Amount of water source cultivation through forest development and conservation upstream of water sampling sites	All companies, including Beverages	

* Examples of indicators in blue are examples of indicators proposed in the TNFD Guidance adapted to the forest situation in Japan.

5. References



5-1. Explanation of the TNFD recommendations

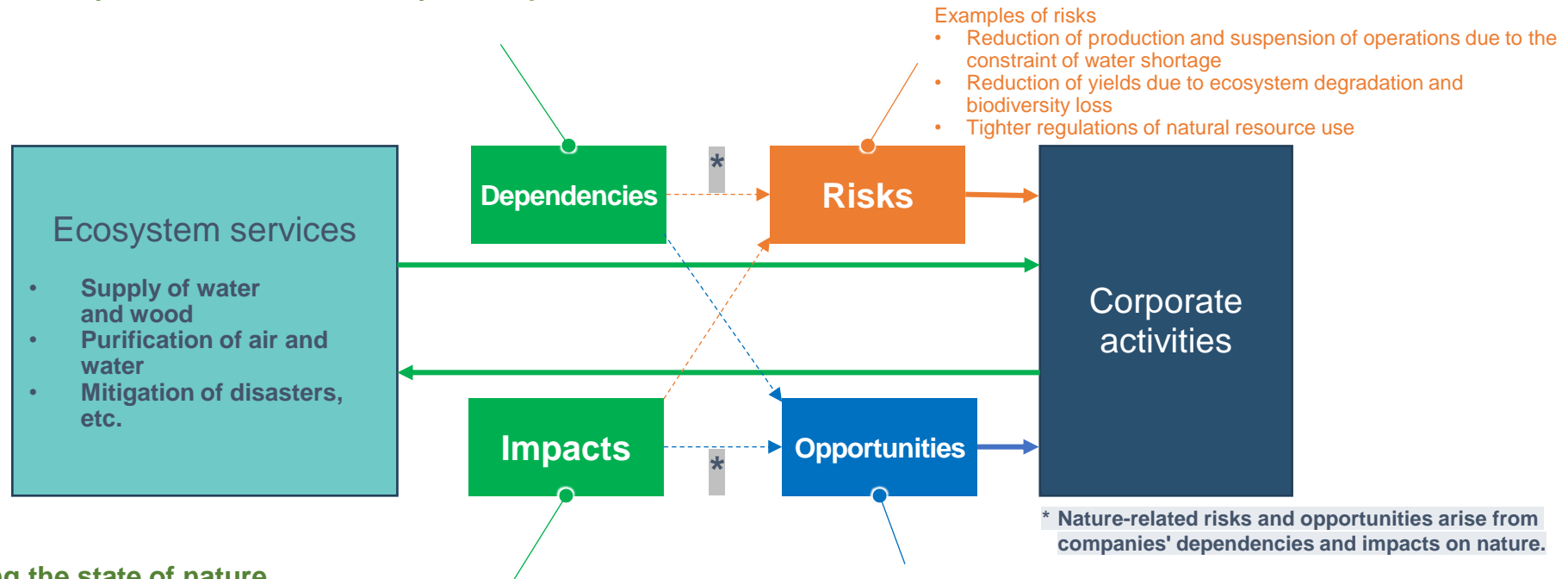


5-1. Dependencies, impacts, risks, and opportunities in the TNFD

- All companies depend on ecosystem services from nature and operate with impacts that change the state of nature.
- Dependencies and impacts on nature give rise to risks, which are potential nature-related threats to companies, and opportunities, which are activities that generate positive outcomes.
- In formulating business strategy, it is important for companies to identify and manage nature-related risks and opportunities for themselves based on their understanding of their dependencies and impacts on nature and to respond to such risks and opportunities, including the maintenance and restoration of nature.

Ecosystem services necessary for corporate activities

Potential threats to companies



Changing the state of nature (resulting in the improvement and loss of ecosystem services)

- Examples of Impacts (Left: Factors for impacts; Right: Impacts on nature)
- Large amount of water used ⇒ Depletion of water sources
 - Unsustainable forest management ⇒ Forest loss and degradation
 - Development and conservation of forests ⇒ Fulfilment of the multifunctionality of forests

Activities that generate positive results for companies and nature

- Examples of opportunities
- Provision of new products and services with reduced water consumption
 - Enhancement of corporate image through sustainable forest management
 - Conservation of areas with high biodiversity for improved ecosystem services

5-1. Trade-off relationship with Nature Positive

- Depending on the method, there may be a trade-off between the transition to Nature Positive and Carbon Neutral. For example, re-planting of a single tree species using an alien tree species for the purpose of CO₂ absorption and the introduction of renewable energy facilities which results in deforestation may contribute to carbon neutrality but may adversely affect forest biodiversity.
- A December 2024 IPBES assessment report on the interconnectedness of the five factors of biodiversity, water, food, health, and climate showed that the nature orientation and balanced sustainability scenarios had positive impacts on all five factors.
- It suggested, on the other hand, that a scenario that was close to maintaining the status quo (food first and overuse of nature) would have negative impacts on multiple factors, including biodiversity, and that a scenario that prioritized climate would also have negative impacts on biodiversity and food.

■ Interconnectedness of the five factors of biodiversity, water, food, health, and climate

Only the sustainability scenario has positive impacts on all five factors.

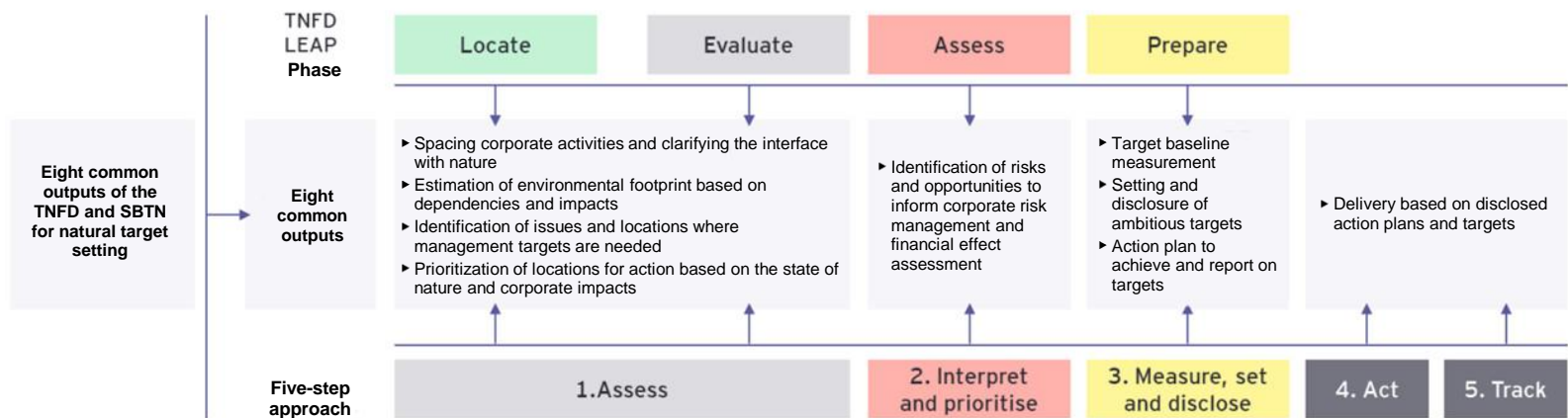
Nexus archetype	Nexus element					Impacts on each nexus element under each nexus archetype
	Biodiversity	Water	Food	Health	Climate	
1. Nature-oriented nexus	▲▲	▲	▲	▲	▲▲	▲▲▲ Highly positive
2. Balanced nexus	▲	▲	▲▲	▲▲	▲	▲▲ Moderately positive
3. Conservation first	▲▲	~	▼	~	▲	~ Variable
4. Climate first	▼	~	▼	▲	▲▲	▼ Slightly negative
5. Food first	▼	▼	▲	▲	▼	▼ Moderately negative
6. Nature overexploitation	▼	~	▼	▼	▼	▼ Highly negative

There may be a trade-off between Nature Positive and Carbon Neutral. (Example: The re-planting of a single tree species using an alien tree species for the purpose of CO₂ absorption may adversely affect forest biodiversity.)

Source: Adapted from Figure SPM.5. Projected future impacts of nexus scenario archetypes on the nexus elements and their interactions. IPBES (2024). Summary for Policymakers of the Thematic Assessment Report on the Interlinkages among Biodiversity, Water, Food, and Health of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. McElwee, P. D., Harrison, P. A., van Huysen, T. L., Alonso Roldán, V., Barrios, E., Dasgupta, P., DeClerck, F., Harmáčková, Z. V., Hayman, D. T. S., Herrero, M., Kumar, R., Ley, D., Mangalagiu, D., McFarlane, R. A., Paukert, C., Pengue, W. A., Prist, P. R., Ricketts, T. H., Rounsevell, M. D. A., Saito, O., Selomane, O., Seppelt, R., Singh, P. K., Sitas, N., Smith, P., Vause, J., Molua, E. L., Zambrana-Torrel, C., and Obura, D. (eds.). IPBES secretariat, Bonn, Germany. DOI: <https://doi.org/10.5281/zenodo.13850290>

5-1. Setting targets for SBTs for Nature

- The TNFD recommends that companies use a method developed by the Science Based Targets Network (SBTN) when applying the TNFD recommendations and setting targets.
- The joint TNFD and SBTN Guidance for Corporations on Science-Based Targets for Nature outlines the five steps for setting science-based nature targets (nature SBTs) by the SBTN and describes the data requirements for each step.
- The SBTN provides technical guidance on freshwater and terrestrial areas as of February 2025 for measuring, setting, and disclosing Step 3 targets. (Technical guidance on oceans to be provided in 2025)



* The TNFD LEAP approach and the SBTN approach have eight common outputs. Organizations using either approach will create these eight common outputs. These are not the only outputs required for organizations to reference TNFD disclosure recommendations or report using the SBTN methodology.



Figure: Basic match between the TNFD and SBTN for target setting

Composed of three targets for terrestrial areas

1. No transformation of natural ecosystems
2. Reduction in land use
3. Landscape Initiatives

Requirements for targets of initiatives for landscape (example)

- When purchasing from producers
 - Volume of high-impact commodities from each procurement area
- When purchasing from companies after producers
 - Procurement area for high-impact commodities purchased
 - Volume of high-impact commodities procured

5-1. LEAP approach | Scoping (tools and datasets)

- Examples of tools and datasets are provided to support scoping discussions and decisions.

Category	Recommended tools and datasets
Examination of problems potentially related to nature	Allianz – Measuring and managing environmental exposure: A business sector analysis of natural capital risk
	ENCORE
	Finance for Biodiversity – The Climate-Nature Nexus
	Integrated Biodiversity Assessment Tool (IBAT)
	The Netherlands Enterprise Agency – Biodiversity Footprint Financial Institutions: Exploring Biodiversity Assessment
	Partnership for Biodiversity Accounting Financials
	Science Based Targets Network Materiality Screening Tool
	Swiss Re Institute BES Index – Biodiversity and Ecosystem Services: A business case for Re/insurance
	UNEP, UNEP FI and Global Canopy – Beyond ‘Business as Usual’: Biodiversity targets and finance. Managing biodiversity risks across business sectors
	UN Environment Programme World Conservation Monitoring Centre & UN Environment Programme Finance Initiative - Prioritising Nature-related Disclosures
World Economic Forum (WEF) – Nature Risk Rising	
Case studies of nature-related issues	Capitals Coalition Case Studies database
	CISL – Integrating Nature: Case for Action
	Monetary Authority of Singapore – Information Papers on Environmental Risk Management
	NGFS – Central banking and supervision in the biosphere: An agenda for action on biodiversity loss, financial risk and system stability
	UNEP FI – Guidance on Biodiversity Target Setting

5-1. LEAP approach | Locate (tools and datasets)

- Examples of tools and datasets are provided to support examination of the Locate phase (L2, L3).

Step	Recommended tools and datasets
L2: Screening of dependencies and impacts	ENCORE
	SBTN's High Impact Commodity List
	SBTN's Materiality Screening Tool
	The CDP Water Impact Index
	The Integrated Biodiversity Assessment Tool (IBAT)
	Trase
	The WWF Biodiversity Risk Filter
L3: Interface with nature	Global Map of Ecoregions
	Integrated Biodiversity Assessment Tool (IBAT)
	Critical Habitat Screening Layer (UNEP-WCMC)
	Ocean+
	Global Forest Watch
	Trends.Earth
	HabitatMapper
	Resource Watch

5-1. LEAP approach | Locate (tools and datasets)

- Examples of tools and datasets are provided to examine sensitive locations in the Locate phase (L4).

Criteria	Recommended tools and datasets
Importance of biodiversity	World Database on Protected Areas(WDPA)
	Key Biodiversity Areas
	Ecologically or Biologically Significant Marine Areas (EBSAs)
	Important Marine Mammal Areas
	IUCN Red List of Threatened Species
	Minimum threshold for the Species Threat Abatement and Restoration (STAR) metric
	Ocean+ Data Viewer marine biodiversity spatial datasets
	IUCN Red List of Ecosystems, seamounts or coastal upwellings
	Ocean+ Habitat datasets
	World Database of Ecological Corridors
	Eurasian African Bird Migration Atlas
	Atlas on Migratory Ungulates (under development by Global Initiative on Ungulate Migrations (GIUM))
Integrity of ecosystems	EII – Ecosystem Integrity Index
	IUCN Red List of Ecosystems database
	EAI - Ecosystem Area Index
	EHI - Ecosystem Health Index
	ErII - Ecoregion [Ecosystem] Intactness Index
	The Natural History Museum – Biodiversity Intactness Index (BII)

Criteria	Recommended tools and datasets
Importance of ecosystem services	Indigenous Peoples' and community conserved territories and areas (ICCAs)
	Global Land Governance Index LANDex Indicators
	The Indigenous Navigator
	LandMark (also available in the Global Forest Watch map)
	ENCORE (that contains hotspots of natural capital depletion spatial layers)
	InVEST (quantifies, maps and values ecosystem services)
	TESSA
	Ocean Wealth (maps ocean ecosystem services)
	Critical Natural Asset layers
	Physical risks of water
WWF Water Risk Filter	
Ocean+ for information on marine biodiversity and critical marine and coastal habitats.	

5-1. LEAP approach | Evaluate, Assess and Prepare (tools and datasets)

- Examples of tools and datasets are provided to support examination of the Evaluate-Prepare phase.

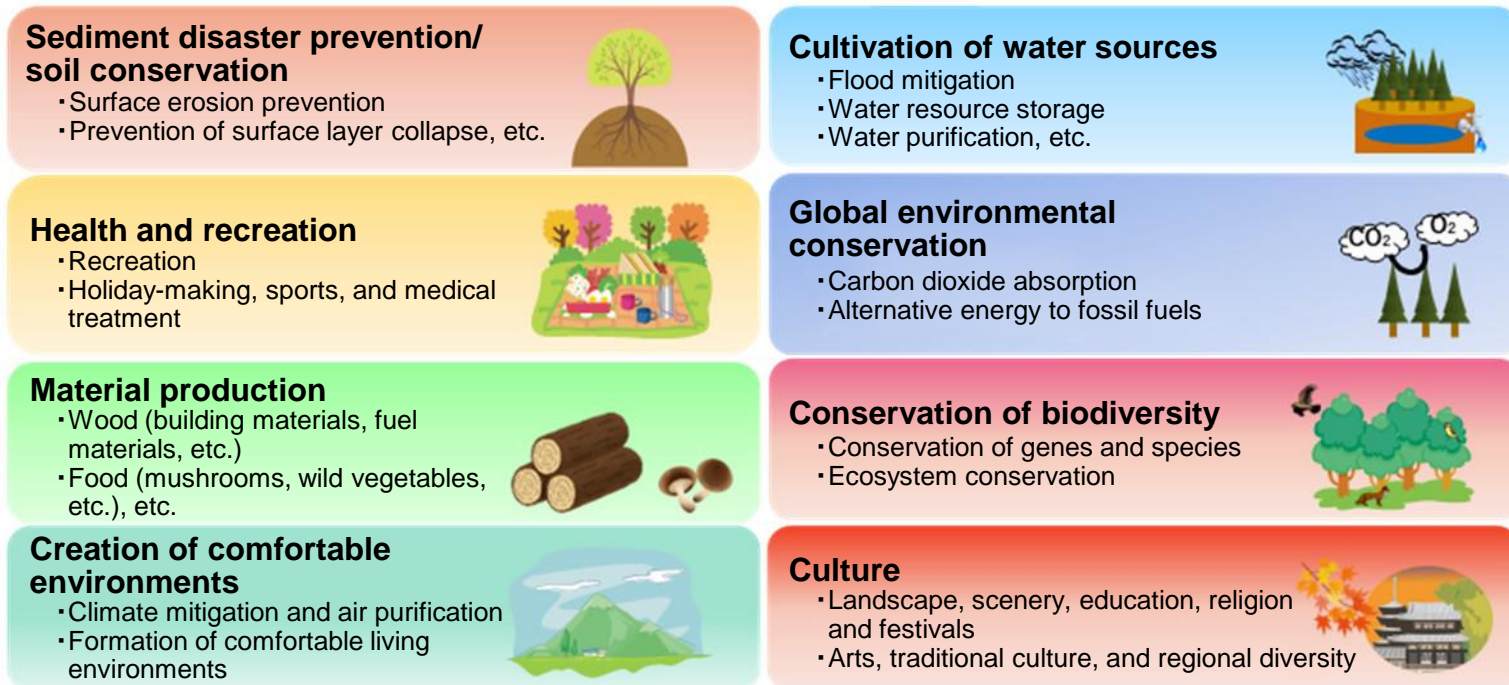
Phase	Recommended tools and datasets
Evaluate	The Economics of Ecosystems and Biodiversity (2012) TEEB in business and enterprise;
	Capitals Coalition (2016) The Natural Capital Protocol, with associated sector guidance and supplements;
	Transparent Project
	Align Project
	Life Cycle Analysis will also be helpful and is summarised through the European Platform on LCA
	ENCORE
	UNEP and S&P (2023) Nature risk profile Methodology
	Further projects including transparency criteria for the use of value factors, which are coordinated through the Capitals Coalition
	Further tools available in the TNFD Tools Catalogue
Assess	Suggested metrics for nature-related risks and opportunities (Annex 1.2: Assess – Risk and opportunity metrics)
	Guidance on valuation of dependencies and impacts on nature, prepared with the Capitals Coalition and based on the Natural Capital Protocol (Annex 3)
	Guidance on risk assessment methods for measuring nature-related risks and opportunities (Annex 4: Risk assessment methods)
	TNFD guidance on scenario analysis
	Nature-related risk and opportunity registers
Prepare	TNFD Recommendations
	SBTN guidance on setting science-based targets for Nature
	Guidance on disclosure presentation by relevant standards bodies
	ISSB's IFRS-S1 General Requirements for Disclosure of Sustainability-related Financial Information

5-2. Methods for disclosure of TNFD information in the forest sector

5-2. Multifunctionality of forests

- In addition to national land conservation, water resource cultivation, biodiversity conservation, the supply of forest products, etc., forests have functions such as the formation of comfortable environments and health and recreation. This is called the "multifunctionality of forests."
- This multifunctionality is green social capital that brings various benefits to people's lives. It is called "ecosystem services*" in the TNFD recommendations.
- In planted forests in particular, the manifestation of multifunctionality is considered to vary depending on the degree of management and administration by forest owners, etc. Thinning, etc., allows light to enter the forest floor and understory vegetation to develop, thereby maintaining and improving functions such as water source cultivation and prevention of surface erosion.
- The multifaceted characteristics of forests are enhanced by the mutual influence of forest stands that constitute groups of trees and the overlapping performance of various functions.

* The TNFD recommendations classify ecosystem services into three categories: supply services, regulation and maintenance services, and cultural services.



Source: Science Council of Japan report "Evaluation of the multifunctionality of agriculture and forests related to the global environment and human life"

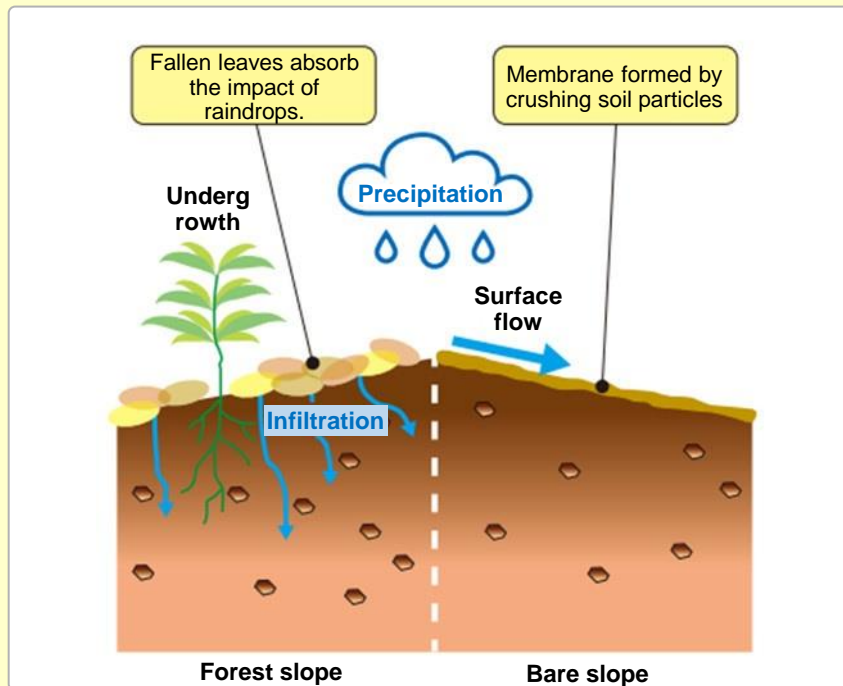
5-2. Multifunctionality of forests (mountain disaster prevention function/soil conservation function)

- The growth of understory vegetation such as shrubs and herbs on the forest floor, the accumulation of fallen leaves, and the development of forest soil reduce the occurrence of surface flow and improve the infiltration capacity of soil. Thus, surface erosion (*1) is prevented.
- In addition, roots that grow in forest soil hold soil layers together and act so that they do not collapse. This prevents surface layer collapse (*2). Furthermore, there are disaster prevention functions such as protection against flying sand, wind damage, flood damage, tide damage, drought damage, snow damage, or fog damage.

*1. Surface erosion occurs when precipitation does not sufficiently penetrate into the ground and flows down a slope on the ground surface.

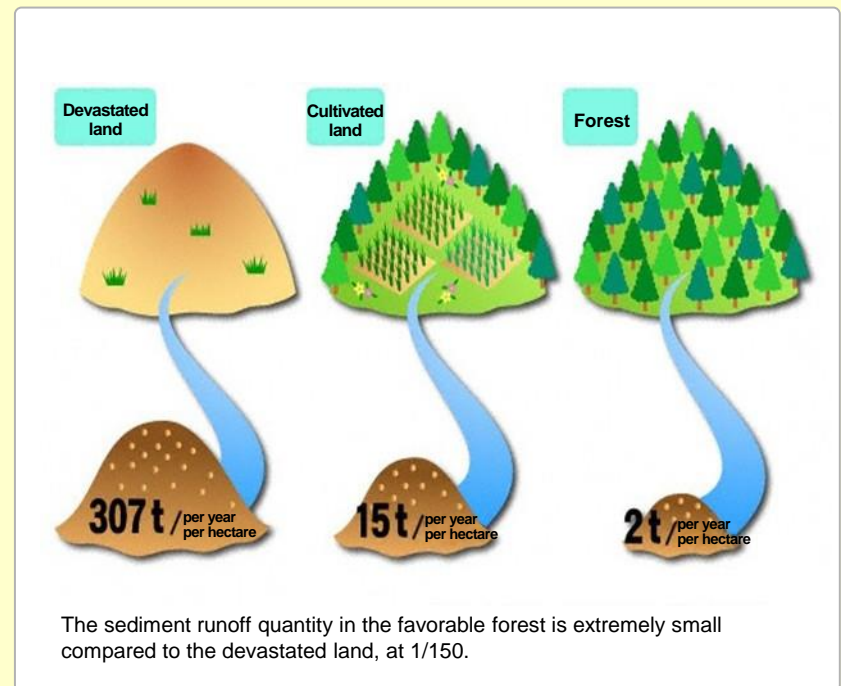
*2. Surface layer collapse refers to the collapse of soil layers within the reach of forest root systems due to torrential rain, etc. In many cases, it occurs along the boundary between the soil layers and the base rock layer.

Surface erosion prevention function



Source: This figure has been created by the Forestry Agency based on "Toward a new world of science (3): Learning from the mechanisms of natural disasters" (2021), which was specially supervised by Takehiko Ota and Akira Fujishima.

Examples of comparison of sediment discharge amounts



The sediment runoff quantity in the favorable forest is extremely small compared to the devastated land, at 1/150.

Source: Iwazo Maruyama, "Forest hydrology," Jissen Ringyo Daigaku, 1970

5-2. Multifunctionality of forests (water source cultivation function)

- The rain that falls on forests reaches the canopy, and part of it returns to the atmosphere, but the rainwater that reaches the forest floor as throughfall or stemflow permeates the forest soil and is stored.
- The stored rainwater flows into rivers over a long period of time and seeps into the ground to form groundwater veins. In this process, water quality is purified by passing through forest soil and bedrock.
- Forests play an important role in the stable use of agricultural, industrial, and drinking water through their ability to cultivate water sources.

(1) Flood mitigation

Forests allow rainwater to penetrate and gradually flow into rivers, thus reducing or delaying peaks in river flow during rainfall.

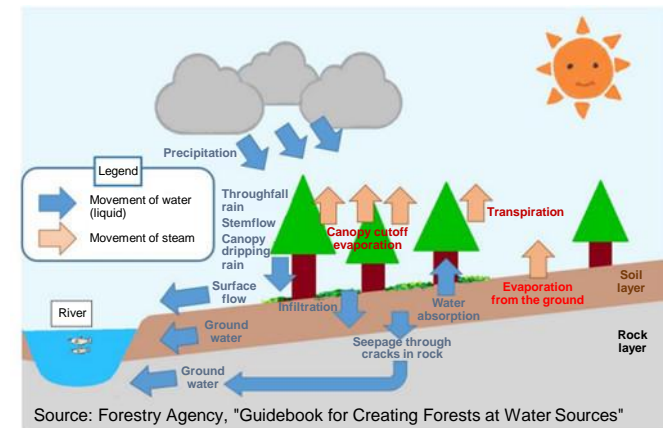
(2) Storage of water resources

The runoff of water stored in deep areas such as forest soil and bedrock allows rivers to maintain a constant flow rate without drying up even during periods of no rain.

(3) Purification of water quality

Water stored in forest soil and bedrock is filtered of impurities and added with minerals before it flows out, resulting in good quality water.

Movement of water in forests



[Industries that use a lot of water]

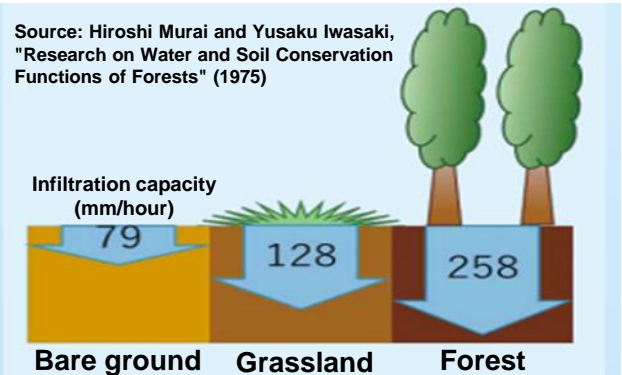
- A look at the share of industrial freshwater consumption by industry indicates that the three industries of the chemical; iron and steel; and pulp, paper, and paper products manufacturing industries account for about 73% of the total.
- With the recent increase in demand for generative AI and semiconductors, the water consumption of AI industrial data centers and semiconductor factories is expected to grow. In some cases, one semiconductor factory uses about three million m³ of water per year*.

Agricultural water	Domestic water	Industrial water
532	135	130
67%	17%	16%

Source: Ministry of Land, Infrastructure, Transport and Tourism, "Current Status of Water Resources in Japan," 2024

Comparison of water resource storage functions (infiltration capacity)

Source: Hiroshi Murai and Yusaku Iwasaki, "Research on Water and Soil Conservation Functions of Forests" (1975)



* Nikkei ESG, "Concern about Water Consumption at the New TSMC Plant - Semiconductor Plant Questioned about Cost to the Value of Nature," December 27, 2023

5-2. Multifunctionality of forests (global environmental protection functions)

- Trees in forests fix carbon by absorbing CO₂ from the atmosphere and carrying out photosynthesis. In addition, CO₂ emissions and absorption in sustainable forest management such as reforestation after logging are balanced over the long term.
- Furthermore, wood products are characterized by their relatively less energy consumption during manufacturing than other materials and contribute to the reduction of CO₂ emissions throughout the life cycle of buildings, etc.
- Climate change is a global issue, and the government is promoting measures to cope with the issue based on its plan for countermeasures against global warming, but interest in the J-Credit system, which certifies the amount of CO₂ emissions reduced and absorbed as a credit, is growing, and the amount of certification is increasing.
- Local efforts are also being made, including cases where companies cooperate with local governments to develop forests and generate credits.

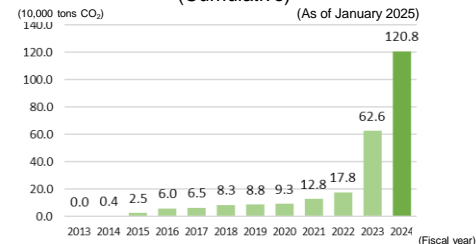
Global Warming Countermeasure Plan (Cabinet Decision on February 18, 2025)

2013 CO ₂ emissions	2022 CO ₂ emissions	Targets for FY2040 (Comparison to 2013 emission level)	
		Overall	Forest absorption
1,407 million t-CO ₂	1,135 million t-CO ₂	380 million t-CO ₂ ▲73%	72 million t-CO ₂ ▲5.1%

Efforts of the Forestry Agency

- The Guide to Promoting the Non-Carbon Premium Value of Forest Absorption J-Credit" is being prepared in 2025.

Changes in the volume of forest-derived J-Credits certified (Cumulative) (As of January 2025)



Carbon storage per house and CO₂ emissions during the production of materials

	Wooden house	Prefabricated steel-frame house	Reinforced concrete house
carbon stock	6 tons of carbon	1.5 tons of carbon	1.6 tons of carbon
Amount of carbon released during the production of materials	5.1 tons of carbon	14.7 tons of carbon	21.8 tons of carbon

Source: Mikiaki Okuma (2003), Global Environmental Conservation and Wood Utilization, Japan Forestry Improvement and Extension Association, 54; Yasuo Okazaki and Mikiaki Okuma (1998) Wood Industry, Vol. 53-No. 4, 161-163

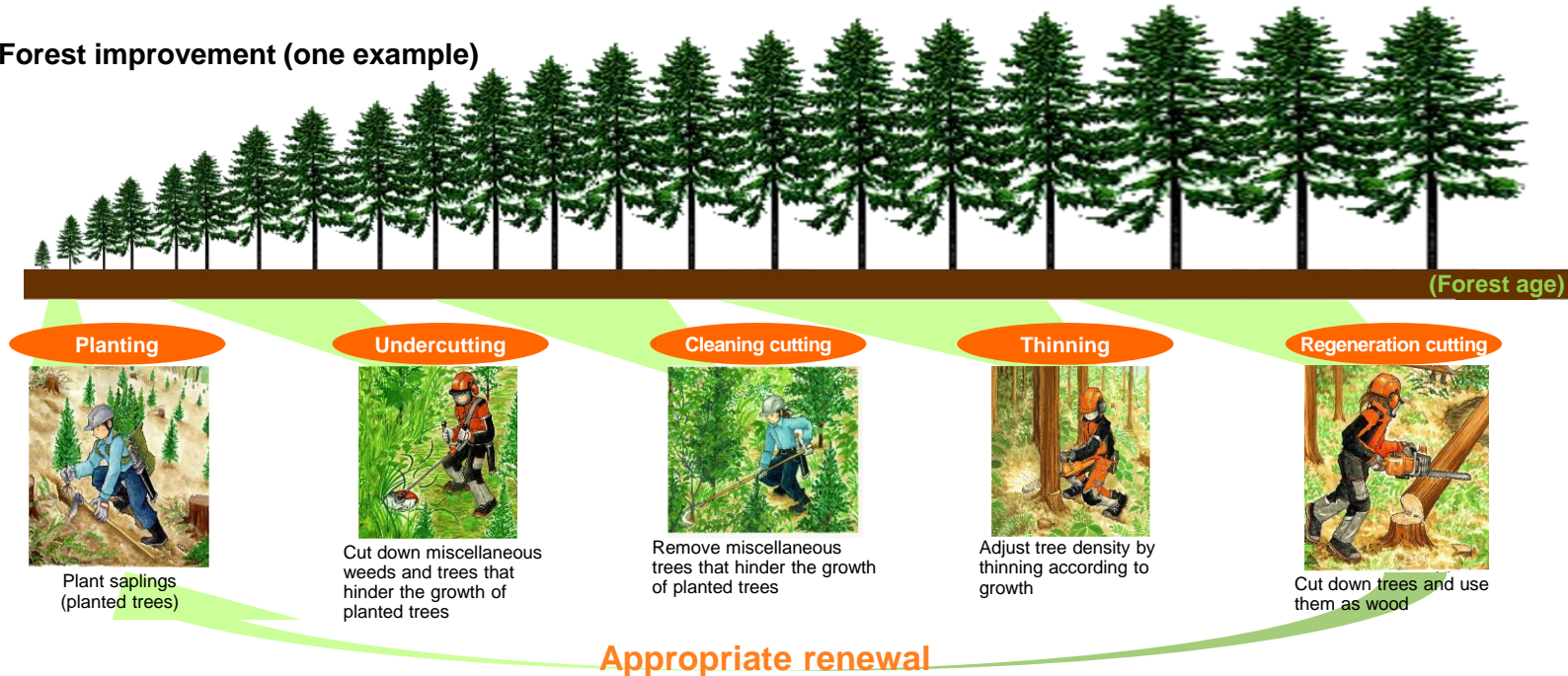
Examples of initiatives by local governments

- Owase City in Mie Prefecture announced its Nature Positive Declaration in 2024. The city is promoting forest improvement and other activities in cooperation with businesses, mainly through the collection of corporate hometown taxpayers and the creation and sale of carbon credits for forests and seagrass beds.
- Oita Prefecture is promoting a project to support the creation of J-Credit for forest owners through corporate hometown tax payment. As described above, there are increasing moves to create businesses that take advantage of nature.

5-2. Multifunctionality of forests (material production functions)

- Forests produce a variety of materials, including wood, mushrooms, wild plants, and bamboo. These resources support people's lives as circulative resources that can be repeatedly produced by proper forest management and use.
- In addition, new wood-based materials such as modified lignin and cellulose nanofibers have been developed and are expected to be used as substitutes for materials derived from fossil resources.

□ Forest improvement (one example)



Circulative resources supporting people's lives



Prototype product using modified lignin, a new material made from Japanese cedar wood



Modified lignin



Electronic substrate

[Photo: AIST]



Steering wheel

[Photo: Toyoda Gosei Co., Ltd.]

5-2. Multifunctionality of forests (biodiversity conservation functions)

- Japan boasts of its high level of biodiversity due to the fact that it has a long land from north to south with an altitude difference and belongs to various climatic zones.
Forests, an important component of the natural environment, function as habitats for a wide variety of organisms.
- In addition to primeval natural forests, satoyama forests and planted forests are arranged in a balanced manner to form a variety of forests both spatially and temporally.
- Forests are the backbone of ecosystem networks and are linked to ecosystems such as rivers, agricultural lands, and the sea and play an important role in the biodiversity of entire watersheds.
- The TNFD defines biodiversity as "variability among living things from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecosystem complex to which they belong."
- Moves toward biodiversity credits have begun, and at the 2024 Conference of the Parties to the Convention on Biological Diversity, an international advisory committee led by the British and French governments presented a draft framework for biodiversity credits.

Contributing to Nature Positive through corporate hometown tax payment

Mitsubishi Estate Co., Ltd., Minakami Town of Gunma Prefecture, and the Nature Conservation Society of Japan concluded a ten-year partnership agreement.

Utilizing the corporate version of the hometown tax payment system, the partnership project receives 600 million yen in funding from Mitsubishi Estate during the period of the agreement to promote the Nature Positive program, including forest improvement, forest restoration, promotion of wood utilization, and other environmental and biodiversity conservation activities.



Source: Nature Conservation Society of Japan:
<https://www.nacsj.or.jp/partner/2024/06/40725/>

Tree planting contributing to oyster culture in Kesenuma (Mori wa Umi no Koibito, an NPO)

Kesenuma Bay is a producer of oysters blessed by the Okawa River that flows into the bay, but the fishing ground environment had been deteriorating year by year. Mr. Shigeatsu Hatakeyama, who runs an oyster farming business, raised the slogan "The forest is the lover of the sea." Since 1989, fishermen and local community residents have carried out tree planting and other activities in Mt. Murone upstream of the Okawa River, and about 40,000 deciduous broad-leaved trees have been planted.



5-2. Efforts to maintain and utilize forest resources

- Efforts to improve the balance of income and expenditure of people involved in forestry by setting lumber prices based on reforestation costs and promoting the utilization of lumber in the region, as well as to promote the utilization of forest resources with increased added value, are being made through cooperation among forest owners' cooperatives and business firms.

Efforts to set lumber prices incorporating reforestation costs

- The Saeki Forest Owners' Co-operative Association, Wing Co., Ltd. (a 2x4 building component manufacturer), Wood Station Corp., and Saeki City have concluded an agreement to promote the use of wood in buildings, setting wood trading prices at a level that incorporates the costs of logging, reforestation, and forest raising, in order to expand the use of wood and recycle forest resources.

(From an Interview survey)

- Since the low price of lumber is a bottleneck for reforestation, we would like to create a positive atmosphere for reforestation by returning profits to forest owners in the form of reasonable raw timber prices.
- A reforestation rate of 100% has been achieved by making a set contract that includes reforestation, weeding, etc. when purchasing standing trees, and thus, reducing the burden on forest owners.
(Saeki Forest Owners' Co-operative Association)
- The issue behind the conclusion of the agreement was to increase the added value of lumber as the number of housing starts was decreasing. In the wake of the Great East Japan Earthquake, we considered efforts to promote the use of domestic logs and bring the demand and supply areas closer together. We concluded the agreement thinking that it would contribute to reforestation in a way different from subsidies.
- To allow for reforestation costs, in addition to the efforts of the mountain side, we are working to raise reforestation funds by making it possible to omit the correction process by using domestic lumber, which has a higher standard accuracy than imported lumber, and by devising ingenious ideas for construction methods. (Wing Co., Ltd.)



Source: Saeki Forest Owners' Co-operative Association: Reforestation Type Timber Trade Agreement (<https://www.saikiforest.or.jp/top/saizourin/>)

Efforts for the use of wood in buildings

- Nomura Real Estate Holdings, Inc, Wing Co., Ltd., and the Ministry of Agriculture, Forestry and Fisheries concluded an agreement to promote the use of lumber for buildings to expand the use of local lumber. While Nomura Real Estate Holdings has decided to strive to use a total of 10,000m³ of local lumber by stages in the buildings to be constructed in the five years to FY2026, Wing Co., Ltd. has decided to work to establish a lumber supply system and supply lumber in a timely manner, and both parties will cooperate to support afforestation.

(From an Interview survey)

- Nomura Real Estate Holdings, which was considering carbon fixation, became interested in the Union Frame method which used domestic wood, and this led to the conclusion of the agreement. Progress has been made faster than initially planned.

(Wing Co., Ltd.)

Source: Forestry Agency's website: https://www.rinya.maff.go.jp/j/riyou/kidukai/mokuri_kyoutei/attach/pdf/zisseki-1.pdf

Efforts to utilize biomass boilers for wood drying

- In drying wood, the Saeki Forest Owners' Co-operative Association contributes to carbon neutrality by using bark, wood scraps, etc. generated in the lumber sawing process as fuel instead of fossil fuels such as heavy oil and kerosene.



(From an Interview survey)

- A biomass boiler was introduced in 1999 due to the rise of heavy oil prices. So far, biomass boilers have been introduced on eight times as large a scale as initially planned, and woody biomass is used for all boilers as fuel. (Saeki Forest Owners' Co-operative Association)

Source: Saeki Forest Owners' Co-operative Association: Environmental initiatives (<https://www.saikiforest.or.jp/action/environment/>)

5-2. Outline of the EU Deforestation Regulation (EUDR)

- With the aim of minimizing the EU's contribution to global deforestation, etc., the EU Deforestation Regulation (EUDR) came into force in June 2023 and will be applied from December 30, 2025 (June 30, 2026, for small and micro enterprises).
- As a requirement of the EUDR, due diligence must be carried out to prove deforestation-free and legal production.
- The requirement for being deforestation-free is that wood and related products have avoided causing not only deforestation but also forest degradation*1 since December 31, 2020.

Purpose

- Avoid the contribution of target products purchased, used, or consumed by people in Europe to deforestation and forest degradation in the EU region and the world, thereby helping reduce deforestation in the world.
- Reduce carbon emissions resulting from the consumption and production of target products in the EU and contribute to the reduction of biodiversity loss.

Requirements

- Due diligence must be carried out on certain product items distributed in the EU region (related products, including seven target items such as timber) to ensure that their production has not caused deforestation.
- As a result of the above due diligence, a due diligence statement must demonstrate (1) that target items are deforestation-free (**deforestation free requirement**), (2) that they are produced in accordance with the relevant laws and regulations of the country in which they are produced (legality requirement), and (3) that these requirements are met.

Definition of "deforestation-free"

The EUDR defines "deforestation-free" in Article 2 of the Regulation as follows:

- Relevant commodities and products (*2) are produced from land that has not been deforested,** since December 31, 2020.
- The timber is harvested from a forest that has not undergone forest degradation,** since December 31, 2020.

*1 The EUDR defines deforestation as "conversion of forests to agricultural use whether artificially or not" and forest degradation as "structural changes in forest cover, converting (a) primeval and natural forests into plantations or other forest land and (b) primeval forests into planted forests."

*2. Relevant commodities are defined as "cattle, beef, cocoa, coffee, oil palm, soybeans, and wood," and relevant products are defined as "those which contain commodities, those for which commodities are provided as feed, and those for which commodities are used."

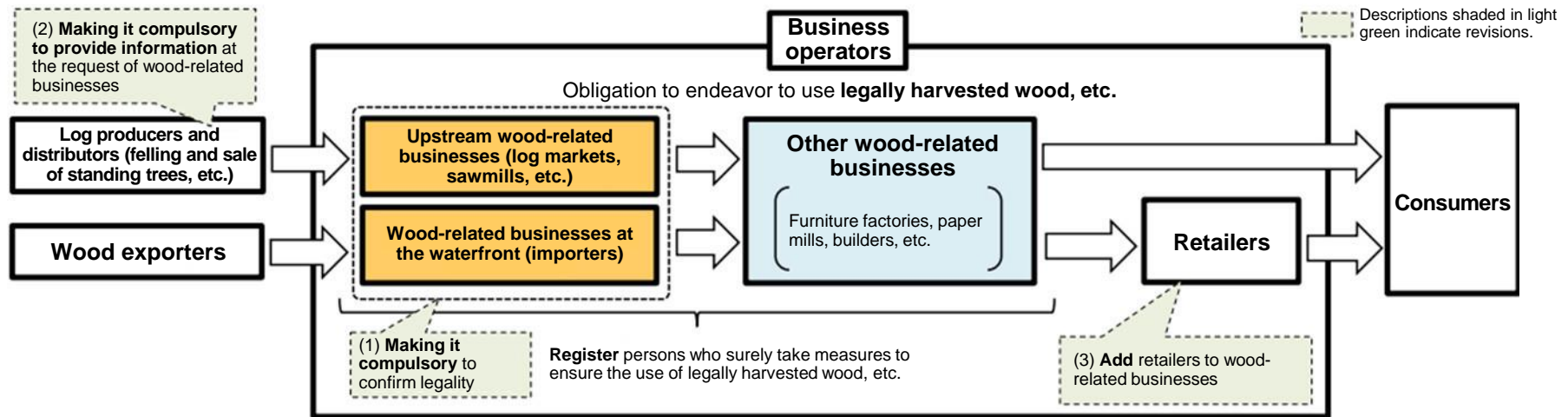
5-2. Outline of the high impact commodity list (HICL)

- The high impact commodity list (HICL) supports screening for criticality assessments in Step 1 of SBTN's five steps for science-based nature-related target setting. It lists 47 product items, including wood.
- TNFD disclosures indicate that companies should refer to the high impact commodity list to screen for dependencies and impacts in the Locate process and grasp high-risk natural commodities sourced from land/freshwater/ocean, which is one of the global core disclosure indicators for dependencies and impacts.

Items on the high impact commodity list		
Avocado	Corn	Wood and logs
Banana	Nickel	Bauxite and aluminum
Cassava	Crude oil and petroleum	Farmed seafood and aquaculture
Cows	Palm oil (oil palm)	Nuts (almonds and walnuts)
Cement	Pork	Wild seafood (fresh water)
Coal	Platinum	Wild seafood (seawater)
Cocoa	Potassium carbonate	Poultry
Coffee bean	Rapeseed oil	Dairy products (derived from cows)
Copper	Rice	Phosphorus fertilizer (derived from phosphate rock)
Cotton	Natural rubber	Nitrogen fertilizer
Goat	Sand (for construction)	Gasoline
Gold	Silver	Steel
Iron	Soybean	Pulp, cellulose, paper, paperboard, corrugated cardboard, and tissue
Lead	Sugarcane	Beef
LNG (liquefied natural gas)	Tobacco	Leather
Lithium	Zinc	

5-2. Outline of the Revised Clean Wood Act (effective April 1, 2025)

- For the purpose of promoting the distribution and use of wood and wood products made from trees harvested in compliance with the laws and regulations of Japan or the country of origin, the Act stipulates the scope of wood, etc. and wood-related businesses covered, registration system, etc. and measures to be taken by wood-related businesses and the national government.
- To step up efforts against illegal logging, the government revised the Act to include new obligation of wood-related businesses to confirm legality, and the Revised Act came into force in April 2025.



Source: Forestry Agency's website "Clean Wood Navi"

[Examples of domestically produced log distribution system]

- The North Japan Wood Material Distribution Cooperative aims to promote the utilization of domestic logs by establishing a smooth distribution system for such lumber and lead forests to healthy ones through the forest resource cycle.
- The Cooperative is working to build a distribution system for domestic logs based on the needs of local markets by matching and coordinating demand for lumber produced by log producers and forest owners' cooperatives with the demand of laminated wood factories, plywood factories, and chip factories.
- The Cooperative is making efforts to distribute legally harvested lumber and logs with certified producing centers and origin. When log producers, etc. ship logs, they submit a logging report and a document stating the name of the place where logs are shipped to the Cooperative.
- For this reason, the Cooperative not only confirms that the wood is legally harvested but can also certify the origin of the wood at the request of laminated wood factories and plywood factories.

5-2. Evaluation of forests in Japan

- The TNFD Sector-Specific Guidance (forestry, paper, and pulp; engineering, construction, and real estate) presents the Global Forest Watch, Global Illegal Logging and Associate Trade Risk Assessment Tool, FSC National Risk Assessment, etc. as reference tools for timber risk assessment.
- The FSC National Risk Assessment assesses timber in Japan as low risk, citing as the basis for such assessment the forest planning system, which promotes appropriate forest management based on long-term planning; the forest land development permit system, which ensures appropriate use of forest land; and the protected forest system, which achieves public purposes such as water resource cultivation and disaster prevention.

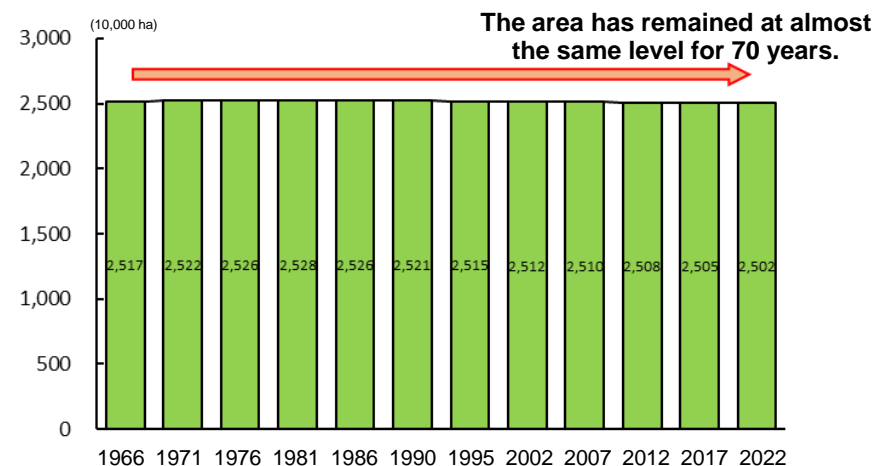
[FSC National Risk Assessment (Japan)]

Item	Risk judgment
1. Illegally harvested wood	Low risk
2. Wood harvested in violation of traditional rights and human rights	Low risk (Specific area: Hokkaido)
3. Wood harvested in forests with high conservation value whose value is threatened by commercial activities	Low risk
4. Wood removed from natural forests for conversion	Low risk
5. Wood harvested from areas with genetically modified trees	Low risk

* FSC Japan updates its national risk assessments every five years.

Reference: <https://www.woodrisk.org/assess-risk/countries/Japan>,
https://jp.fsc.org/sites/default/files/2021-09/FSC_NRA-JP%20V1-0%20JP.pdf

[Changes in forest area in Japan]



Source: Forestry Agency, "Current Status of Forest Resources" (as of March 31, 2022) and Forestry Agency operational data

5-2. Guidance for evaluation of wood use in buildings

- The use of wood in buildings contributes to carbon neutrality, the sustainable use of resources, and the realization of comfortable spaces.
- In March 2024, the government put together guidance on evaluation items and methods based on international trends in ESG-related information disclosures, so that construction companies, real estate firms, and building owners who used wood in buildings could emphasize the benefits of wood use in buildings among investors and financial institutions and encourage the latter to actively evaluate such benefits.

[Overview of evaluation of wood use in buildings]

Evaluation areas	Evaluation items (Initiatives by construction companies, etc.)	Evaluation methods
1. Contribution to carbon neutrality	(1) Reduction of embodied carbon in buildings	✓ Indicate the amount of GHG emissions from the production of wood products used in buildings, as calculated by LCA.
	(2) Carbon storage in buildings	✓ Indicate carbon stocks according to the Forestry Agency's "Guidelines for the Labeling of Carbon Stocks of Wood Used in Buildings."
2. Sustainable use of resources	(1) Sustainable wood procurement (implementation of due diligence)	✓ Indicate that the items listed below have been confirmed for the wood to be used. Indicate the amount and ratio as for i). i) (a) The legality of the wood can be confirmed in accordance with the Act on Promotion of Use and Distribution of Legally Harvested Wood and Wood Products (Clean Wood Act), and the guarantee of renewal after the harvest of the forest from which the wood was produced can be confirmed, or (b) the wood is certified (evaluated and certified under the forest certification system). ii) Efforts to respect human rights based on the Guidelines for Respecting Human Rights in Responsible Supply Chains, etc. are made in the supply chain.
	(2) Contributing to local communities by utilizing forest resources	✓ Indicate whether locally produced logs (or domestically produced logs) are used, as well as the amount and percentage used. ✓ Indicate that an agreement for the promotion of the use of wood in buildings has been concluded with local forestry and wood industries for the purpose of utilizing locally produced logs. ✓ Use input-output tables to show the spillover effects of wood use on local economies in quantitative terms.
	(3) Contribution to the circular economy	✓ Indicate that wood is evaluated as a renewable resource from the perspective of the circular economy. ✓ Provide, if possible, in quantitative terms, specific details of the below-listed initiatives, for example, which are being carried out with circularity in buildings in mind. i) Reduce the use of non-biological (non-renewable) virgin materials by using wood. ii) Utilize recycled wood (wood board, etc.). iii) Use designs that reduce environmental impacts at the time of dismantling.
3. Realization of comfortable spaces	Effects of wood use for interior furnishing on physical and mental health, productivity, etc.	✓ Indicate the effects of woody interior furnishing that is highly appealing depending on factors such as the use of buildings.

5-2. Examples of local efforts to use domestic logs

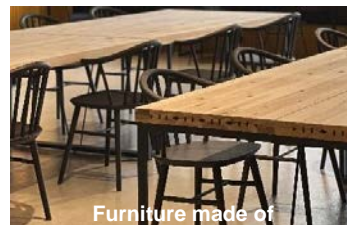
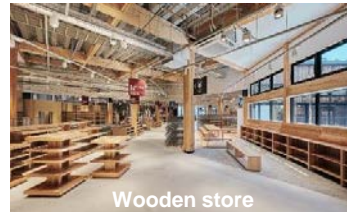
Efforts of Ryohin Keikaku Co., Ltd.: Recycling of resources using local logs

[Outline]

- Based on the basic policy of "serving society and people," Ryohin Keikaku has set solving regional problems and realizing regional revitalization through indigenization as one of its important issues.
- The company promotes the building of platforms to realize "pleasant lifestyles and societies" in each region. It aims to create a system of public interest and mutual assistance in society and create a state in which the economy, culture, and environment are connected in a systematic way.
- The company promotes the use of domestic logs to restore the connection between mountains and businesses and between mountains and people and to realize a sustainable, pleasant lifestyle and society.

Wooden and woody stores

- in May 2023, Ryohin Keikaku concluded a five-year agreement with the Ministry of Agriculture, Forestry and Fisheries to expand the use of wood.
- Making the most of the networks and technologies it has cultivated in its residential space business, the company is promoting the use of 10,000 m³ of wood in its stores and fixtures while actively utilizing domestic logs. In 2024, it opened two stores, its first wooden ones.



Furniture utilizing domestic wood

- Regarding an office space as "a place to live," Ryohin Keikaku creates an environment that inspires affection using materials made of wood that gives a sense of warmth.
- Through furniture made of Japanese wood, the company strives to address forest-related issues and connect trees as a sustainable resource to a future 100 years later while offering comfortable and pleasant places to work in.

(From an Interview survey)

- The medium-term management plan emphasizes that the company's core business is space design and renovation, which covers everything from forest-related issues to lifestyles, and promotes the use of domestic logs.
- A wide variety of people are involved in the production of saplings, afforestation, logging, lumber sawing, and processing before wood becomes a commercial product, and we wanted to provide products that show the face of the producer. We are working in cooperation with local industries, and we hold wood education and other events.

Utilization of local logs in public spaces

- Ryohin Keikaku is responsible for designing public spaces such as stations and parks.
- For the renovation of the Nichinan Station building in Miyazaki Prefecture, the company cooperated with Nichinan City and local companies and associations in projects such as planning the renovation of the station and holding hearings and workshops for local community residents.
- Obisugi (Japanese cedar), a local specialty, was used for the exterior and part of the window frames, giving the station a warm appearance.



Participation in the Yama-no-Daigomi project

- The aim is to promote the market distribution of products that utilize unused wood generated in each process of the forest industry and to connect producing centers (provincial areas) and consumption centers (urban areas).
- Through commercialization, the project provides companies with an opportunity to understand the relationship between lifestyles and the use of trees and the impact of using them, and to think about coexistence.
- In 2024, the project received the Japan Wood Design Award (Director General of the Forestry Agency Award).



(From an Interview survey)

- After going to mountains, we realized that mountains are connected to various things such as food, life, and the sea.
- Considering it as an issue we should address to return profits to mountains and being based on the concepts of "use quantity," "use every piece of wood we have," and "increase the number of friends," we are working with Miyazaki Prefecture and its forest-related stakeholders (such as forest owners' cooperatives, lumber companies, and NPOs) to commercialize resources, including those which are not considered useful materials and are usually discarded (short logs, scraps, etc.).

5-3. Landscape approach



5-3. Landscape approach

[Landscape approach in the TNFD recommendations]

- The TNFD recommendations consider stakeholder engagement as an important factor to effectively assess and manage nature-related dependencies, impacts, risks, and opportunities and recommend collaboration in decision-making.
- In the TNFD recommendations, the landscape approach is positioned as an approach of collaboration with diverse stakeholders. To resolve issues related to natural resources, it is important to aim for the realization of desirable land use in a certain range in terms of both the environment (including biodiversity) and human activities (including various stakeholders).
- To this end, it is necessary to establish local governance unique to the region concerned, including municipalities, local communities, businesses, stores, and research institutes to smoothly carry out detailed decision-making and activities in line with the actual conditions of the region.

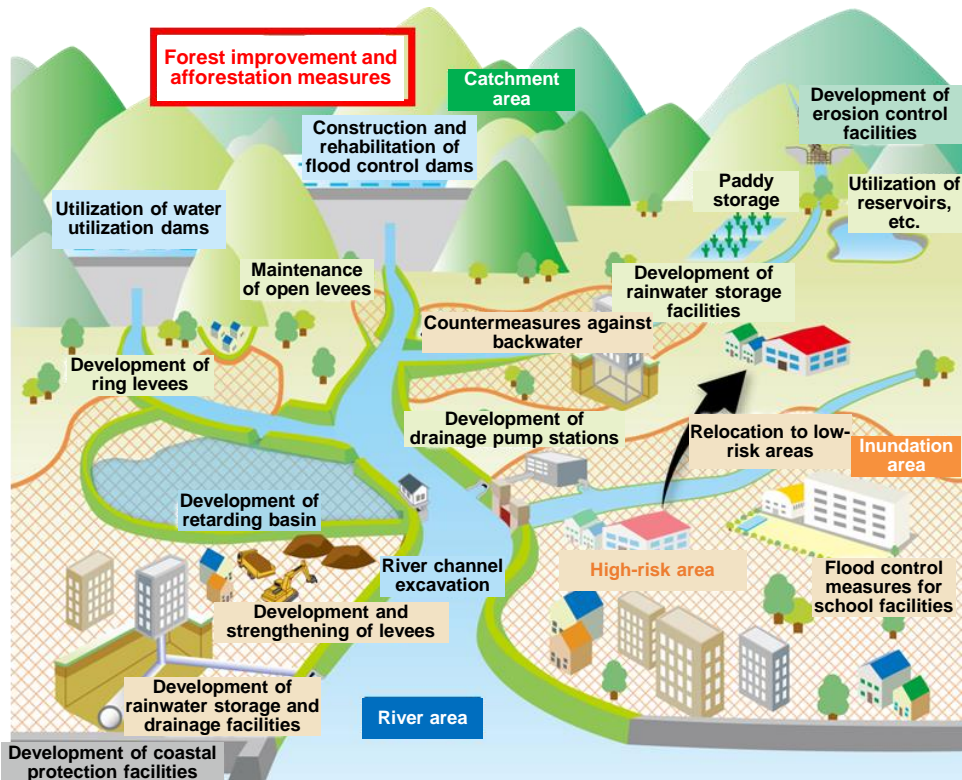
[Forest management and landscape approach]

- Because the way forests are managed affects the basis of local activities such as landscape, sediment loss, and water quality and because the use of water resources needs to be adjusted at the basin level, it is important to cooperate with various stakeholders such as forest owners, etc. who manage forests, local community residents, businesses, and administrative agencies in the basin, and forest owners' cooperatives which are responsible for forest management.
- It is especially important for businesses with large areas of company-owned forests to be aware of the impact on the entire watershed and make efforts to appropriately manage them.
- Even in forest management aimed at carbon fixation, meanwhile, appropriate development and conservation can be seen as an opportunity to prevent landslides and floods, reduce the risk of natural disasters, and facilitate regional economic activities.
- It is important for various stakeholders to understand and evaluate the multifunctionality of forests to promote appropriate management of forests as green infrastructure.

5-3. Watershed flood control projects

- As an effort to promote watershed flood control in which all parties concerned in the entire river basin work together to reduce flood damage in the entire river basin, a Watershed Flood Control Council consisting of the national government, watershed municipalities, companies, etc. has been established in each primary and secondary river system, and the overall picture of flood control measures to be urgently implemented in the entire river basin has been prepared and published as a Watershed Flood Control Project.
- Reflecting green infrastructure initiatives, the Watershed Flood Control Project will promote environmental initiatives such as the conservation and creation of diverse habitats for living things and the formation of landscapes that are in harmony with the local natural environment, in cooperation with all parties involved in the watershed.

Cooperation between watershed flood control and forest improvement



- To promote initiatives in collaboration with watershed flood control, Regional Forest Offices and prefectural forestry departments participate in the Watershed Flood Control Council and position forest improvement and afforestation measures as part of the Watershed Flood Control Project for all 109 Class A river systems.
- In addition, the Project broadens afforestation measures in Class B river systems where watershed flood control efforts are expanding.
- Specifically, it utilizes the five-year acceleration measures for building national resilience to focus on the establishment of afforestation dams to control sediment and driftwood runoff, the building of terraces to improve the water-holding capacity of forests, and forest improvement in the upper reaches of rivers in each region.

Reference: Watershed Flood Control Promotion Action Plan of the Working Level Meeting of Related Ministries and Agencies for the Promotion of Watershed Flood Control (formulated in July 2021)

Source: Basic concept of watershed flood control: https://www.mlit.go.jp/river/kasen/suisin/pdf/01_kangaekata.pdf

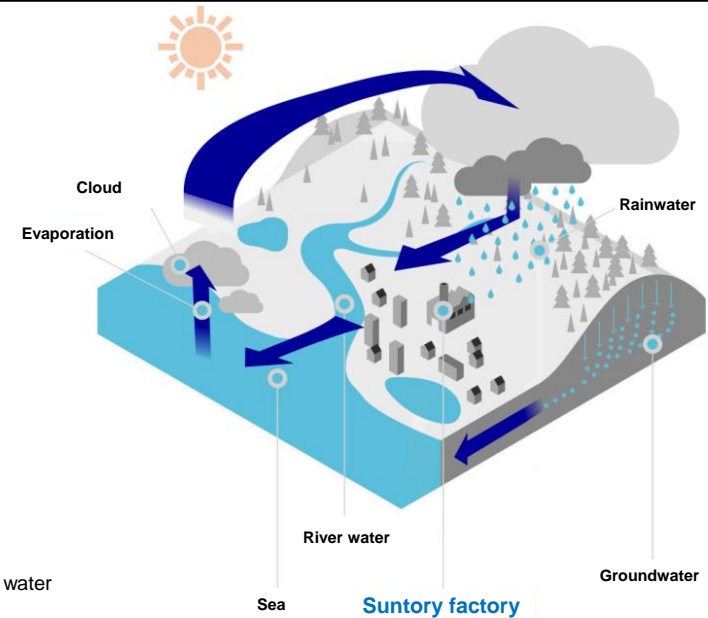
5-3. Example of water resource recycling

Efforts at Suntory Holdings Ltd.

[Outline]

- The Suntory Group's Water Philosophy, which aims to promote a sound water cycle in watersheds, advances initiatives based on four pillars: understanding the water cycle, using water with care, protecting water sources, and working together with local communities.
- Water is the most important raw material and an indispensable shared resource for local communities and ecosystems, and the Group is implementing integrated water resource management in cooperation with local governments and communities on an ongoing basis from the perspective of protecting the entire watershed*, not just within its own premises such as factories.
- In 2018, Suntory became the first company in Japan to acquire certification under the AWS certification system for integrated water resource management using the landscape approach.

* Watershed: A series of geographical spaces in which clouds evaporate from the sea and fall in the form of rain and become river water and groundwater, which then flows into larger rivers and oceans



[AWS certification]

- AWS is a certification system for sustainable water use in factories and water-using areas around the world that promotes water conservation and stewardship.
- The AWS system certifies companies' efforts to promote responsible management of water resources **involving stakeholders in watersheds**.



Efforts by various stakeholders, mainly private companies, for groundwater resources in Kumamoto

↑ Initial Report of a Review of Collaborative Action of Diverse Stakeholders Based on a Nature-Based Landscape Approach

(From an Interview survey)

- Figuring out where groundwater came from led Suntory as a water-dependent company to forests. We realized that abandoned and degraded forests had many problems in the water cycle such as soil erosion, which reduced groundwater cultivation functions, and efforts to cultivate water sources in forests began.
- The Kumamoto area, where the plant is located, is one of the few areas in the world where one million residents use a water supply system sourced from groundwater. Considering the importance of groundwater utilization and its impact on local inhabitants and industries, we constructed a wide area simulation model of the Kumamoto area under the supervision of academic experts.
- In Japan, where many disasters occur, bottled water is in great demand as a stockpile and is an important lifeline. We believe that it is important to protect the health of watersheds to fulfill our supply responsibility, and we would like to spread the significance of AWS certification along with the story of our efforts.

5-3. Example of initiatives to create recyclable forests

Initiatives by Nomura Real Estate Holdings, Inc. Tokyo Project "Mori wo Tsunagu"

[Outline]

- The Nomura Real Estate Holdings Group concluded a comprehensive partnership agreement with the town of Okutama in August 2021. In October 2022, the Group took over the forest owned by the town by concluding a 30-year contract to establish surface rights and launched the Tokyo Project "Mori wo Tsunagu."
- It named the forest it owned in the town "Tsunagu Mori" and has promoted the creation of recycling forests, which enable forests to fulfill their multifunctionality. The forestation is entrusted to the Tokyo Prefectural Forest Owners' Cooperative, and logs that are sawed up are actively used for businesses.
- The Group acquired SGEC/PEFC forest certification, and its forest was certified as a Nationally Certified Sustainably Managed Natural Site in October 2023.

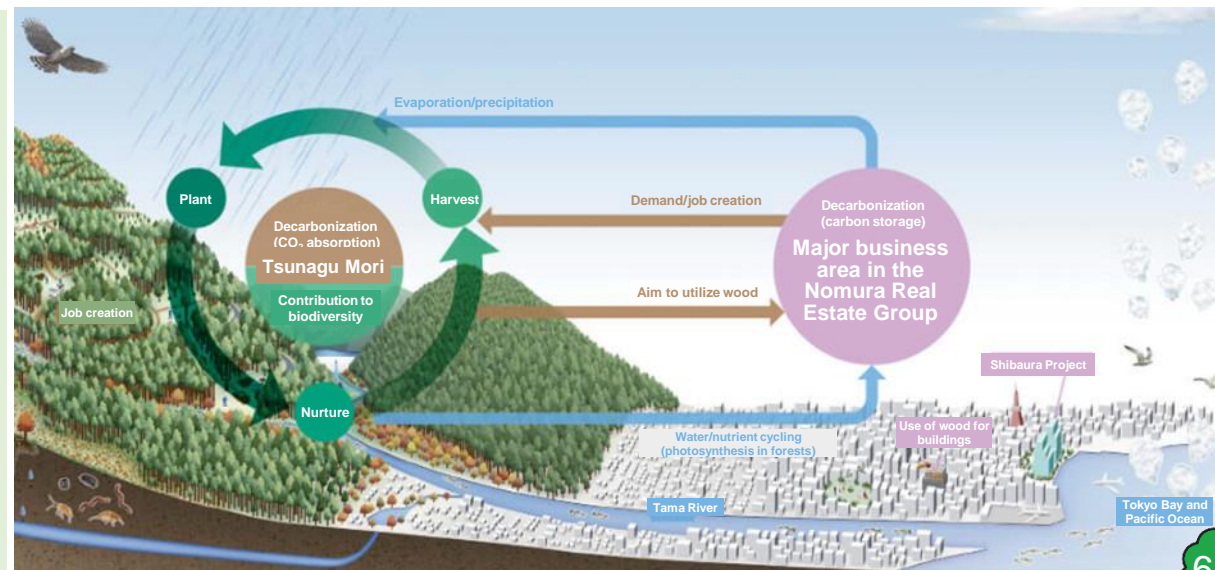
[Landscape approach]

- With the aim of reducing CO₂ emissions, conserving biodiversity, and realizing a recycling-oriented society, the Group has adopted a landscape approach that deals comprehensively with the natural environment and human activities in Tokyo's natural and urban settings in order to draw solutions to problems.
- The landscape approach views Tsunagu Mori and the urban area, which is the main business area of the Nomura Real Estate Group, as a watershed connected by the Tama River, and through forest development, it aims to not only promote the circulation of forests themselves and water but also provide decarbonization functions and wood from forests to the urban area. and creates demand and jobs from the urban area to the forest area.



(From an Interview survey)

- We started to consider the project after the Sustainability Management Department was established in 2020. During a brainstorming session among the members, the TNFD was cited as a new trend in areas such as wood use and water source cultivation, and we focused on the forests of Okutama. We bought a forest with the TNFD in mind.
- To take the landscape approach, we needed to invent a solid story. Because there were many stakeholders, creating an attractive story and gaining understanding broadened the network of stakeholders.
- We feel benefits in terms of human resource development. The project is very popular when used for training new employees in the company. Sustainability initiatives also contribute to fostering internal understanding.



5-3. Example of efforts to build a new business model through the use of local resources

MEC Industry Co., Ltd.'s Initiative: Integrated business from the procurement of raw timber to the manufacture and sale of houses, etc.

[Outline]

- Aiming to contribute to the creation of a sustainable world through forest conservation, urban carbon fixation, and regional revitalization by achieving an appropriate forest cycle, MEC Industry was established in 2020 as a comprehensive forestry business company funded by seven companies* including construction and real estate firms and local wood-related companies.
- Utilizing the know-how of each company, MEC Industry is engaged in a comprehensive range of businesses from raw timber procurement in southern Kyushu to housing production and sales. It has constructed a new business model that utilizes regional resources.
- Using domestic logs, the company contributes to maintaining the multifunctionality of forests such as carbon fixation, water sources, and disaster prevention. It also contributes to solving social issues by creating a virtuous cycle of domestic forests.
- The plant in Yusui Town, Kagoshima Prefecture, which is the company's production base to utilize domestic logs, is expected to use 55,000 m³ of raw timber in fiscal 2024.
- To cope with the increasing demand for large-diameter lumber in the region, MEC Industry has introduced a line that can accept raw timber with a base diameter of 60 cm and efficiently produce building materials such as two-by-four construction materials and CLT.

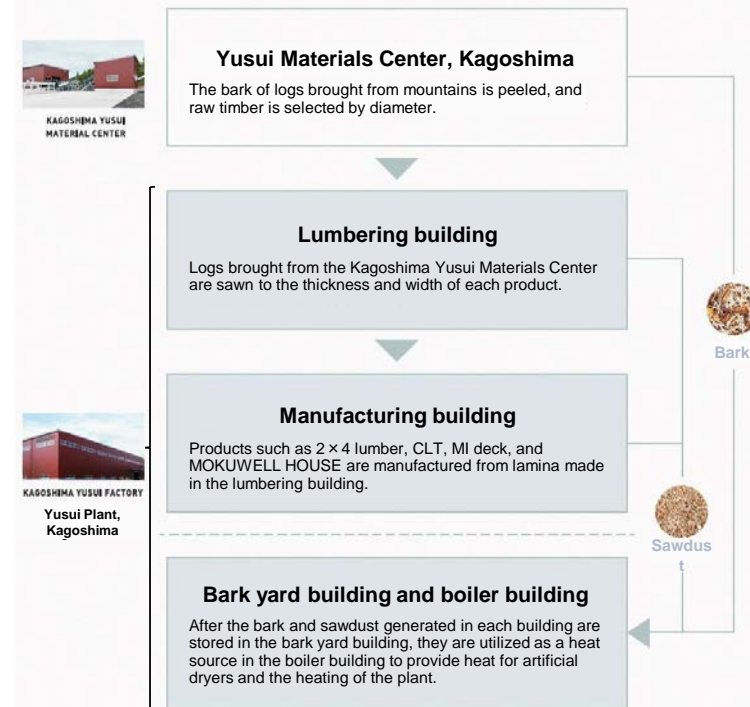
[Effective use of waste]

- The company is trying to eliminate waste from its business activities by reusing such waste as sawdust and bark as fuel for its own boilers.

(From an Interview survey)

- Multiple partner companies have worked together to build a business model, which leads to business design utilizing the know-how of each company and product development at the user's eye level.
- There are many large-diameter trees in the forest around the plant, and there is little competition with other sawmills over large-diameter lumber, allowing the company to increase the yield as it covers all processes from sawmilling to the manufacture of final products. For these reasons, we have installed equipment that can saw large-diameter lumber. Forest owners' cooperatives in the area around the plant are hoping that large-diameter trees, which could not be sawn in the past, can be effectively used as resources.

* MEC Industry was established with investments from Mitsubishi Estate Co., Ltd., Takenaka Corporation, Daiho Corporation, Matsuo Construction Co., Ltd., Nangoku Corporation, Kentech Corporation, and Yamasa Mokuzaï Co., Ltd.



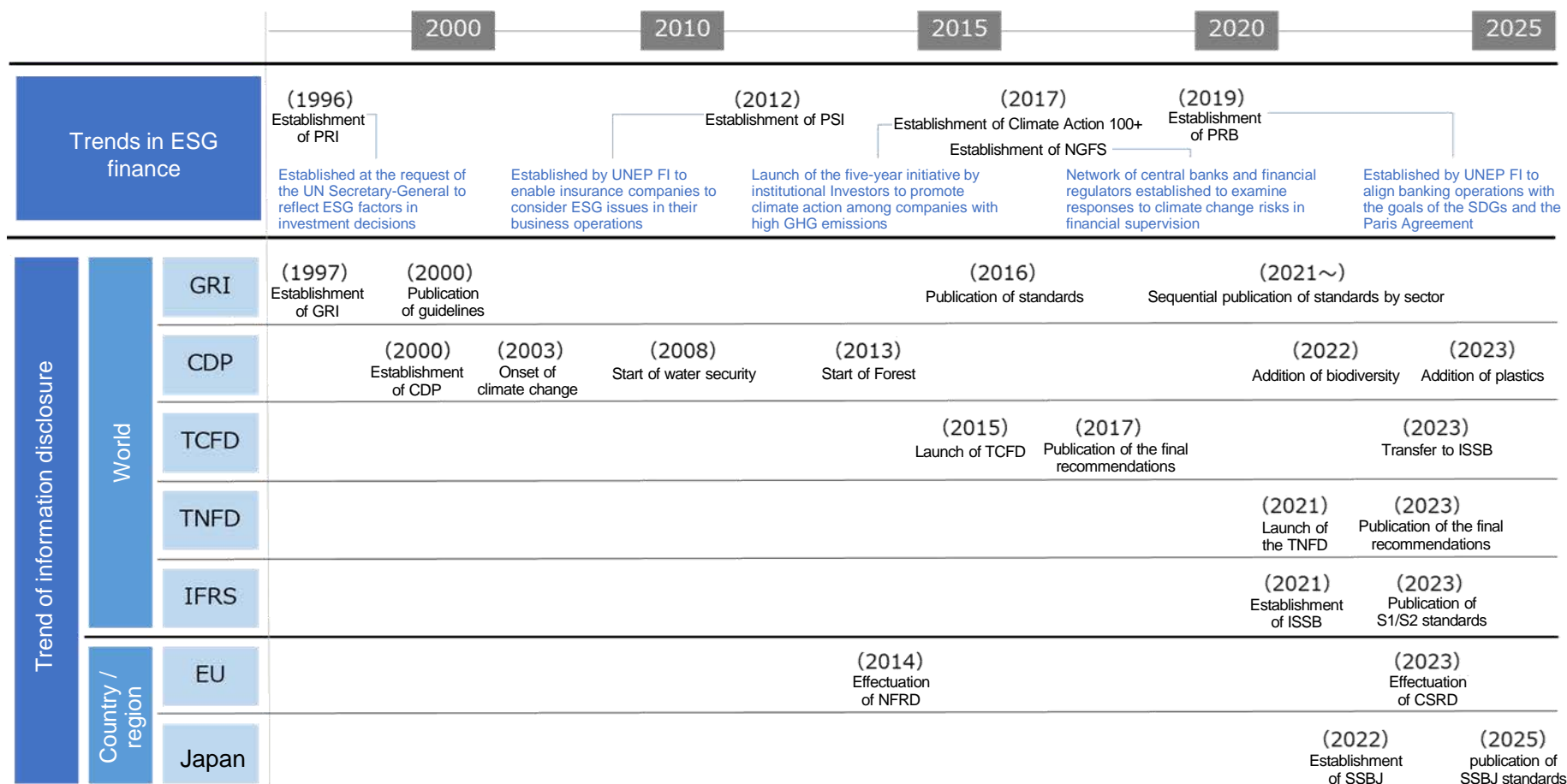
Raw timber refers to wood cut down from mountains.
Logs refer to wood that has been peeled at the Materials Center and selected.

5-4. Finance-related



5-4. Financial institutions' initiatives for disclosure of TNFD information

- ESG finance initiatives have been established in parallel with various moves toward information disclosures, including the TNFD.
- The Principles for Responsible Banking (PRB) were established in September 2019 by the United Nations Environment Programme Finance Initiative (UNEP FI) against a backdrop of global ESG finance trends, including major crises such as destruction of nature, environmental pollution, and social problems that had emerged as international policy issues since the Paris Agreement of 2015.
- The Principles for Responsible Banking provide a framework to ensure that the strategies and practices of banks are in line with the SDGs and the vision for a future society as defined in the Paris Agreement. Banks are required to set targets to amplify positive impacts and reduce negative impacts, to implement investments and loans that take environmental, social, and economic considerations into account, and to disclose the progress and results thereof.



Source: This figure has been created by NTT Data Institute of Management Consulting based on the Ministry of the Environment's "Guide for Signatures and Initiatives for the Principles for Responsible Banking (PRB)."

5-4. Investors' moves toward TNFD disclosures

- In relation to TNFD disclosures, there are moves among investors to engage in nature-related dialogue with businesses. Examples include taking up deforestation as a theme of dialogue with businesses and calling for conservation and restoration of ecosystems throughout the value chain.
- As there are cases in which TNFD disclosures are incorporated in the criteria for exercising voting rights, it is likely that investors' demand for TNFD disclosures will increase in the future.

■ Setting deforestation as a theme for dialogue between investors and businesses

- The general meeting of the Principles for Responsible Investment (PRI) held in Tokyo in October 2023 focused on nature and biodiversity.
- At its general meeting, the PRI launched Spring, a multi-investor dialogue initiative on the theme of nature, and the theme taken up for the first dialogue was deforestation and land degradation.

■ Joint engagement with businesses that rely heavily on and have significant impacts on nature

- The Finance for Biodiversity Pledge, an investor initiative, has launched Nature Action 100 in collaboration with the Institutional Investors Group on Climate Change (IIGCC) and other organizations.
- Nature Action 100 selects 100 companies around the world that depend heavily on and have significant impacts on nature to make pledges to conserve and restore ecosystems across the value chain by 2030 and calls upon them to undertake actions such as assessing natural risks, setting science-based targets, and formulating action plans.

■ Incorporating TNFD disclosures into the criteria for exercising voting rights

- In January 2025, Sumitomo Mitsui DS Asset Management incorporated TNFD disclosures into its criteria for exercise of voting rights at general meetings of shareholders.
- The asset management firm selects companies that have not implemented TNFD disclosures and have no disclosure policy and holds dialogues until their general meeting of shareholders in June 2025. Then, it will vote against candidates for representative directorship in the resolution proposed at the general meeting of shareholders of companies whose management is not aware of the importance of nature and presents no disclosure policy.
- After 2026, It will assess not only TNFD disclosures but also the scope of disclosures, the reality of nature-positive management, and the setting of targets.

5-4. Examples of financing for the maintenance and enhancement of the multifunctionality of forests

- In addition to green finance investments and loans, financing through non-life insurance and public funds are available for the maintenance and promotion of the multifunctionality of forests.
- One example of an approach using investments and loans is sustainability-linked loans, which are open-ended loans that encourage borrowers to meet ambitious sustainability performance targets (SPTs).
- Forest insurance based on the Forest Insurance Act serves as the only safety net for forest owners to prepare themselves for disasters and plays an important role in stabilizing forestry management and realizing the multifunctionality of forests through the early restoration of disaster-stricken areas.

Investments and loans		Insurance	
Bonds	<ul style="list-style-type: none"> • Sustainability-linked bond • Sustainability bond • Green bond • Social bond • Transition bond, etc. 	<ul style="list-style-type: none"> • Forest insurance (Comprehensive compensation for damage caused by forest fires, weather disasters, and volcanic eruptions) • Insurance for reforestation (Compensation for expenses required for restoration of forests damaged by fire, etc.) • Insurance on forest-derived carbon credits (Compensation for expenses required for purchasing amounts equivalent to credit deficits due to forest damage), etc. 	<h3>Public funds, etc.</h3> <ul style="list-style-type: none"> • Subsidies from forest improvement projects, etc. • Fund from Japan Finance Corporation • Forestry and wood industry improvement funds • Various forest funds, etc.
Loan	<ul style="list-style-type: none"> • Sustainability-linked loan • Sustainability loan • Green loan • Social loan • Transition loan, etc. 		
Investments	<ul style="list-style-type: none"> • Impact investments, etc. 		

5-4. Examples of financing for the maintenance and enhancement of the multifunctionality of forests

- In order to fulfill the commitment to environmental targets in their portfolios, financial institutions support environmental and natural capital initiatives of their borrowers through financing and dialogue.

◆ Examples of Norinchukin Bank's efforts

[Status of initiatives for nature-related issues]



- Norinchukin Bank uses JA savings and JF savings as funds to provide loans to agricultural, forestry, and fishery operators and related companies as well as investments and loans in Japan and overseas.
- The Bank considers that there is a close relationship with nature both upstream and downstream of the value chain and recognizes that initiatives for managing risks, and capturing opportunities, related to climate and nature are directly linked to the sustainability of business administration and organizational foundations, and based on such recognition, we are working on integrated TCFD and TNFD disclosures.

(Comments during the interview survey)

- As part of its efforts for engagement as a financial institution, Norinchukin Bank provides investment and loan clients with accompanying support, including the formulation of strategies, to encourage them to pursue net zero emissions and nature positive programs.
- If there is a possibility that efforts to combat climate change will result in trade-offs that adversely affect nature, we recommend acquiring certification and conducting environmental assessments.

[Evaluation of companies' TNFD disclosures]

(Comments during the interview survey)

- At present, as a financial institution, we do not have a defined view of or an evaluation method for TNFD disclosures. However, when considering investments and loans in sectors with deforestation risks, we use disclosed information to confirm the status of environmental consciousness. We would like companies to disclose information in a quantitative manner, but we understand that their efforts have not kept pace.
- In the ENCORE analysis, the degree of dependence on the same business is analyzed regardless of the location of the business or the degree of risk through dependencies. However, it is important to understand where the financial impact is and whether the environmental impact is large even if the scale of the business is small.
- Through dialogue with customers, we ask them whether they have identified material locations, understand the stage of their efforts for TNFD disclosures, etc. and provide support that is appropriate for each effort.

[Status of forest initiatives]

- At the end of March 2023, the Bank launched a platform for forest-derived credits jointly with the National Federation of Forest Owners' Cooperative Associations with the aim of contributing to green growth in forests and forestry and a carbon-neutral society. It supports credit generation and sales.
- The Bank established the Norinchukin Forest Revitalization Fund (commonly known as the Norinchukin Forest Power Fund) as a charitable trust to subsidize a total of 200 million yen annually for projects and activities that would revitalize private forests in Japan and enable forests to display their multifunctionality sustainably. Thus, it provides new support for biodiversity conservation and forest space utilization.
- The Bank also signed a positive impact finance agreement with Valor Holdings. It established acquisition of certification of Nationally Certified Sustainably Managed Natural Sites as a KPI.
- The Bank began offering biodiversity loans as a unique initiative.

5-4. Examples of financing for the maintenance and enhancement of the multifunctionality of forests

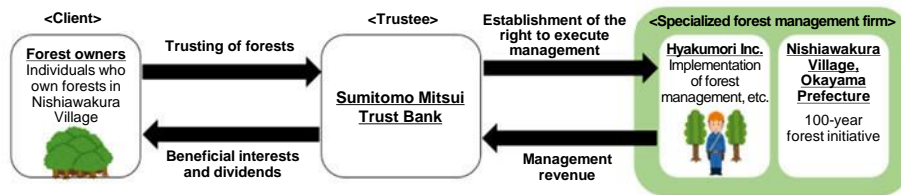
- Some financial institutions support companies' nature-related efforts mainly through sustainable finance and develop and implement their own forest-related projects.

◆ Examples of Sumitomo Mitsui Trust Bank's Initiatives

[Status of forest initiatives]

Forest trust project in Nishiwakura Village

- The Trust Bank established the forest trust scheme, the first commercial trust in Japan, for stable forest development and other projects that are not affected by inheritance for Nishiwakura Village and its forest owners.



(Comments during the interview survey)

- The forest trust initiative was born while we talked with many people about ways to contribute to regional revitalization and other regional issues as a financial institution.
- Nishiwakura Village played an important role in coordination with stakeholders.
- This initiative was taken up by mass media and received requests for advice on forest business from all over the country, bringing PR effects.

Reforestation activities through Japan Forest Asset Co., Ltd.

- In January 2025, the Trust Bank acquired a 40% stake in Japan Forest Asset Co., Ltd. and launched a joint venture with Sumitomo Forestry Co., Ltd., which includes the acquisition and reforestation of logging sites.
- It aims to realize sustainable forest management with high economic efficiency while utilizing J-Credit with a view to forming forest funds in the future.

(Comments during the interview survey)

- Forestry is a very long-term business with a cycle of several decades which requires early investments, but by utilizing J-Credit, we would like to take up the challenge of launching domestic forest funds that invest in Japanese forests.

[Evaluation of companies' TNFD disclosures]

(Comments during the interview survey)

- We believe that it is important to identify risks, opportunities, and impacts not only for the TNFD but also for sustainability in general and to reflect them on management decision-making from the perspective of enhancing corporate value.
- Companies are taking the first step toward business improvement and risk reduction, starting with understanding impacts on business models and medium- to long-term strategies. We are looking at this situation from the perspective of how financial institutions can support such efforts.

[Status of financial initiatives related to the TNFD]

- In February 2025, the Trust Bank began offering Nature Impact Finance with the aim of contributing to the development of a sustainable society by supporting the realization of impacts on nature and promoting the enhancement of information disclosures based on the TNFD, etc.

(Comments during the interview survey)

- Obtaining objective evaluations of initiatives and disclosures that lead to the realization of impacts on nature will serve as external PR for customers.
- We believe that the evaluations and recommendations made by expert organizations will provide suggestions for the advancement of disclosures.
- The sophistication of TNFD disclosures is expected to deepen investor interest and diversify funding sources.

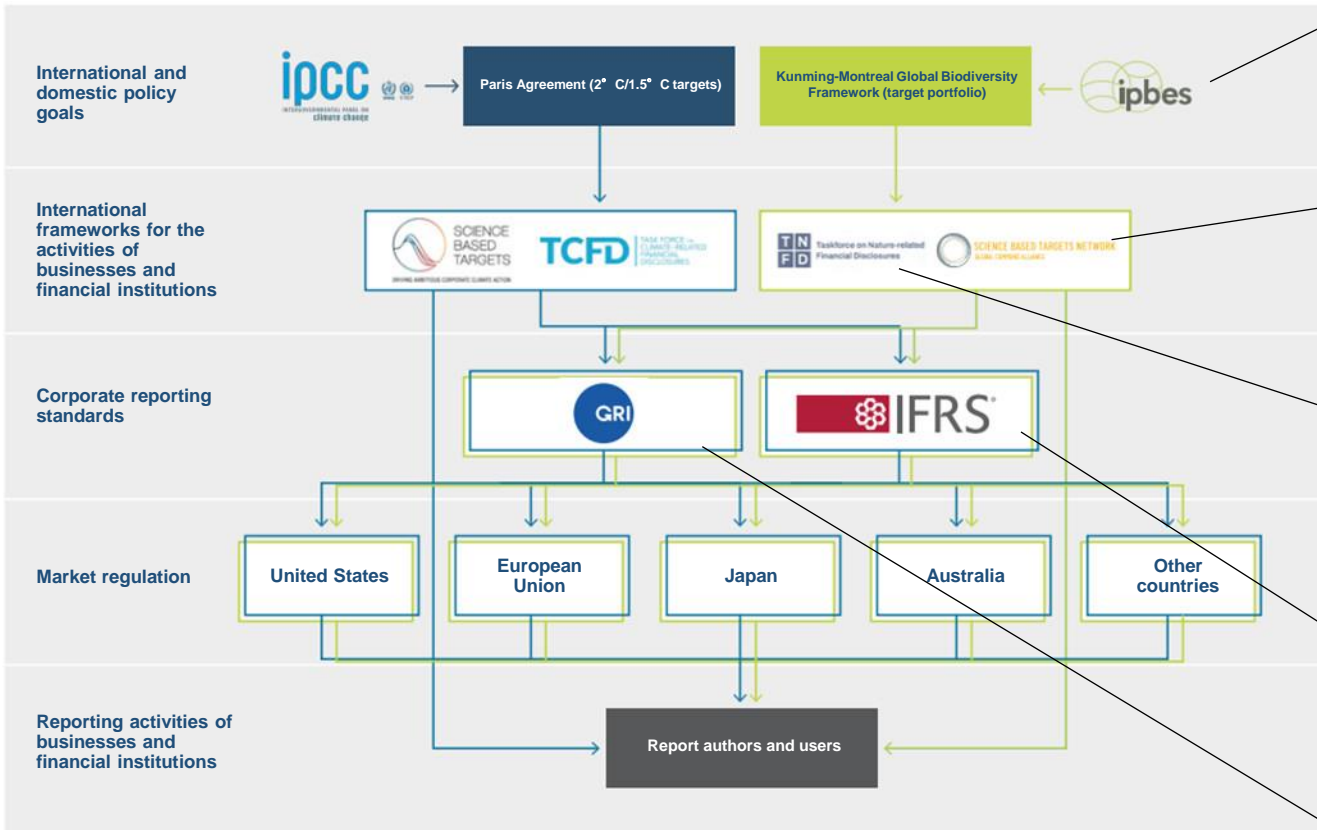
5-5. Glossary



5-5. Explanation of frameworks and organizations related to TNFD disclosures

- In parallel with the trend of climate-related information disclosures such as the TCFD, the trend of nature-related information disclosures such as the TNFD is also developing.
- Initiatives such as the TNFD provide a framework for information disclosures based on the Kunming-Montreal Global Biodiversity Framework, which is an international nature-related policy goal, and companies and others conduct reporting activities based on corporate reporting standards and market regulations in each country.
- In Japan, for example, the SSBJ considered information disclosures based on the IFRS reporting standards (ISSB standards) and published the results of discussion in March 2025. In the future, disclosures using securities reports based on the SSBJ standards are expected.

■ Description of organizations, etc. related to reporting and information disclosures



- Abbreviation of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
- IPBES conducts scientific evaluations, etc., and the results are used in international efforts and national policies based on the Convention on Biological Diversity.

- Abbreviation of the Science Based Targets Network. The SBTN is an initiative aimed at building networks to scale up evidence-based action
- The Network is working to help businesses and cities to set science-based climate- and nature-related targets.

- Abbreviation of the Taskforce on Nature-related Financial Disclosures.
- The TNFD is an international organization that establishes a framework for appropriately assessing and disclosing risks and opportunities related to natural capital and biodiversity. The final recommendations were published in September 2023.

- Abbreviation of the International Financial Reporting Standards. Accounting standards established by the International Accounting Standards Board.
- They were developed by the IFRS Foundation to enhance the transparency, comparability, and reliability of financial reporting.

- Abbreviation of the Global Reporting Initiative. The GRI is a non-profit organization that develops international standards for corporate sustainability.
- In 2016, it published the GRI Standards to explain its contribution to sustainable development.

5-5. Glossary

Name	Outline
AWS	Abbreviation of the Alliance for Water Stewardship. Established jointly by NGOs such as the World Wild Fund for Nature and the Nature Conservancy and businesses, AWS is an organization that promotes water sustainability globally, It has developed AWS certification for sustainable water use for factories around the world to promote water conservation and stewardship.
CDP	CDP is a non-profit organization established in 2000 that operates the world's only independent environmental information disclosure system. It is the first organization to leverage the power of investors to encourage companies to disclose information on environmental impacts.
COP	Abbreviation of the Conference of the Parties. COP is established in international conventions as the supreme decision-making body for its member states to decide things. With respect to environmental issues, there are the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity.
CSRD	Abbreviation of the Corporate Sustainability Reporting Directive. CSRD is the EU's Sustainability Disclosure Regulations issued in 2023. It aims to enhance the consistency of sustainability reporting in the EU and make comparable and reliable sustainability information available to financial institutions, investors, etc..
EUDR	Abbreviation of the EU Deforestation Regulation. The EUDR is the regulation issued in 2023 to prevent the destruction and degradation of forests. The due diligence process is required for certain products distributed in the EU (related products that include any of the seven products covered) to ensure that their production has not caused deforestation.
FSB	Abbreviation of the Financial Stability Board. Representatives from central banks, financial regulators, ministries of finance, and major standard-setting bodies in 25 major countries and territories as well as the International Monetary Fund (IMF), the World Bank, the Bank for International Settlements (BIS), and the Organization for Economic Co-operation and Development (OECD) participate in FSB. Its activities include addressing vulnerabilities in the financial system and promoting cooperation among authorities responsible for financial system stability.
FSC	Abbreviation of the Forest Stewardship Council. Established in 1994 by environmental NGOs, foresters, forest products trading companies, indigenous groups, etc. from 26 countries, FSC aims to stop the rapid destruction of forests around the world. It operates the certification system (FSC certification) whereby wood produced from forests that are considered as properly managed, and products made from such wood are affixed with the FSC label and sold as certified products.
GBF	Abbreviation of the Kunming-Montreal Global Biodiversity Framework. GBF was adopted as a new global biodiversity target in 2022. While taking over the vision of "a world of living in harmony with nature" from the previous targets, the Aichi Biodiversity Targets, GBF included 23 global targets as global short-term targets for urgent action by 2030.
HWP	Abbreviation of Harvested Wood Products. The three expected effects of HWP are carbon storage, energy conservation (material substitution effect), and fossil fuel substitution. HWP is attracting attention as an important measure for forests as a source of absorption in various countries.
IPCC	Abbreviation of the Intergovernmental Panel on Climate Change. The IPCC is an intergovernmental organization established in 1988 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). It aims to provide a scientific basis for governments' policies on climate change.
ISSB	Abbreviation of the International Sustainability Standards Board. ISSB was established to develop international standards for companies to disclose non-financial information, including environmental, social, and governance information. It was established in 2021 by the IFRS Foundation, which is responsible for formulating international accounting standards.

5-5. Glossary

Name	Outline
MDGs	Abbreviation of the Millennium Development Goals. These goals were set as common development challenges that the entire world should address in the 21st century. The MDGs set out eight goals, including poverty eradication, universal primary education, and environmental sustainability, and for each of these goals, they established specific numerical targets to be achieved by 2015.
NFRD	Abbreviation of the Non-Financial Reporting Directive (amended directive on disclosure of non-financial and diversity information). This is a regulation requiring disclosure of information needed by stakeholders about companies' policies and initiatives for environmental and social issues and their performance thereof in management reports that are included in annual reports based on the European Company Statute.
PEFC	Abbreviation of the Pan European Forest Certification Schemes. The PEFC is the world's largest forest certification system and is headquartered in Geneva, Switzerland. It is an independent, non-profit NGO that aims to promote sustainable forest management through rigorous third-party certification.
PRI	Abbreviation of the Principles for Responsible Investment. PRI is a leading global organization promoting responsible investment. It understands the impact of ESG factors on investment, helping an international network of investor signatories to integrate ESG factors into investment and ownership decisions.
SDGs	Abbreviation of the Sustainable Development Goals. A set of international goals aiming at a sustainable and better world by 2030, the SDGs consist of 17 goals and 169 targets and pledge to "leave no one behind" on the earth. They are the successor to the Millennium Development Goals (MDGs) formulated in 2001.
SGEC	Abbreviation of the Sustainable Green Ecosystem Council. The SGEC forest certification system was established to promote sustainable forest management based on the natural and social conditions of Japan's forests. This system aims to maintain the functions of forests from environmental, economic, and social aspects in the long run.
SSBJ	Abbreviation of the Sustainability Standards Board of Japan. SSBJ was established in July 2022 within the Financial Accounting Standards Foundation in response to comments from market participants on the necessity of developing sustainability disclosure standards in Japan and establishing a system for disseminating opinions about the development of international sustainability disclosure standards.
TCFD	Abbreviation of the Task Force on Climate-Related Financial Disclosures. The TCFD was established to examine how to disclose climate-related information and how financial institutions should respond. It published its final report in 2017, recommending companies, etc. to disclose the below-listed items regarding risks and opportunities related to climate change.
UNDP	Abbreviation of the United Nations Development Programme. UNEP leads the United Nations development network, working in more than 170 countries around the world to help developing countries to achieve their development goals.
UNEP FI	Abbreviation of the United Nations Environment Programme Finance Initiative. UNEP FI is an extensive and close partnership between the United Nations Environment Programme (UNEP) and more than 200 banking, insurance, and securities firms worldwide. Since its establishment in 1992, it has worked with financial institutions, policymakers, and regulators to transform the financial system into one that integrates economic development and ESG considerations.
WWF	Abbreviation of the World Wild Fund for Nature. WWF is an environmental conservation organization active in approximately 100 countries. The mission of WWF is to prevent the deterioration of the global natural environment and build a future where people can live in harmony with nature by protecting the world's biodiversity, ensuring the sustainable use of renewable natural resources and reducing environmental pollution and wasteful consumption.