[Provisional translation : Original text is in Japanese]

# Interim Summary of the Guidelines on the Investments in Forest, Forestry, and Wood Industry in Japan that Contribute to Achieving Carbon Neutrality, etc.

June, 2022
Study Group on Proper Investments in
Forest/Forestry/Wood Industry in Japan

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### 1. Positioning of Forest's $CO_2$ Absorption/Storage Function of Forests in the World and Japan

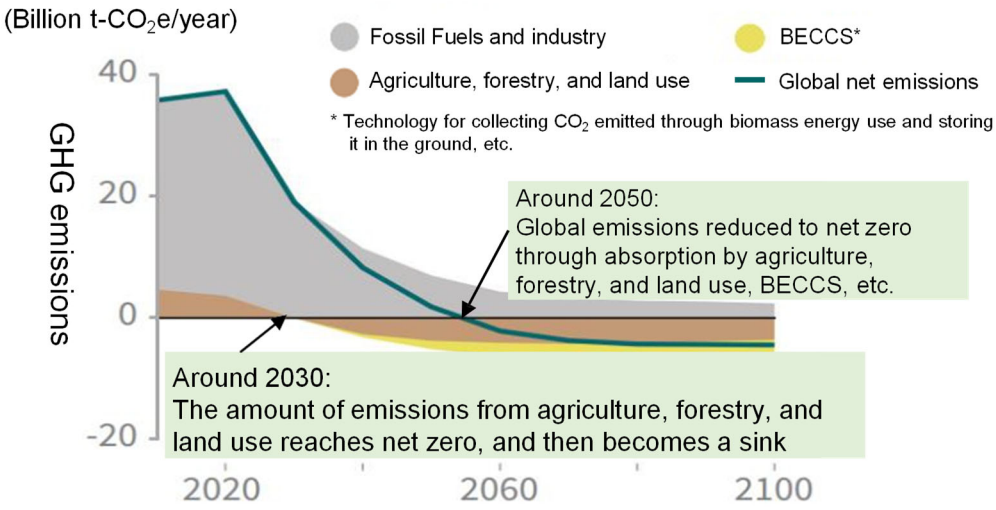
#### (1) Positioning in the World

Efforts to achieve carbon neutrality by 2050 are becoming increasingly important, as the Glasgow Climate Pact was adopted at the COP26 in the UK in 2021, which set forth the efforts to limit the global average temperature increase to 1.5°C above pre-industrial levels.

As you can see from the fact that the Glasgow Climate Pact clarifies and focuses on the importance of forests as $CO_2$ sinks and storehouses, it is essential to not only reduce GHG emissions but also absorb $CO_2$ in the agricultural/forestry industry and land use sector in order to achieve carbon neutrality.

Figure 1 shows how GHG emissions should be reduced globally in order to limit the temperature increase to 1.5°C as presented by the Intergovernmental Panel on Climate Change (IPCC[1]). In this scenario, emissions in the agricultural/forestry industry and land use sector will be net-zero by around 2030, and after that this sector will be a $CO_2$ absorber. On the other hand, emissions in the fossil fuel/industrial sectors will maintain carbon positive status. By 2050, global emissions, including emissions from fossil fuel / industrial sectors, are expected to reach net zero, because of increased absorption in the agriculture/forestry industry and land use sector and the advancement of BECCS[2] technology.

Figure 1: IPCC's scenario on how global GHG emissions should be reduced in order to limit the temperature increase to 1.5°C




* Prepared based on IPCC (2018) "Global Warming of 1.5° C"; and Makino Yamanoshita and Chisa Umemiya from Institute for Global Environmental Strategies "Global Trends on Climate Change and Forests - Reports of COP26" [*"Somamichi"* December 2021, No. 63]

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[1] An organization established by the United Nations Environment Programme (UNEP) and World Meteorological Organization (WMO) in 1988 in order to provide a comprehensive assessment on man-made climate change, its effects, and how to adapt to or mitigate it from a scientific, technical, and socioeconomic standpoint

[2] Abbreviation of "Bioenergy with Carbon Capture and Storage", which is technology for collecting $CO_2$ emitted when biomass fuel is used and storing it underground.

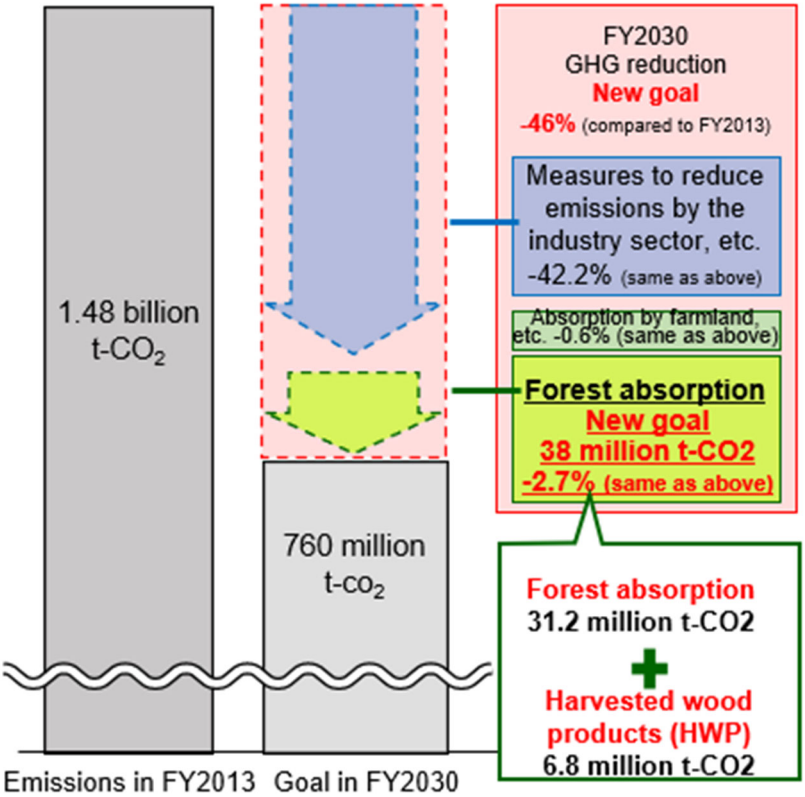
Emissions from the fossil fuel / industrial sectors are expected to further decrease, but it is difficult to achieve zero GHG emissions. Therefore, in order to achieve net zero (carbon neutrality), it is necessary to focus on the $CO_2$ absorption/storage functions of forests and wood and to make effective use of them. The more forests grow, the more they absorb $CO_2$, and it takes decades. Therefore, we must take actions now in order to increase the amount of $CO_2$ that forests will absorb.

**(2) Positioning in Japan**

The Basic Plan for Forest and Forestry (decided by the Cabinet in June 2021) espouses appropriate thinning, cyclic use of resources through "Harvesting, Utilizing, and Replanting" trees, and expansion of wood use. Through these efforts, the government of Japan (the GOJ ) aims to manage forests appropriately, promote sustainable use of forest resources, transform forestry into a growth industry, and achieve green growth that contributes to carbon neutrality by 2050.

In addition, the Plan for Global Warming Countermeasures (decided by the Cabinet in October 2021) set a new target of reducing GHG emissions by 46% by FY2030 compared to FY2013. Forest absorption (consisting of the amount absorbed by forests and amount stored in harvested wood products (HWP)) will have to account for 2.7% (38 million t-$CO_2$) of this reduction percentage (Figure 2).

Figure 2: New targets for reduction of GHG emissions and absorption by forests (FY2030)



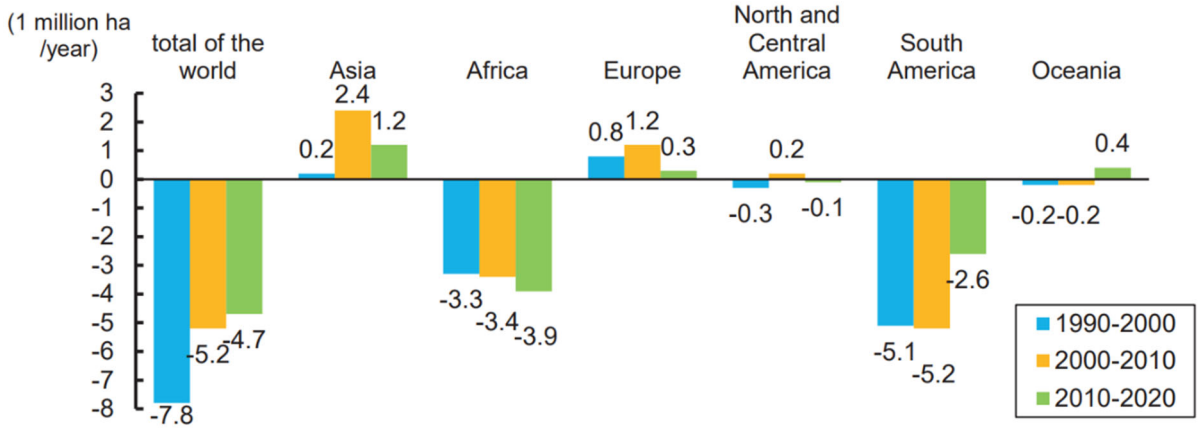
## 2. The Current State of the World's Forests and Investment in Forests from the Perspective of Climate Change

### (1) Current situation of forests and COP26's responses

The global forest area in 2020 was approx. 4.1 billion hectares in 2020, accounting for 31% of the global land area. Although regional forest growth has been observed in Asia, Europe, and Oceania due to planting and natural expansion of forests, the global forest area has been on a declining trend. Rainforests in South America and Africa are rapidly disappearing because of conversion to agricultural land and forest fires. While the decline in forest area in the decade from 2010 to 2020 was slower than in the previous 20 years, the global forest area has been reduced by an average of 4.7 million hectares (approx. one-fifth of Japan's forest area) per year (Figure 3).

Amid these circumstances, over 140 countries, including Japan, signed the Glasgow Leaders' Declaration on Forests and Land Use in the "Action on Forests and Land Use" event held under the auspices of the United Kingdom in line with the COP26. The declaration aims to strengthen efforts to conserve forests and promote their recovery in order to prevent deforestation and improve the situation by 2030, and to promote trade and development policies that do not cause deforestation. The world is paying attention to these measures for preventing deforestation and degradation.

Figure 3: Change in global forest area




Source: Prepared by the Forestry Agency based on Global Forest Resources Assessment 2020(FAO)

### (2) Efforts for investments in forests

The NYDF[3] Assessment Partners[4] published the report "Taking stock of national climate action for forests" in 2021, in which it evaluated how forest management should be funded from the perspective of preventing climate change. According to the report, current international and domestic funding of on average USD 2.4 billion per year for forest-related

[3] Abbreviation of "The New York Declaration on Forests", which was adopted at the 2014 UN Climate Action Summit.

[4] NYDF Assessment Partners was founded in 2015 as an independent civil and social organization initiative to monitor progress toward NYDF goals.

climate mitigation by worldwide governments only covers a fraction of what is needed to protect, restore, and sustainably manage forests: 0.5–5 percent. The Glasgow Leaders' Declaration on Forests and Land Use also stated the commitments to "increase finance and investments from a wide variety of public and private sources, and to enable sustainable forest management, forest conservation, and restoration". It is therefore considered that further funding is needed to take measures against climate change in forests.

Under these circumstances, it is recognized that investing in forests is characterized by the fact that trees grow steadily every year and timber volume will increase, that they become a stable source of income in the long term if there are no natural disasters, and that they are less affected by financial crises because they are less correlated with traditional financial sectors such as stocks and bonds. For these reasons, institutional investors in the United States and other countries regard forests as attractive targets for building portfolios to diversify risk.

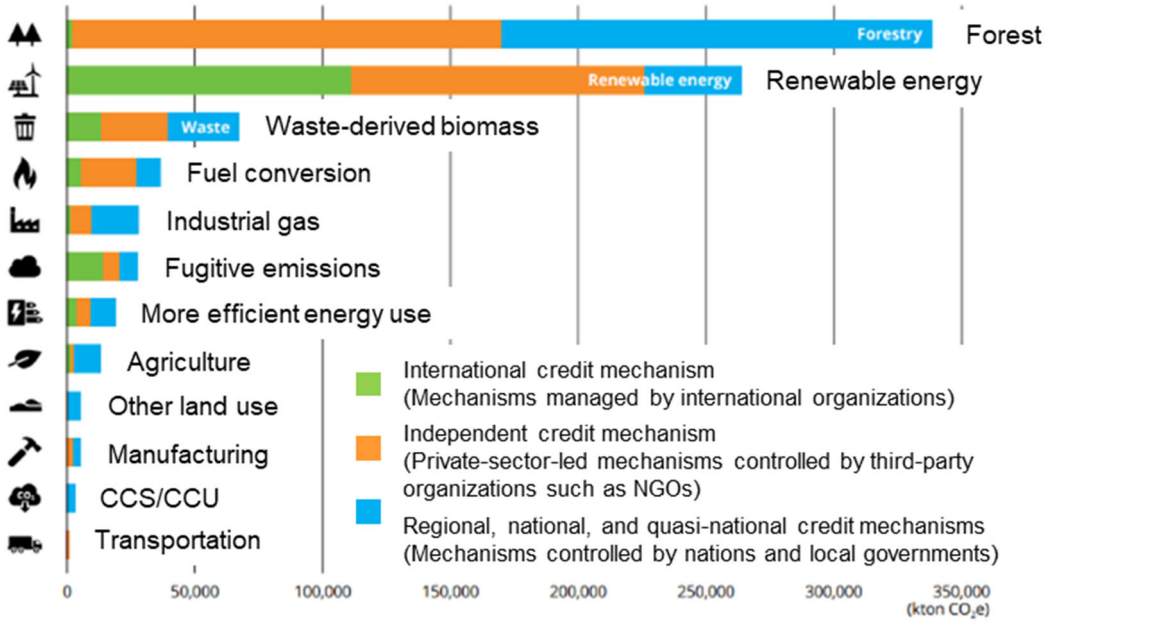
The forests in the United States and other neighboring countries have efficient forestry conditions, such as flat topography, developed forest road systems, and resource management information. Furthermore, these forests are congregated in one place.

In these forests, where returns on investment can be expected, forest investment management has been developed, for example in the form of TIMO[5], in which costs required for managing the forests are covered by funds and investments from the private sector, which gives work instructions for forestry contractors to efficiently and appropriately manage forests, and the companies give returns to investors from the profits. The global market size of forest funds is estimated to have increased five times from approx. $20 billion (2.2 trillion yen) in 2000 to approx. $100 billion (9.8 trillion yen) in 2013, and have increased gradually since then.

Although different from a direct investment in forests, carbon credit systems, which focus on reducing $CO_2$ emissions and increasing $CO_2$ absorption, include systems where the $CO_2$ absorption effects in forest management projects such as thinning are converted into monetary value. Looking at global carbon credits issued between 2015 and 2019 by sector, the forest sector has the highest amount of carbon credits issued, accounting for 42% of the total (Figure 4). This is possibly because the forests' multiple functions are highly evaluated, including contribution to preventing climate change, conservation of biodiversity, watershed protection, and other benefits. Investment activities for forest management are not only conducted from the viewpoint of profitability, but also from the viewpoint of the impact of investment projects on society and the environment.

[5] Abbreviation of "Timberland Investment Management Organization".

Figure 4: Amount of carbon credits issued by sector and mechanism in 2015-2019




Source: World Bank Group "State and Trends of Carbon Pricing 2020"

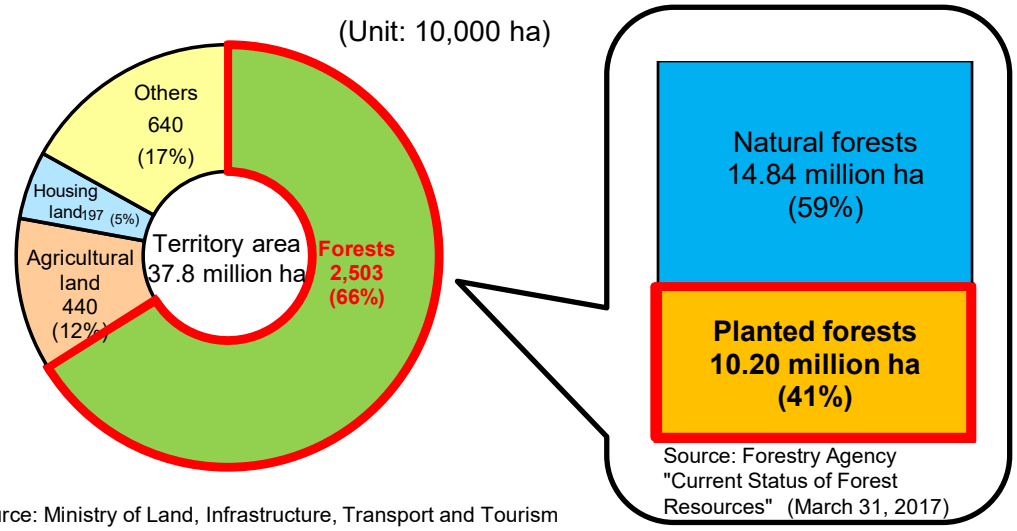
## 3. Current State of Forests and Related Challenges in Japan

### (1) Current condition of forests in Japan and how to increase $CO_2$ absorption

The forest area in Japan is 25.03 million hectares, remaining almost constant for decades. The total land area of Japan is 37.8 million hectares, and approx. two thirds of the land is covered by forests (Figure 5). Approx. 40% (10.2 million hectares) of Japan's forests are planted forests, and most of them were created in cutover areas immediately after the war or during the period of high economic growth. As the planted forests have grown, more than half of them are over 50 years old and generally suitable to be logged, so further use of the forests is required (Figure 6).

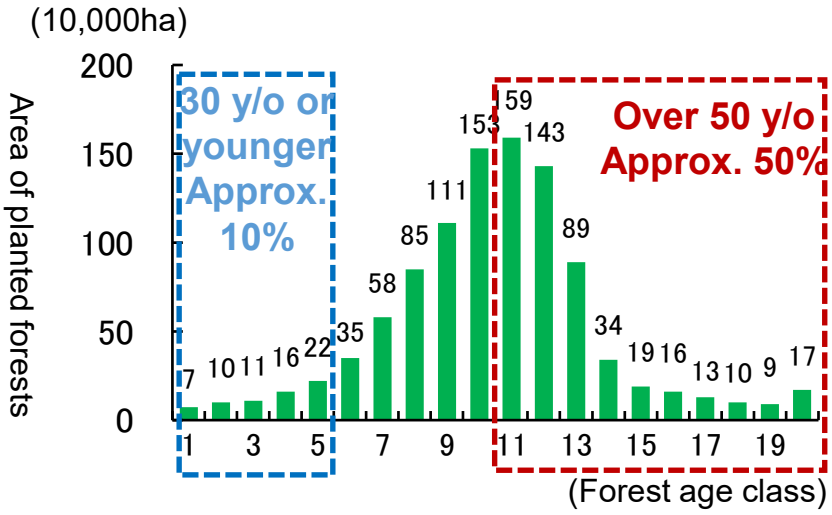
Currently, forest resources, especially planted forests, have grown by approx. 60 million cubic meters annually. The growing stock of planted forests as of 2020 is approx. 3.4 billion cubic meters, which is six times higher than the approx. 5,600 million cubic meters in 1966, and the total growing stock of planted and natural forests is approx. 5.43 billion cubic meters (Figure 7).

Figure 5: Breakdown of land area of Japan



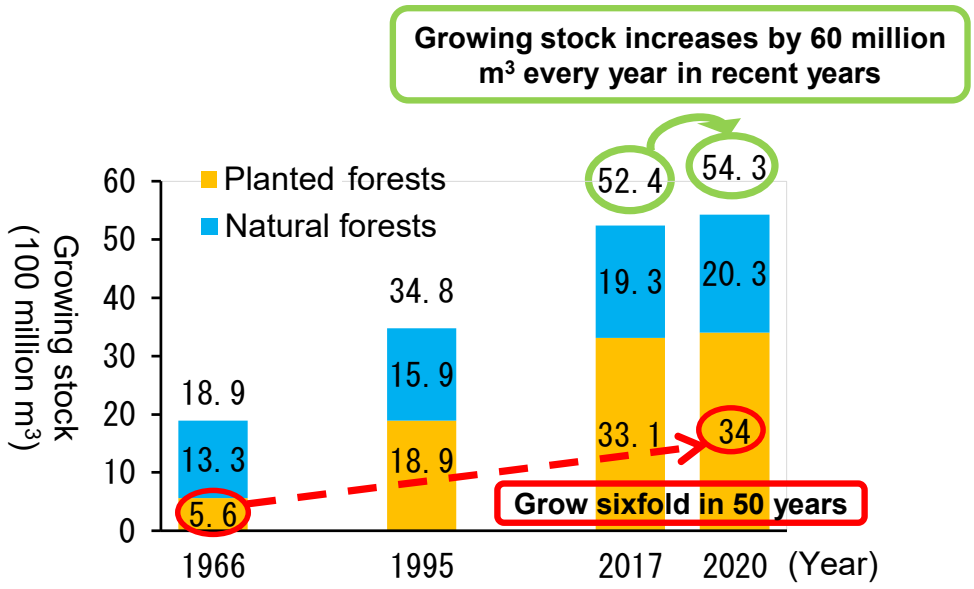

Source: Ministry of Land, Infrastructure, Transport and Tourism
"FY2021 White Paper on Land"
(The territory area is the value as of 2019)
Note 1: The total numbers are not the same because fractions are rounded off.
Note 2: The survey methods and time for forest areas are different from ones specified in Forestry Agency's "Current Status of Forest Resources".

Figure 6: Area of planted forests by age class in Japan



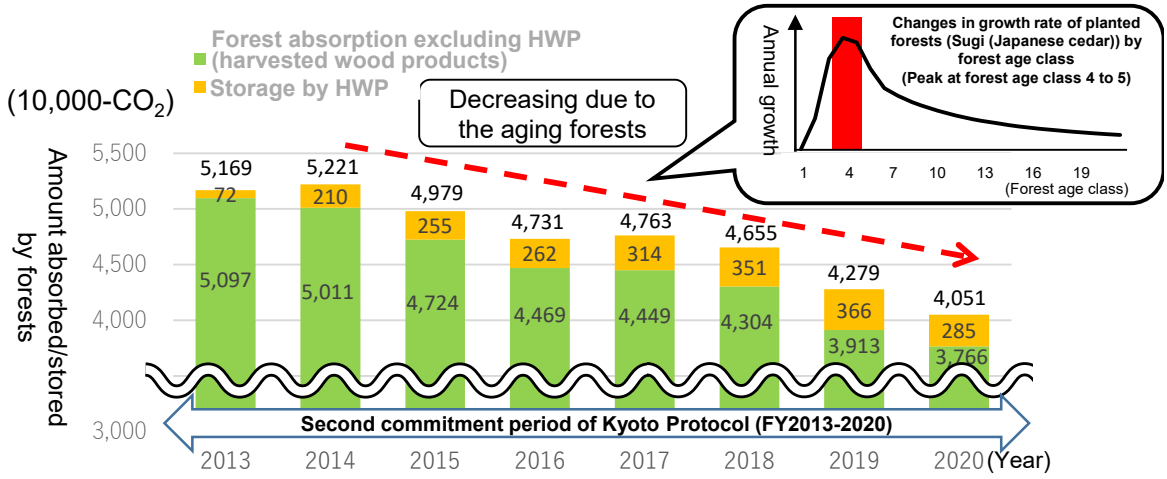

Source: Forestry Agency “Status of Forest Resources” (March 31, 2017)

Figure 7: Changes in growing stock in Japan




On the other hand, the growth of planted forests is said to decline from the peak of forest age class 4 to 5 (forest age 16 to 25), and the amount of $CO_2$ absorbed by Japan's forests has been decreasing due to the aging of the planted forests (Figure 8).

Figure 8: Changes in absorption by Japan's forests




In order to achieve carbon neutrality by 2050, 3,800 million t-$CO_2$ must be absorbed in FY2030. However, considering that Japan is densely populated and the use of land is advancing, there is little room for afforestation, so it is necessary to establish the cycle of "Harvesting, Utilizing, and Replanting" trees for managing Japan's forests, especially planted forests appropriate for forestry management. In other words, it is important to develop young forests with strong growth potential and to achieve the desired form of

forest, in which forests consisting of various growth stages are arranged in a balanced manner.

In order to secure and strengthen the amount of $CO_2$ absorbed by Japan's forests, it is necessary to appropriately cut down planted forests which have reached their usage period, and to replant and grow trees in the cutover areas (Figure 9). Choosing reforestation by planting Sugi (Japanese cedar) or similar trees as the method of renewal after logging will increase annual growth and the $CO_2$ absorption effect more than choosing natural regeneration (Figure 10).

Figure 9: Cyclical use for ensuring forest absorption

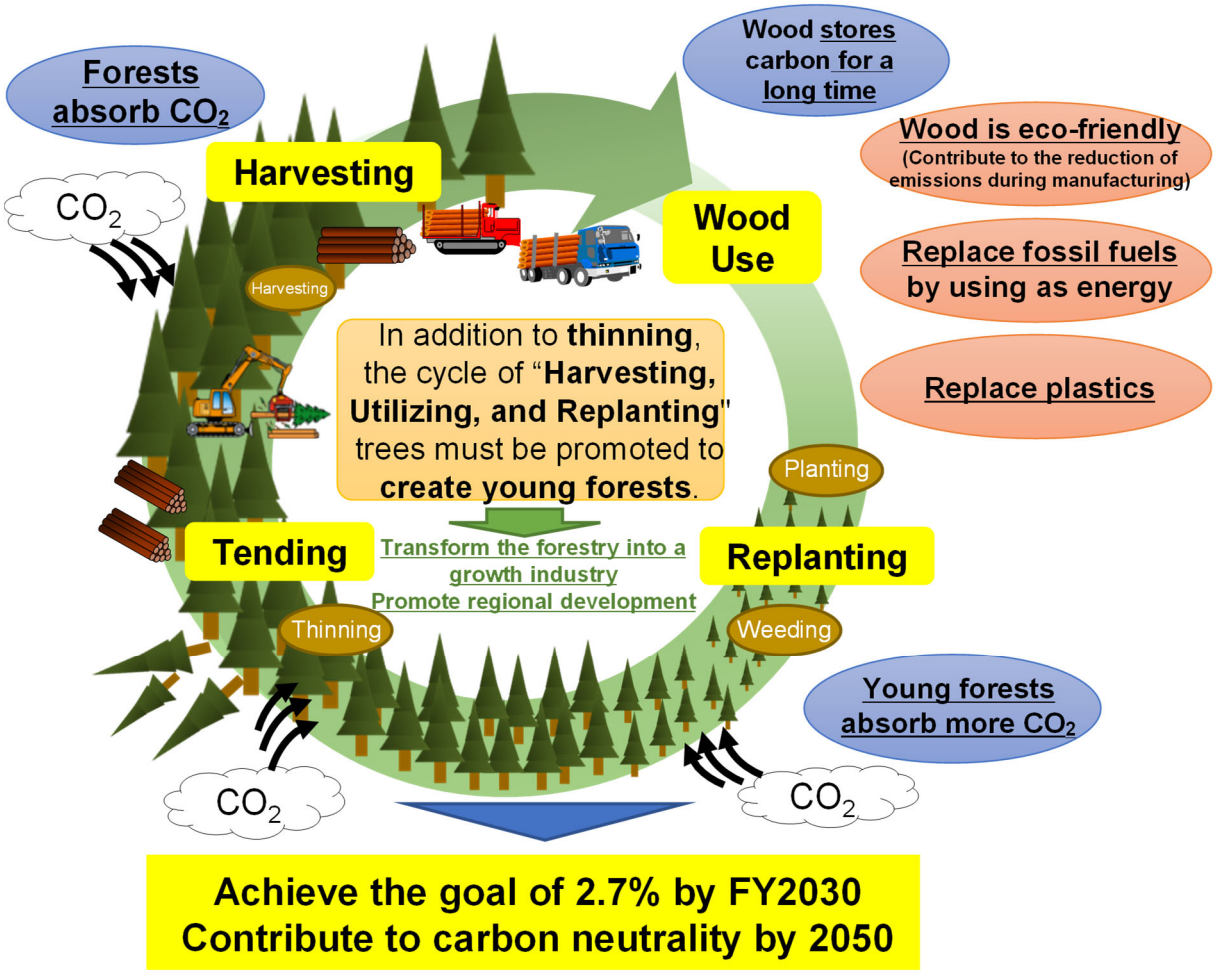
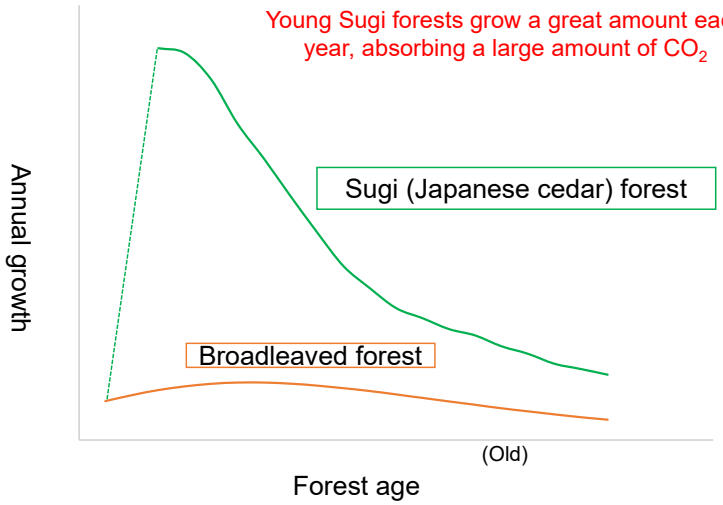


Figure 10: Difference in annual growth by tree species (yield table by Gifu Prefecture)




* Created on the basis of "yield table for broad-leaved forest" and "General area (areas with less than 1 m of deepest snow depth), stand density management diagrams, yield table for Sugi (Japanese cedar) forest" by the Forestry Policy Division of Gifu Prefecture.

As carbon is stored in wood, it is effective to use logged wood for building materials appropriately and re-use wood from demolished building for particle boards and furniture (Figure 11).

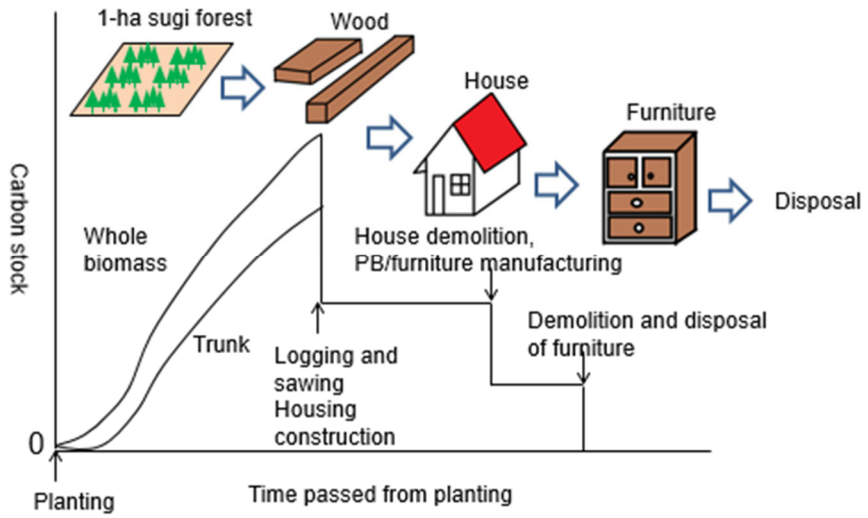
A temple carpenter named Tsunekazu Nishioka said in his book "The building of Horyu-ji: the technique and wood that made it possible[6]" that trees finish their lives when they are felled but live a second life as lumber for building materials to support buildings. This concept is similar to $CO_2$ storage by wood use.

Furthermore, wood is a material that consumes relatively little energy during manufacturing, and woody biomass replaces fossil fuels. Therefore, using it contributes more to the reduction of $CO_2$ emissions than the use of other materials.

Strategy for Sustainable Food Systems, which was formulated by the Ministry of Agriculture, Forestry and Fisheries in 2021, stipulates that Japan aims to increase the use of fast growing seedlings, such as the “elite trees”, to 30% and 90% of forestry seedlings by 2030 and 2050, respectively, to establish high-rise wood building technology and maximize $CO_2$ stored by wood by 2040.

[6] Tsunekazu Nishioka, Jiro Kohara (2019) The building of Horyu-ji : the technique and wood that made it possible. NHK Books (pp 56-57)

Figure 11: Carbon stock in wood use




Note 1: This figure shows that Sugi (Japanese cedar) planted in 1 hectare of forest area absorbs $CO_2$ from the atmosphere and fixes it as carbon inside, and keeps the carbon inside even after it is logged and used for houses or furniture for a certain period of time.

2: This does not take into account continuing absorption in forest areas as a result of reforestation.

Source: Motoaki Okuma (2012) *Sanrin*, No.1541 (pp 2-9)

### (2) Current state of investments in forests in Japan

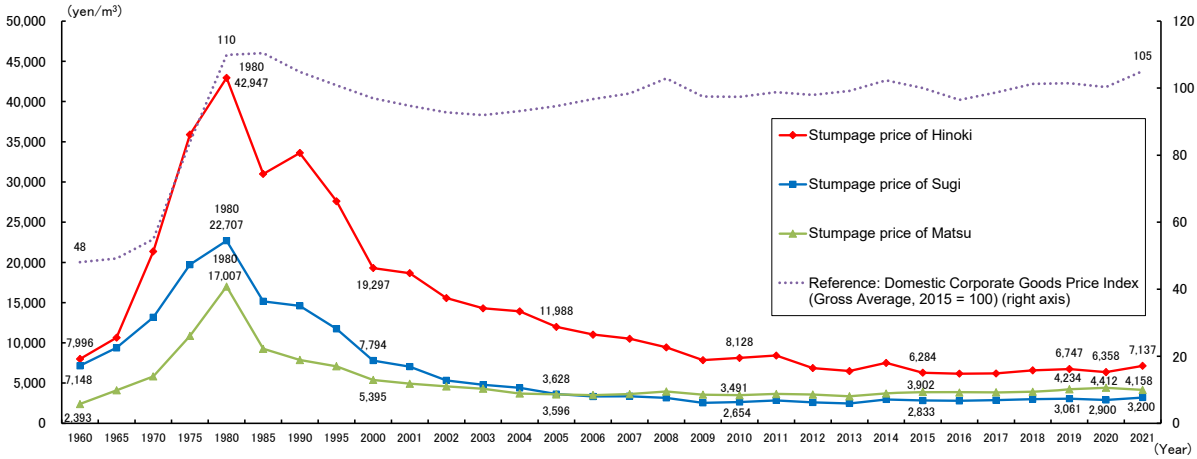
Japan's forestry experiences difficulty in improving efficiency because of the steep terrain unlike the forests in the United States. The management efficiency of Japan's forestry is also poor, because forestry road systems have not been developed well, resulting in high transportation costs; resource management information, such as information on boundaries and owners, has not been shared appropriately; and private forests are generally owned by small and micro entities.

Furthermore, due to the long-term slump in stumpage prices (Figure 12), the change of generations of forest owners, and an increase in non-resident forest owners, owners are becoming less interested in their forests. As the amount of harvestable forest resources is limited and technology such as forestry machines has not been developed well, efforts to improve productivity are still insufficient.

Forests and Forestry generally take a long time from planting to logging, and looking at each forest, there are only three cash inflows in approx. half a century, including thinning. Therefore, when taking into consideration Japan's small and micro forests that provide lower efficiency, investment returns from Japan's forests cannot be expected as much as those overseas.

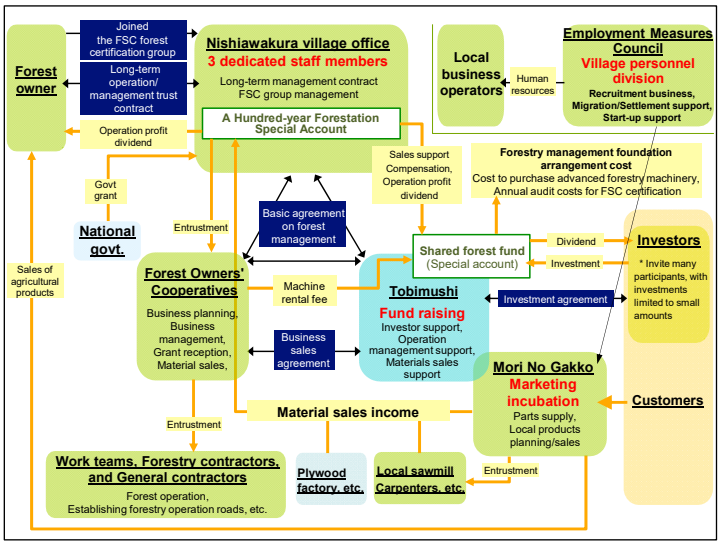
For these reasons, Japan's forests are different from those of other countries, and have been regarded as difficult to invest in. The actual cases of forestry investment are limited to the cases in Nishiawakura Village, Okayama Prefecture and Uchiko Town, Ehime Prefecture involving Tobimushi Inc. which the Study Group interviewed (Figure 13).

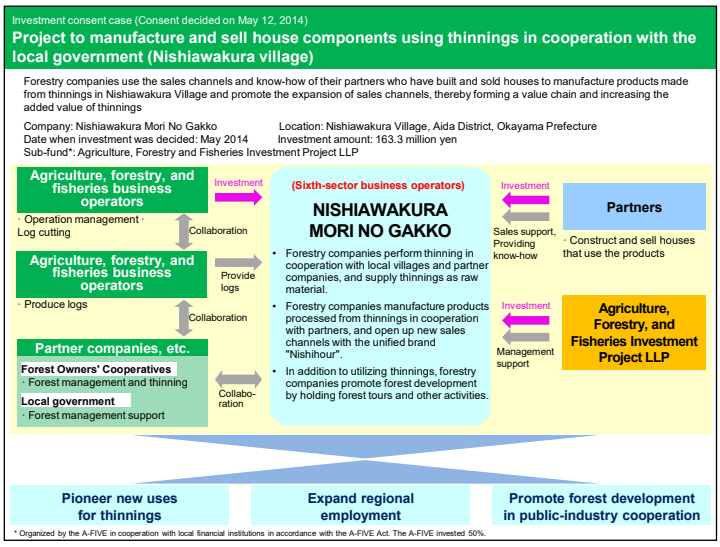
Figure 12: Changes in the national average stumpage price

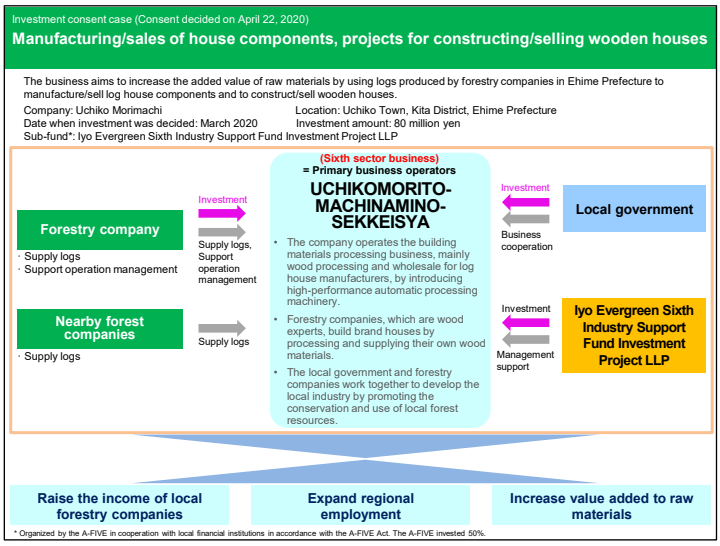



Note: “Stumpage price of Matsu” shows prices of Todomatsu, Ezomatsu, and Karamatsu in Hokkaido.
Source: Japan Real Estate Institute "Survey of Mountain forest base & stumpage price"; Bank of Japan "Corporate Goods Price Index (BOJ Time-Series Data Search)"

(Figure 13) Example of Investment in Nishiawakura Village, Okayama Prefecture and Uchiko Town, Ehime Prefecture involving Tobimushi Inc.



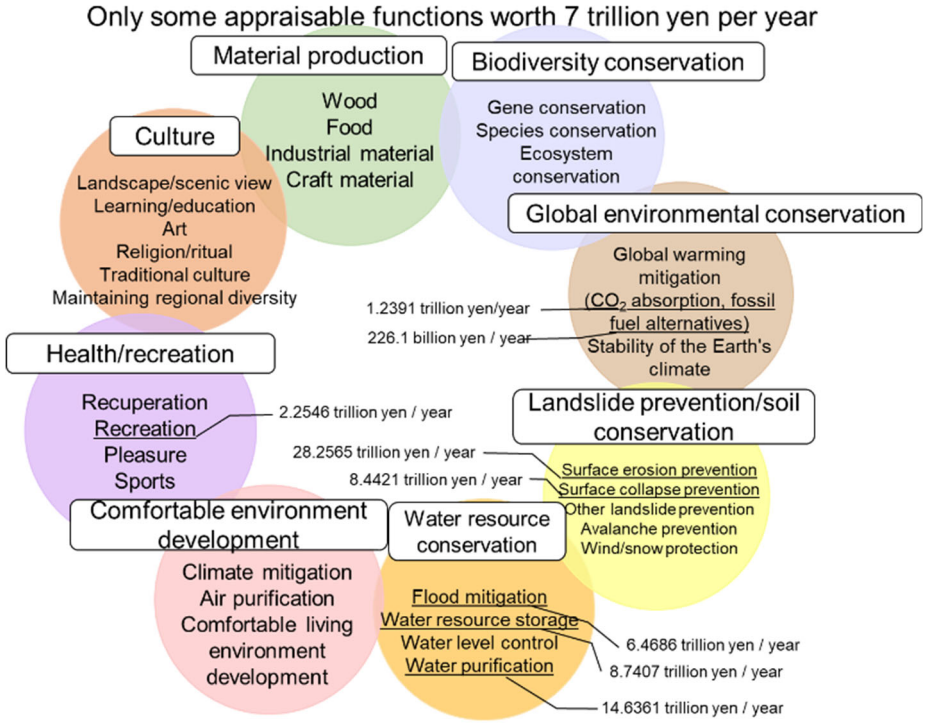




* Created on the basis of the materials presented by Tobimushi Inc. at the first study group meeting

### (3) Forest management to date and future development

Japan's forests contribute to the stability of people's lives and the sound development of the national economy through their various functions such as land conservation, watershed protection, and global warming prevention. These are the multiple functions of forests. The multiple functions of forests include functions for public interest, such as land conservation, and functions for producing wood. The total estimated value of appraisable functions for public interest is 7 trillion yen per year (Figure 14). The multiple functions of forests are characterized by the fact that one of the functions is not demonstrated independently but several functions are demonstrated at the same time. For this reason, even the planted forests developed for wood production demonstrate functions for public interest, such as land conservation.

Figure 14: Appraisal of functions of forests for public interest




* Created based on Science Council of Japan "Appraisal of the Multiple Functions of Agriculture and Forests in Relation to Global Environment and Human Life" and attachments to the document (November 2001).
* The amount is for appraisable functions out of the multiple functions of forests, mainly physical ones. All appraisals use values within a certain assumptive range, and should be applied with caution.

In order to ensure that functions of forests for public interest will be fully demonstrated in the future, the GOJ has promoted forest management and maintenance/demonstration of functions for public interest by means of subsidies (such as public works) for forest owners and forest management entities, with a certain amount paid by them.

In addition, in line with the start of the forest management system in FY2019, in which municipalities are entrusted to manage forests under poor management, a forest environment transfer tax started to be transferred to prefectures and municipalities as a new source of funding for forest management and other measures to combat global warming and prevent disasters.

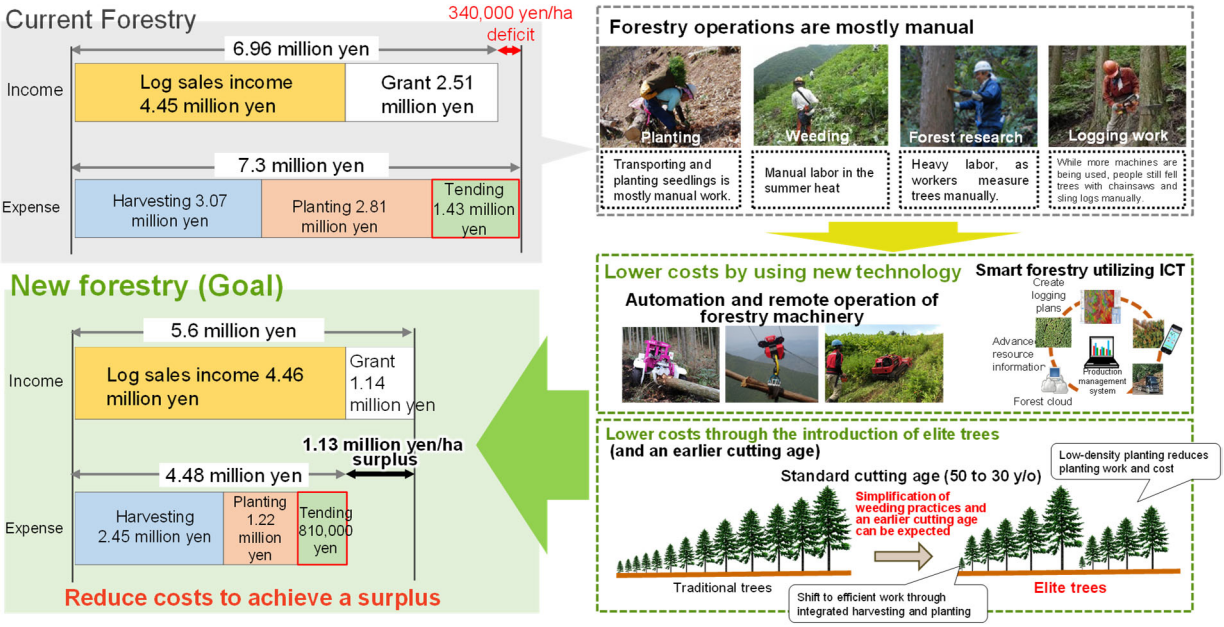
Many forests are in the stage of tending and thinning, and forest management has been promoted with support from public funds from the viewpoint of the functions for public interest. While many forests are at the stage of utilizing and are progressing to being harvested, reforestation after harvesting is not performed often because of high burden on forest owners. In other words, because of forestry's management structures, where costs for tending trees, such as planting and weeding, are high compared to income from timber sales (Figure 15), the reforested area is limited (Figure 16). Therefore, in light of the current state of Japan's forests, in order to steadily advance reforestation and achieve carbon neutrality, it is necessary to make the structure of forestry management profitable. For this reason, technological innovation and funds to support it are necessary to achieve efficient forestry management.

The Basic Plan for Forest and Forestry specifies and estimates the promotion of activities to achieve the "New Forestry" that makes logging, reforestation, and tending profitable by transporting seedlings with drones and forestry machines, cutting down the number of seedlings through low density planting, reducing reforestation work and costs by planting "elite trees" and reducing weeding work, and improving productivity of logging work by developing forestry road systems and introducing advanced forestry machinery (Figure 15). In order to develop "new forestry" like this and introduce new technology such as smart digital technologies, external investments are necessary for areas that lack public funds.

Therefore, in order to achieve carbon neutrality, it is necessary to consider promoting forest management by gaining help from funds including private capital as well as subsidies (public projects, etc.) while advancing efforts to improve income and expenditure of forestry production, such as coordinating and consolidating forestry practices, reducing reforestation costs and forest management costs, and improving productivity.

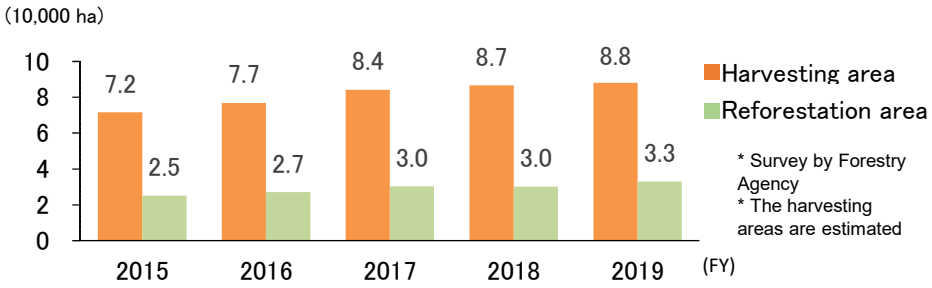
If forest management achieves high productivity and profitability through the use of these private funds, the employment environment, such as the salaries of forestry workers, will be improved, and it is expected to secure more workers.

Figure 15 How forestry management should be in "New Forestry"




Source: Prepared based on Forestry Agency "Outlook of Forestry Management and Structure 2" (Forest Policy Council (November 16, 2020) Data 3). The value is estimated in units of 1 ha of operation area.

Figure 16 Changes in harvesting area and planting reforestation area



## II. Environmental Changes Related to Investments in Forests

### 1. Forests Receiving Attention as More ESG Investments Are Made

As more institutional investors worldwide gain a sense of crisis regarding the risk of climate change, they are increasingly putting value on the sustainability of corporate management and other non-financial information related to measures against climate change and biodiversity conservation as much as financial information, and make more ESG investments[7] (Figure 17).

Investors who make ESG investments also highly evaluate efforts to protect forests to mitigate climate change and conserve biodiversity. From the perspective of climate change, GHG emissions resulting from deforestation and forest degradation in developing countries account for approx. 10% of the world's total emissions. Therefore, efforts to stop reduction and degradation of tropical rainforests are of concern to the world, and the CDP Forest[8] publishes evaluation reports on corporate disclosed environmental information and efforts.

On the other hand, although forest reduction or degradation, which is a major problem in the world, is not seen in Japan, planted forests which account for approx. 40% of the forest area, are becoming old and growing less, so the annual $CO_2$ absorption by the entire forest is declining.

Establishing the cyclical use of "harvesting, utilizing, and replanting" planted forests will result in Japan's forests continuously demonstrating their functions for public interest and will mitigate climate change and conserve biodiversity. Traditional efforts by Japanese companies for social contribution, such as tree planting, are linked to ESG and SDGs, which are attracting global attention, if cyclical use is promoted. Under these circumstances, more Japanese financial institutions have been consulted by companies that want to start taking efforts related to ESG investments, so interest and inquiries regarding Forest Owners' Cooperatives and forestry stakeholders on things related to forests from financial institutions are increasing.

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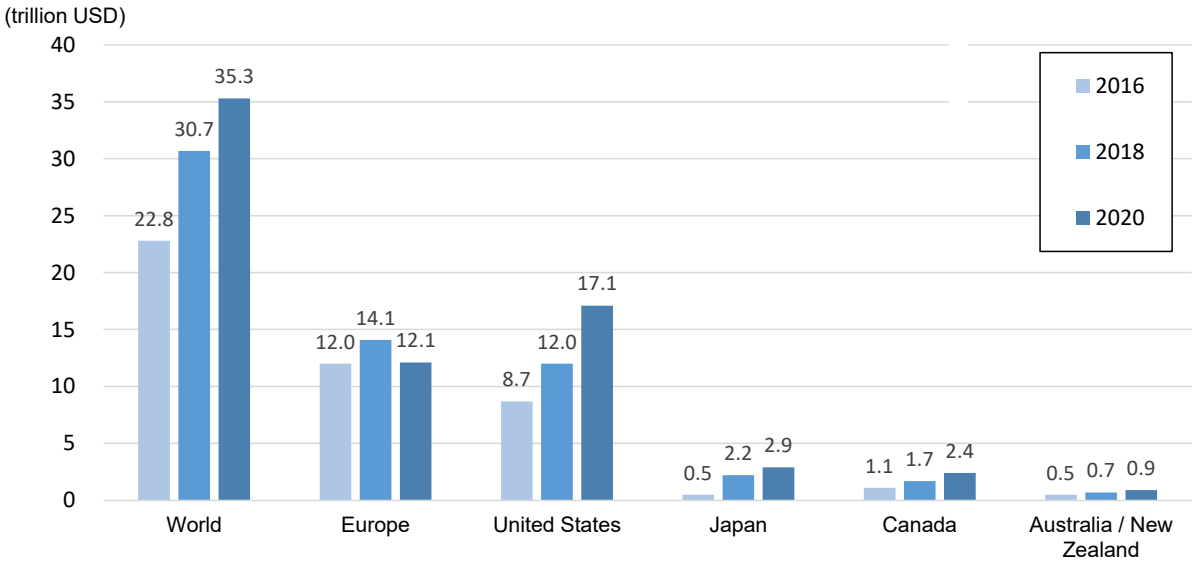
[7] An investment method that uses environmental, social, and governance aspects to decide on investments in addition to traditional financial information

[8] The Carbon Disclosure Project (CDP) is an initiative for institutional investors to ask companies to disclose their environmental strategies and measures against GHGs. The project added forests as survey targets in 2013, and evaluated companies involved in businesses related to wood, palm oil, cattle, and soybeans.

(Figure 17) Expanding global ESG markets




Created on the basis of GSIA (Global Sustainable Investment Alliance) "Global Sustainable Investment Review 2020".

**2. Increasing the Chance of Producing Profits in Wood Production and Sales**

A management decision model to evaluate economic efficiency based on the productivity of forest areas, which was developed in the study by Utsugi and others[9], has started being used. In this model, profits are calculated by multiplying wood volume that increases in a unit area per year (continuous growth volume) by stumpage prices and rotation periods, and expenditures include the costs of planting, tending, production of logs, and transporting.

Companies and governments can judge whether profits can be secured in forests through producing and selling wood by setting wood prices and expenditures, utilizing the calculation, and on the basis of continuous growth volume per unit area and zoning of planted forests.

The use of these research results is expected to improve the chances of producing profits in wood production/sales as matters now stand by reducing forestry practice costs to a certain extent, and to create forest and forestry projects that can be the target of investments.

**3. Increasing Expectations for Forest Investment Incomes**

It is difficult to extract investment projects consisting of profits only in the wood production/sales division in the management judgment model shown in 2. because stumpage prices are not expected to rise significantly. Therefore, there should be schemes and measures where the various values and possibilities of forests and forestry are additionally evaluated as the impact value of the investment.

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[9] Hajime Utsugi, Hirofumi Kuboyama (2021) Criteria for Forestry Based on Land Expectation Value (LEV) in Terms of Mean Annual Increment (MAI) of Plantation Forests. J Jpn For Soc 103: 200-206

In this regard, there have been movements in Japan against the background of efforts to achieve carbon neutrality, including:

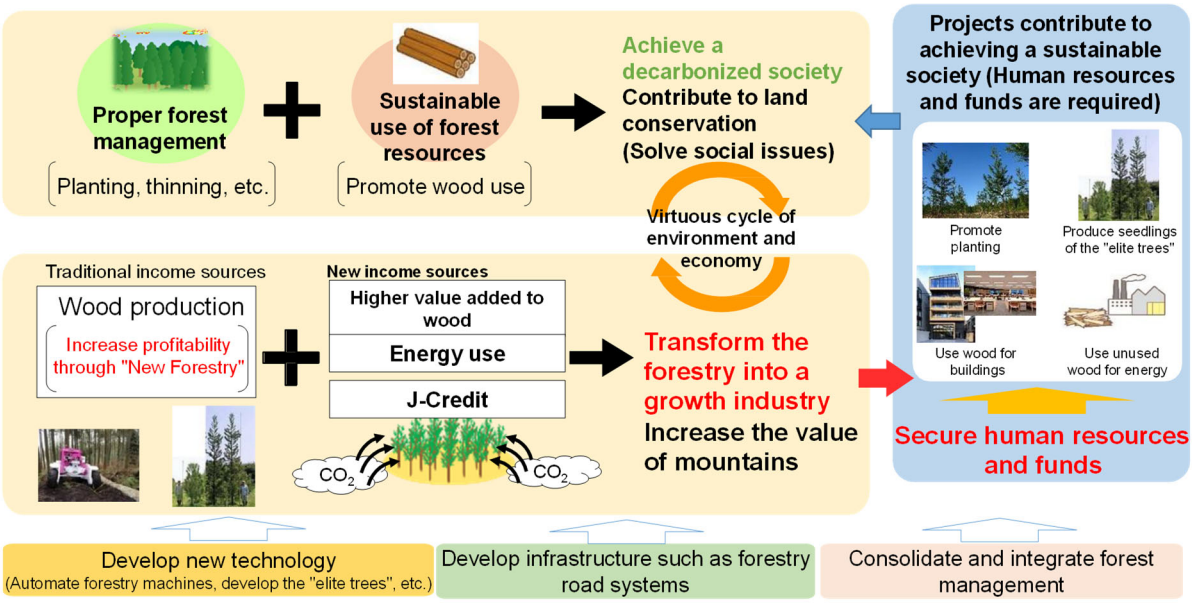
(1) Increase in the private sector's interest in wood use for buildings after the Act on the Promotion of Wood in Buildings to Contribute to the Realization of a Decarbonized Society was enforced;

(2) More use of woody biomass such as unused wood for energy use under the FIT scheme in Japan; and

(3) Progress in efforts to use the J-Credit scheme derived from forest management activities.

These actions have led to the improvement of the value of forests, and expectations are rising from the viewpoint of impact investing (Figure 18).

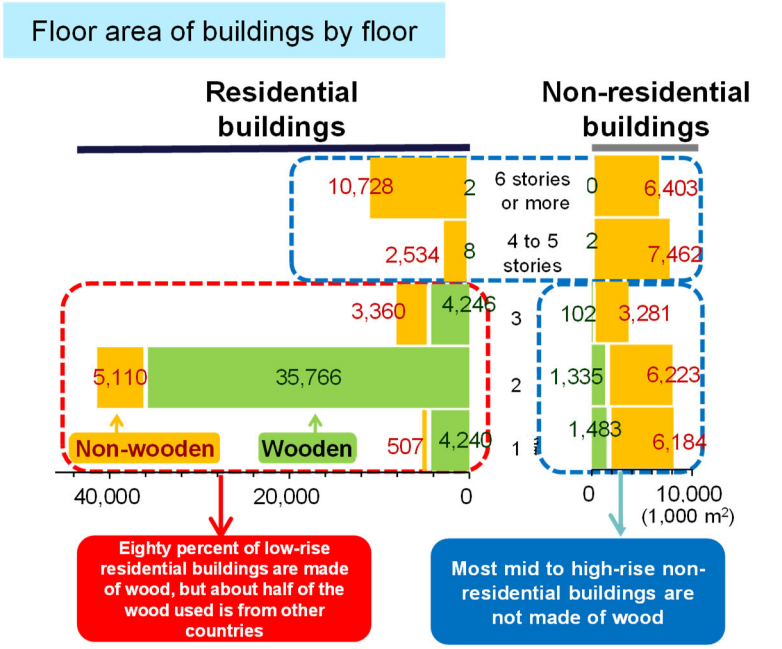
(Figure 18) Virtuous cycle of forest and forestry environment and economy by securing new sources of income




As for "(1) Increase in the private sector's interest in wood use for buildings after the Act on the Promotion of Wood in Buildings to Contribute to the Realization of a Decarbonized Society was enforced", looking at the current building floor areas in Japan in both residential buildings and non-residential ones and by number of floors, eighty percent of one-story to three-story residential buildings are wooden structures, but less than 10% of mid- to high-rise residential ones with 4 or more floors and non-residential buildings are wooden buildings (Figure 19). The Basic Plan for Forest and Forestry establishes a direction for aiming to acquire new demand for wood in mid- to high-rise buildings and non-residential buildings and for expanding the use of high-value-added wood products that use domestic wood. There has been progress on agreement systems based on the "Act on the Promotion of Wood in Buildings to Contribute to the Realization of a Decarbonized Society" (Act No. 36 of 2010) and public-private efforts on wood change. Efforts to increase wood value that lead to improved profitability of raw wood have been

implemented at an accelerated pace. Therefore, the growth of demand for high-value-added building wood materials is expected to increase the value of forests and forestry.

Figure 19: Use of wood for buildings




Source: Ministry of Land, Infrastructure, Transport and Tourism "the Survey of Building Construction Work Started" (2020)
Note: "Residential buildings" refers to the total number of residential buildings, semi-residential buildings, and residential-industry buildings, and "non-residential buildings" refers to the total number other buildings.

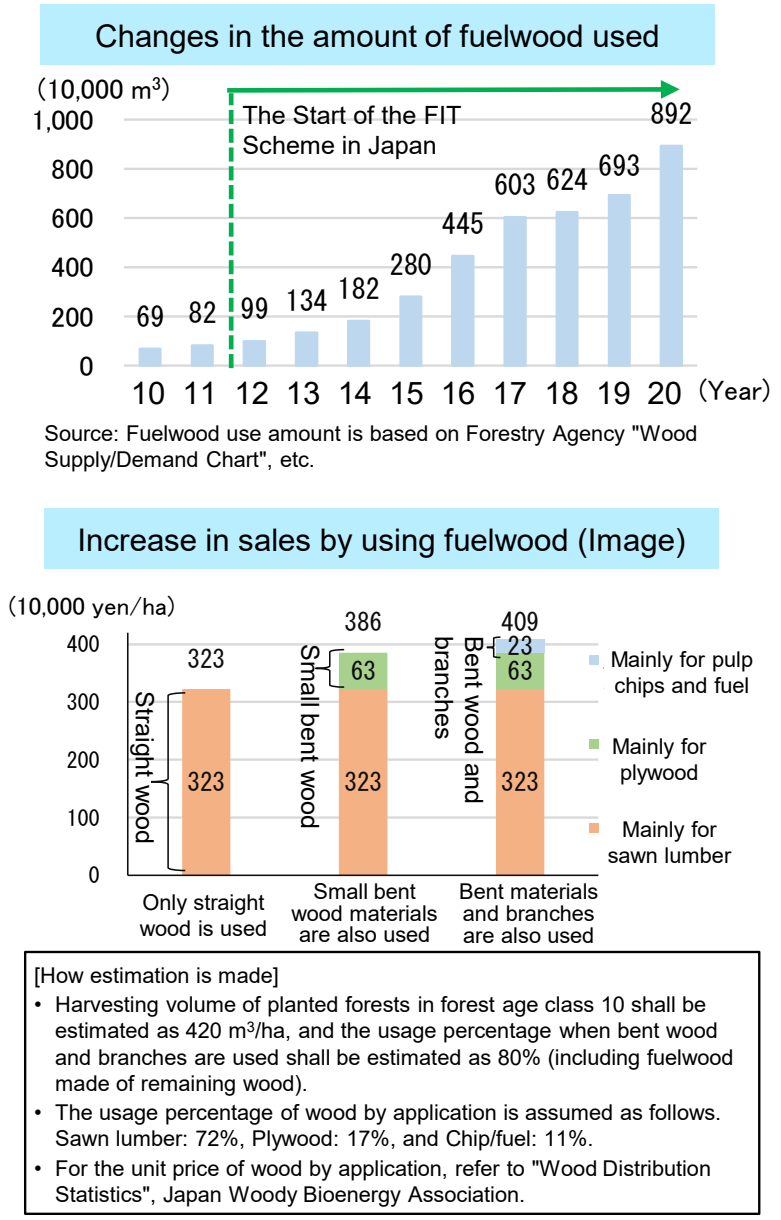
High-value-added wood products that use domestic wood

(Co-operative Fukuoka/Okawa Furniture Industry)

(Nishiawakura Mori No Gakko)

As for "(2) More use of woody biomass such as unused wood for energy under the FIT scheme in Japan", the increasing amount of woody biomass is used for energy sources, as woody biomass generation plants have increased as a result of the Feed-in Tariff (FIT) Scheme for Renewable Energy Use in 2012. New income sources are available for wood, the value of which was limited to sawn lumber and plywood, by broadening wood utilization, including using it as fuel. This leads to the utilization of bent wood, branches, and other wood waste that was previously unused. (On the other hand, it is important to keep in mind from the management viewpoint that it is crucial to increase the ratio of high-value applications such as sawn lumber). Therefore, it is believed that this will contribute to an increase in the sales of wood, and improvement in the value of forests and forestry (Figure 20).

Figure 20: Using unused wood as woody biomass




Finally, as for "(3) Progress in efforts to use the J-credit scheme derived from forest management activities" the forest sector accounts for 42% of the global carbon credits as mentioned above. However, looking at Japan's certification status of the J-credit scheme by methodology, solar power generation accounts for the majority of the issuance, and forest management activities are only 128,000 t-$CO_2$ (Figure 21).

The value of forests has been generated by wood sales revenue as a result of logging. With the J-credit scheme, however, additional income can be generated from standing trees without logging them, so it is possible to create new revenue sources by expanding and promoting credit issuance.

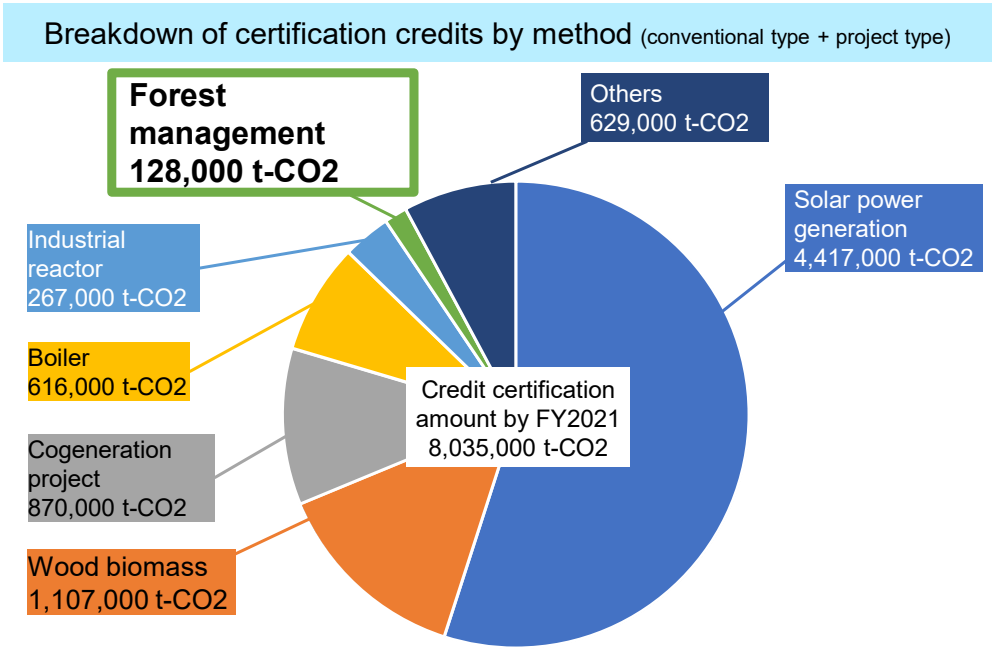
The Plan for Global Warming Countermeasures promotes the creation of carbon-neutral credits for carbon removal/absorption credits, which are becoming increasingly important to achieve carbon neutrality by applying the scheme to forest owners and management

entities and simplifying monitoring processes in order to increase the generation of forest-derived credits through forest management activities.

Specifically, the Forest Subcommittee was established under the J-Credit Scheme Steering Committee, and has started to review the scheme for forest management activities since April 2022 (requirements for project registration (additional requirement), handling of reforestation, recording the fixed amount of $CO_2$ in wood use, and the absorption amount of natural forests).

The acquisition of credits has made it possible to increase the value of forests and forestry by adding revenue that had not existed before.

Figure 21: Using J-Credit Scheme




* Data from J-credit Secretariat
* Includes transferred amount from J-VER scheme

Selling price of J-credit

| | Price | Remarks |
|---|---|---|
| Renewable energy (Solar, biomass, etc.) | 2,995 yen/t-CO2 | Auction results in January 2022 |
| Energy savings (Introducing boilers, lighting equipment, etc.) | 1,574 yen/t-CO2 | Same as above |
| Forest management | From thousands to ten and thousands yen/t-CO2 | Information from interviews (Negotiated transaction price) |

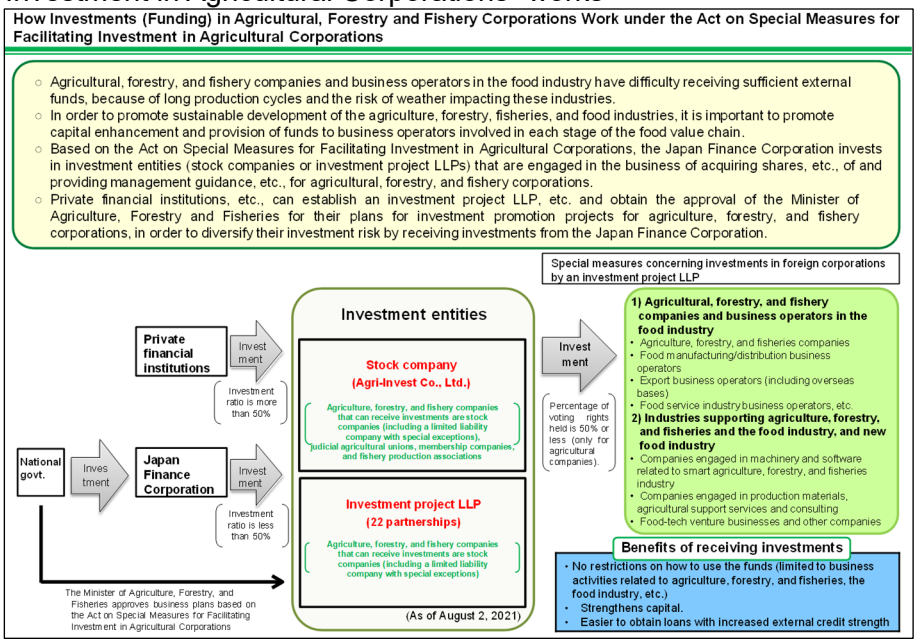
* J-credits are generally sold through negotiated transactions, and individual transaction prices are unknown. Only government-owned credits for renewable energy and energy savings are sold through bidding.

Source: J-Credit Scheme website https://japancredit.go.jp/, Forestry Agency

## 4. New Movements of Public-private Funds

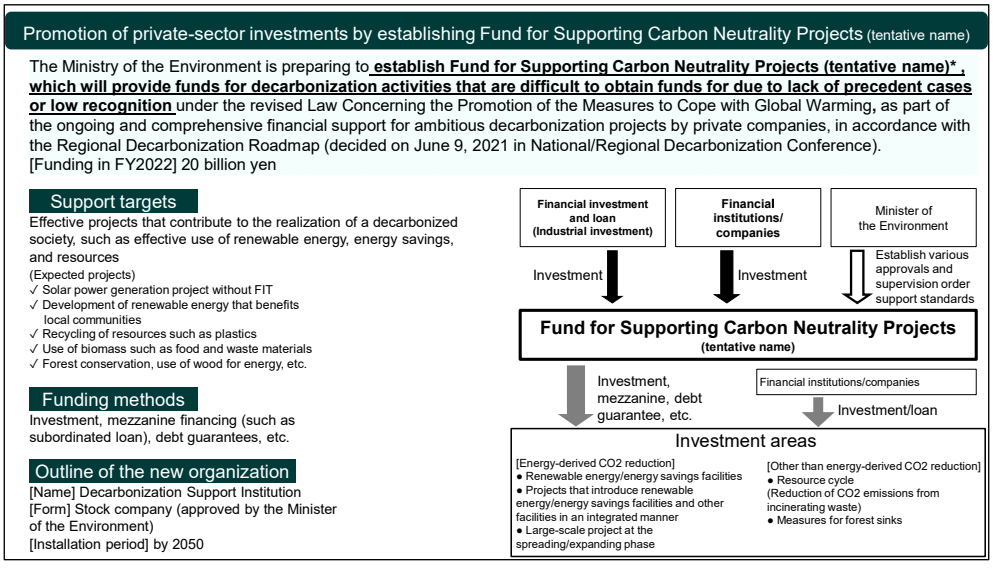
An environment for promoting new investments in the forest/forestry/wood industry is being developed, as the Act on Special Measures for Facilitating Investment in Agricultural Corporations (Act No. 52 of 2002) was revised in April 2021 to expand investment targets, which were only agricultural corporations, to include forestry and other fields (Figure 22), and the Act Partially Amending the Act on Promotion of Global Warming Countermeasures (Act No, 60 of 2022) was established in May 2022 to specify the creation of new decarbonization investment systems and include forest conservation and timber/energy use as investment targets (Figure 23).

Figure 22: How investments based on the "Act on Special Measures for Facilitating Investment in Agricultural Corporations" works




Created based on the website of the Ministry of Agriculture, Forestry and Fisheries "Investment Promotion System for Agriculture, Forestry and Fisheries Corporations"

Figure 23: Outline of a new decarbonization investment system (Ministry of the Environment)




Created based on the MoE website "Decarbonization Portal"

## III. How Investment in Forests, etc. Should be Promoted from the Viewpoint of Promoting Carbon Neutrality

### 1. Basic Concept of Investing in Forests, etc.

In order to transform Japan's forestry into a growth industry and further promote green growth in accordance with the Basic Plan for Forest and Forestry, as groundwork for investment in forests, etc., it would be effective to have a system where even people without much expertise can easily understand how multiple functions such as measures against climate change and biodiversity conservation can be estimated as investment effects.

Financial institutions have said that it is difficult to decide whether or not to invest in the forest and forestry sector because there are not many precedents for investments. In addition to determining profitability, whether individual investment projects for the forest/forestry/wood industry are desirable for promoting the policies listed in the Basic Plan for Forest and Forestry and are not greenwashing[10] projects must be explained externally in this age where business activities are evaluated from an ESG perspective. On the other hand, it cannot be said that financial and investment institutions have developed persons who have deep knowledge on forests, and it is difficult to make decisions without expert knowledge. Under these circumstances, if the impact of new investment projects on carbon neutrality and biodiversity conservation can be seen in a simple way, it is expected to be a call for investment in forests.

The basic idea is to quantitatively evaluate the increase and decrease in forest absorption after investment projects, and to objectively confirm the impact and effect on biodiversity conservation and other matters, in order to induce investment in forests.

This approach is designed to help 1) secure confidence in the contribution of green investments to green growth, 2) reduce issuance costs and administrative burdens by investors, and 3) prove the greenness of their own investment projects, and is intended to be a key factor in achieving green growth involving private funds.

### 2. Necessity of Consideration based on the Unique Nature of Japanese Forests

As mentioned before, while forests worldwide require measures against reduction and degradation of them, in Japan, the amount of forest absorption is gradually decreasing with the aging of planted forests. The promotion of cyclical use of forest resources with the cycle of "Harvesting, Utilizing, and Replanting" trees is important to secure and increase forest absorption over the medium to long term. As such, there is a gap between Japan and other nations in themes for responses to forests through investment.

For this reason, it is necessary to consider measures on the basis of Japan's unique challenges in forest management. The aim is to induce investment in forests by showing evaluation methods based on the effects of future forest absorption and storage for the forestry industry that harvests/replants trees.

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[10] The term "greenwashing" refers to something that is apparently environmentally-friendly, but actually is not or is pretending to be so.

Because harvesting itself causes $CO_2$ emissions, it is necessary to contrive evaluation methods, such as to measure the degree of cyclical use by confirming changes in $CO_2$ absorption depending on how forest areas are used after harvesting and how logged trees are used.

**3. Using Public-Private Funds, etc.**

The basic concept described in 1. and 2. shall be taken into account as evaluation methods for investment projects using public-private funds, etc.

In order to ensure that investment in forests through public-private funds, etc. can be used effectively as a call for investments by private investment institutions, and that investment projects are appropriately and smoothly selected, promotion should be made by formulating this Guideline and making its concept and method of use known to people.

**4. Study with a View to Use in Private Investment Institutions**

Private investment institutions expect investment opportunities to expand through investments by public-private funds, but at present, few people consider forests as new investment opportunities. Under these circumstances, it is difficult to see the expansion of investments just by introducing guidelines that contribute to the promotion of carbon neutrality per investment project.

In order to expand the potential for investment, it is necessary in general to expand the possibility of project formation. Therefore, further consideration is necessary to make necessary support measures and rules regarding promoting innovation in forestry road system development and forestry technology, establishing boundaries and arranging information on forest owners to contribute to the creation of investment projects in large forests, creating stable revenue opportunities through consolidation, obtaining forest resource information with laser measurements, etc., forest accounting systems, and disclosing corporate information on forest/forestry/wood industry.

Therefore, as the next step, we consider formulating an "explanatory version for general use" which not only explains the concept of investments comparing Japanese and overseas forests, the Basic Plan for Forest and Forestry, and a wide range of other matters, but also illustrates possible investments by using case studies including the use of decision tools for investment project models as well as commentaries on guidelines in an easy-to-understand way.

The guidelines that will be newly examined will clarify the means and objectives by showing outcomes on the impact of biodiversity and other factors.

The guideline can be used not only for investments by private investment institutions, but also for explaining forest and forestry projects by companies to stakeholders and for using loans for forest and forestry projects.

As the world of ESG investments is moving rapidly, this guideline should be revised as appropriate to accommodate changes in situations.

## IV. How to Evaluate Investment Projects

### 1. Application and Significance of Evaluation

Forest and forestry projects should be built by investment project managers with business purposes and profitability in mind, and some of the forests included in the scope of investment projects are at the stage of tending/thinning, or are in an old forest age class and scheduled to be harvested. When the contribution to carbon neutrality is measured by $CO_2$ absorption, forests that receive carbon credits, such as forest absorption, where thinning is mainly carried out, will always receive a positive evaluation.

On the other hand, as mentioned before, in order to promote the cycle of "harvesting, utilizing, and replanting" trees, harvesting and planting is important, but the amount of $CO_2$ absorbed by the forest does not recover immediately after planting, and the amount of emissions increases at that time. Therefore, when the concept of the J-credit scheme is applied to determine the $CO_2$ absorption/emissions of forests in relation to harvesting, the contribution to carbon neutrality will be negatively evaluated.

This evaluation method aims to measure contribution of investment projects in the forest/forestry/wood industry to carbon neutrality and other factors. Therefore, the evaluation should not be performed for changes in $CO_2$ absorption in an entire forest owned by a company that conducts investment projects or an entire mountain that includes investment project forests, but should be performed for changes in $CO_2$ absorption in each forest stand that is the target of an investment project.

As described later, for $CO_2$ absorption effects after harvesting/planting, this evaluation method will focus on future $CO_2$ absorption effects accompanied by post-harvesting actions, and include future resource recovery related to $CO_2$ emissions associated with harvesting. In other words, the entire $CO_2$ absorption effect gained by tending/thinning until harvesting at the same cutting age as the current harvest for the area replanted afterwards is counted in advanced at the time of the current harvest in this evaluation method. This evaluation method focuses on $CO_2$ absorption that changes as a result of post-harvesting actions, such as planting, natural regeneration, and diversion.

As described above, because thinning areas included in the scope of investment projects will always be positively evaluated when contribution to carbon neutrality is measured in terms of $CO_2$ absorption, this evaluation method does not include these thinning areas in light of the purpose of formulating this guideline. However, it is possible to evaluate the $CO_2$ absorption effect in accordance with forest growth by focusing on the silviculture processes such as thinning during the period of growth (up to harvesting) by using conventional methods such as the J-credit scheme, and to make investment decisions in conjunction with this evaluation method.

On the other hand, for $CO_2$ storage and emission reduction by using logged trees, there is no difference in the counting method between harvested wood and thinned wood. Therefore, when an investment project area contains thinning areas, $CO_2$ storage / emission reduction amounts by the use of logged trees, including timber transportation from the area, shall be evaluated. By doing so, it would be possible to properly evaluate

the major $CO_2$ absorption/emission events of an entire investment project and to easily determine the contribution of an entire investment project to carbon neutrality.

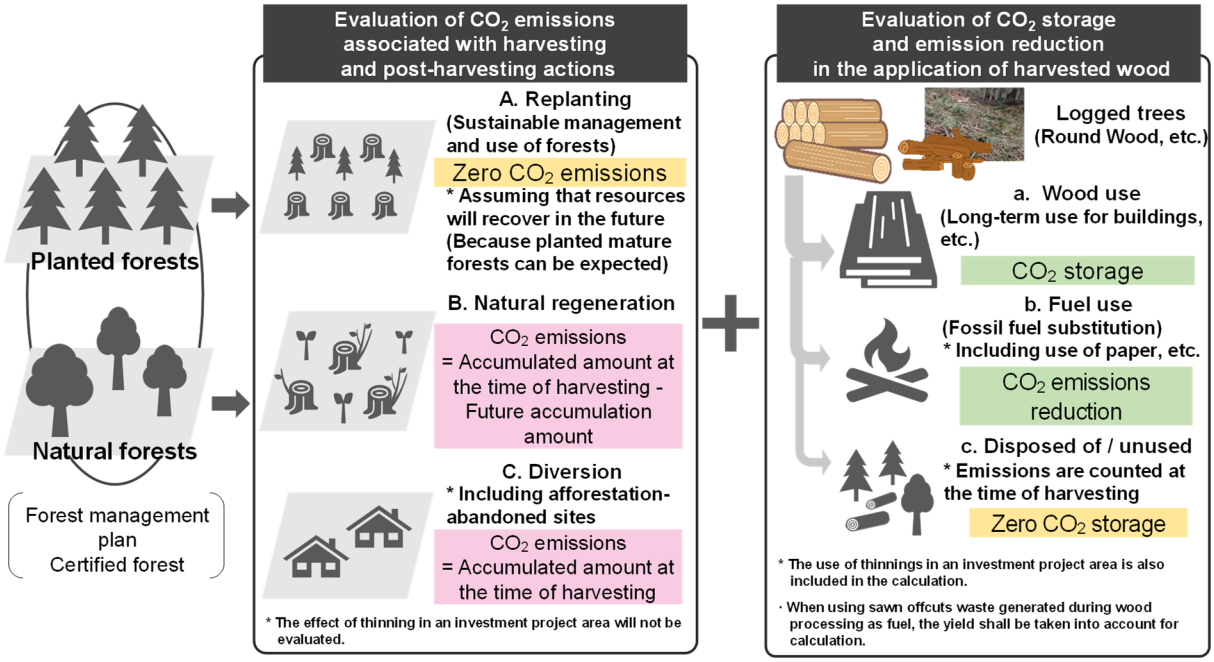
This evaluation method allows investment project managers to organize investment projects that promote contribution to carbon neutrality in relatively small areas by making use of logged trees, without having to organize investment projects in large areas of an entire mountain. Investment funds can have visibility into harvested areas after development and use of harvested trees, which reduces concerns of greenwashing and provides visibility into an entire supply chain, so revenue predictability will increase. It also makes it possible to quantitatively evaluate and objectively confirm increases and decreases in forest absorption in investment projects.

Therefore, the formulation and dissemination of this evaluation method will be significant in encouraging the cyclical use of forest resources by "harvesting, utilizing, and replanting" trees, which is promoted in the Basic Plan for Forest and Forestry.

## 2. System for Evaluating the Contribution of Investment Projects to Carbon Neutrality

As shown in Figure 24, it is appropriate to comprehensively evaluate the contribution of each investment project to carbon neutrality by using 1) calculated values pertaining to the evaluation of $CO_2$ emissions from harvesting and post-harvesting actions, and/or 2) calculated values for the evaluation of $CO_2$ storage and emission reduction accompanied with the use of harvested wood including thinnings.

Figure 24: Scope of targets where $CO_2$ absorption and emissions are estimated in accordance with the guideline



### (1) Evaluation of $CO_2$ emissions associated with harvesting and post-harvesting actions

$CO_2$ absorption and emissions of forests associated with harvesting and post-harvesting actions can be estimated by estimating the current and future trunk volume of planted or natural trees, and by multiplying the timber volume by the forest area, wood density, biomass expansion factor, root-to-shoot ratio, carbon fraction, and $CO_2$ conversion factor, in accordance with the yield table from the prefecture. This calculation is based on the method used for calculating forest absorption in the J-credit scheme.

#### ① Equation for estimating $CO_2$ emissions

| |
|---|
| Absorbed amount (Emissions) (t- $CO_2$) = Trunk volume ($m^3$/ha) × Area (ha) × Wood density (t/$m^3$) × Biomass expansion factor × (1 + Root/shoot ratio) × Carbon fraction × $CO_2$ conversion factor |

- Trunk volume: Volume of the trunk part of a tree (material volume)
- Wood density: Factor that converts wood volume into weight
- Biomass expansion factor: Factor for adding branch volume
- Root/shoot ratio: The ratio of root volume to the tree volume above ground (trunk + branches)
- Carbon fraction: Percentage of the carbon fraction in wood per ton
- $CO_2$ conversion factor: A factor for converting carbon fraction to carbon dioxide ($CO_2$) amount (44/12)

#### ② Concept of forest absorption at the stage of harvesting and replanting

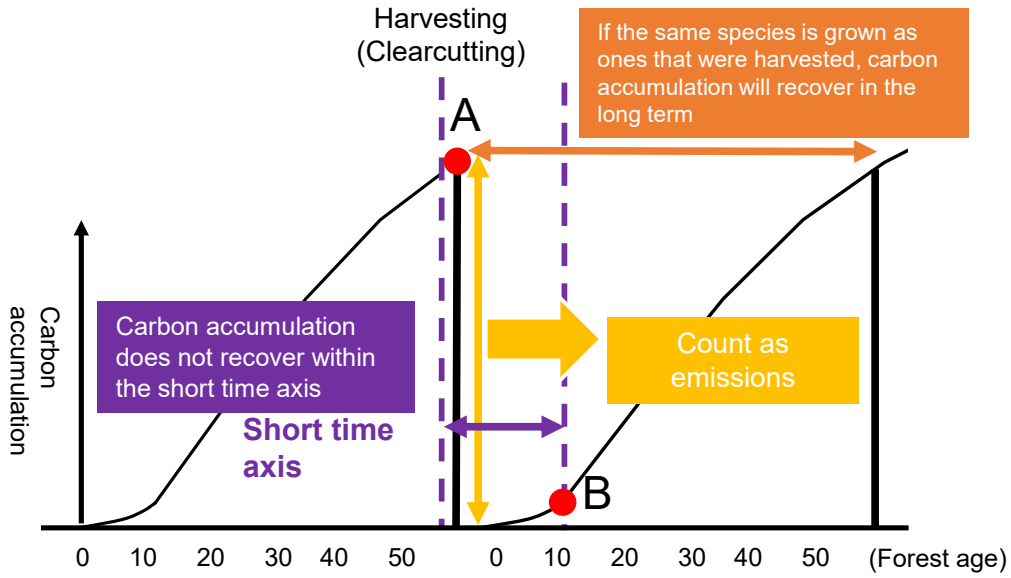
From the viewpoint of inducing investments in forests in a way that contributes to the realization of carbon neutrality on the basis of the land conditions and land use status in Japan, if there are plans or contracts to guarantee the cyclical use of the forests, there is some validity to the idea that emissions count of the $CO_2$ absorption accompanied with the harvesting event of the forests should be treated as zero taking into account the fact that forest absorption will certainly recover in the future after planting, and that changes in $CO_2$ absorption after harvesting are not evaluated.

If the same tree species is planted in a site of the same quality and grows in the same way without suffering from damages by disasters or other risks, the trees are expected to absorb the same amount of $CO_2$ at the same age, according to the characteristics of Japanese forests. Furthermore, in light of the actual situation at the investment scene, which is the investment period of approx. 10 years, this evaluation method assumes that the entire amount of carbon accumulation at the time of the current harvest will be restored in future, and the emissions at the time of the current harvest will be evaluated as zero, if plans and schedules ensure that adequate forest management will be carried out after planting (Figure 25).

Even when natural regeneration is selected as a post-harvesting action, the above-mentioned replanting concept is used for evaluation. With the forest age at the time of

harvest being an evaluation period, estimation shall be carried out using the yield table of the tree species expected after natural regeneration.

Figure 25: Changes in carbon accumulation as Sugi (Japanese cedar) grows




1. The carbon emissions when 50-y/o trees are harvested represented as A.
2. Even after planting, the carbon accumulation in the short term, such as 10 years, is represented as B and has not recovered.

   Carbon absorption rate (the slope of the line) grows small in the initial stage and does not recover until the forest age class reaches 15.
3. On the other hand, assuming that the same species as ones that were harvested are planted and the trees are appropriately managed and grown for the same period as before without suffering disasters, carbon accumulation will basically recover 50 years after the replanting, according to the carbon accumulation curve for planted trees in Japan.

For this reason, when assessing carbon absorption in a general 10-year period for a development project involving harvesting events, "planting with the same species as one that was harvested" shall be assessed as "zero CO2 emissions", because expected recovery of carbon absorption by the growth of planted trees are taken into account in advance.

(*) Notes

· If there is a large discrepancy between the values in the yield table and the trunk volume data or actual measured values in the forest register, the values should be corrected as necessary.

· Forest soil is an important element that affects global warming because of its large accumulation of carbon, but the changes in the amount of carbon are considered to be smaller and slower than changes in the amount of carbon accompanying harvesting and replanting above ground. Therefore, this evaluation method does not take into account forest soil.

**(2) Evaluation of $CO_2$ storage and emission reduction in the application of harvested wood**

In evaluating $CO_2$ storage amounts accompanying applications of harvested wood, it is appropriate to estimate 1) the amount of $CO_2$ stored by wood use and 2) the reduction of $CO_2$ emissions by fuel use (fossil fuel substitution).

**① Amount of $CO_2$ stored by wood use**

The amount of carbon stored in wood products (converted to $CO_2$) is estimated by first obtaining the product volume by multiplying the planned supply volume of logs brought in to a sawmill or other plant by a yield, and then multiplying the obtained product volume by the wood density, carbon fraction percentage, and $CO_2$ conversion factor. The equation used for the calculation is shown below.

| Planned supply volume ($m^3$) × Yield × Wood density ($t/m^3$) × Carbon fraction × $CO_2$ conversion factor |
|---|

· Planned supply volume: Quantity planned to be supplied to sawmills, plywood plants, chip plants, wood markets, etc.
· Yield: Yield based on logs equivalent percentage in Wood Supply and Demand Chart (conifer: 60%, broadleaf: 50%)
· Wood density: Factor that converts wood volume into weight
· Carbon fraction: Percentage of the carbon fraction in wood per ton
· $CO_2$ conversion factor: A factor for converting carbon fraction to carbon dioxide ($CO_2$) (44/12)

**② Reduction of $CO_2$ emissions by fuel use (fossil fuel substitution)**

Reduction of $CO_2$ emissions by fuel use (fossil fuel substitution) is calculated by first multiplying the planned supply volume of logs used for chips and other items by wood density to convert it into weight, then converting it to the carbon amount generated when A-type heavy oil — mainly used for boilers in plants, buildings, and plastic hothouses — are burnt, and finally converting it to $CO_2$. The equation used for the calculation is shown below.

Depending on the type of fossil fuel used, it is possible to replace type-A heavy oil with diesel oil, coal, or natural gas.

| Planned supply volume ($m^3$) × Wood density ($t/m^3$) × Fossil fuel (type-A heavy oil) substitution effect per one ton of wood (tC/t) × $CO_2$ conversion factor |
|---|

· Fossil fuel (type-A heavy oil) substitution effect per one ton of wood (tC): The amount of heat and carbon generated by combustion are calculated by comparing wood with fossil fuel (type-A heavy oil) (= 0.272).

Calorific value for burning 1 ton of wood: 14.4 GJ/t.
* The value varies depending on the water content.
Carbon fraction generated when burning type-A heavy oil: 0.0189 tC/GJ
(Based on the List of Calculation Methods and Emission Factors in the Calculation/Reporting/Publication System for GHG Emissions, Ministry of the Environment)

(*) Notes

· When using wood offcuts generated during wood processing as fuel, the yield shall be taken into account and added to the calculation of fuel use.

· While paper products as HWP are usually counted as wood use, it is difficult to separate chips for paper making and ones for fuel at the planning phase of an investment project. Therefore, for convenience, paper-making chips are also included in $CO_2$ emissions reduction by fuel use (fossil fuel substitution).

· It is difficult to estimate $CO_2$ emissions in harvesting, transportation, distribution, machining, and other processes at the planning stage, and general emissions calculation values may not be specified. Therefore, for convenience, this calculation does not take into account the $CO_2$ emissions in these processes, and the Life Cycle Assessment (LCA) will be discussed in the future.

(Table) Factors for estimating $CO_2$ absorption/emissions of forests and wood

| Tree species | Biomass expansion factor | | Root/shoot ratio | Wood density | Carbon fraction | Remarks |
|---|---|---|---|---|---|---|
| | Forest age ≦ 20* | Forest age > 20** | | | | |
| Conifer | | | | | | |
| Sugi | 1.57 | 1.23 | 0.25 | 0.314 | | |
| Hinoki | 1.55 | 1.24 | 0.26 | 0.407 | | |
| Sawara | 1.55 | 1.24 | 0.26 | 0.287 | | |
| Akamatsu | 1.63 | 1.23 | 0.26 | 0.451 | | |
| Kuromatsu | 1.39 | 1.36 | 0.34 | 0.464 | | |
| Hiba | 2.38 | 1.41 | 0.20 | 0.412 | | |
| Karamatsu | 1.50 | 1.15 | 0.29 | 0.404 | | |
| Momi | 1.40 | 1.40 | 0.40 | 0.423 | | |
| Todomatsu | 1.88 | 1.38 | 0.21 | 0.318 | | |
| Tsuga | 1.40 | 1.40 | 0.40 | 0.464 | | |
| Ezomatsu | 2.18 | 1.48 | 0.23 | 0.357 | | |
| Aka ezomatsu | 2.17 | 1.67 | 0.21 | 0.362 | 0.51 | |
| Maki | 1.39 | 1.23 | 0.20 | 0.455 | | |
| Ichii | 1.39 | 1.23 | 0.20 | 0.454 | | |
| Ginkgo | 1.50 | 1.15 | 0.20 | 0.450 | | |
| Foreign conifer | 1.41 | 1.41 | 0.17 | 0.320 | | |
| Other conifer | 2.55 | 1.32 | 0.34 | 0.352 | | Applicable to Hokkaido, Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Tochigi, Gunma, Saitama, Niigata, Toyama, Yamanashi, Nagano, Gifu, and Shizuoka |
| Same as above | 1.39 | 1.36 | 0.34 | 0.464 | | Applicable to Okinawa |
| Same as above | 1.40 | 1.40 | 0.40 | 0.423 | | Applicable to all other prefectures |
| Broadleaved trees | | | | | | |
| Buna | 1.58 | 1.32 | 0.26 | 0.573 | | |
| Kashi | 1.52 | 1.33 | 0.26 | 0.646 | | |
| Chestnut | 1.33 | 1.18 | 0.26 | 0.419 | | |
| Kunugi | 1.36 | 1.32 | 0.26 | 0.668 | | |
| Nara | 1.40 | 1.26 | 0.26 | 0.624 | | |
| Doronoki | 1.33 | 1.18 | 0.26 | 0.291 | | |
| Hannoki | 1.33 | 1.25 | 0.26 | 0.454 | | |
| Nire | 1.33 | 1.18 | 0.26 | 0.494 | | |
| Keyaki | 1.58 | 1.28 | 0.26 | 0.611 | | |
| Katsura | 1.33 | 1.18 | 0.26 | 0.454 | | |
| Hoonoki | 1.33 | 1.18 | 0.26 | 0.386 | | |
| Maple | 1.33 | 1.18 | 0.26 | 0.519 | | |
| Amur cork | 1.33 | 1.18 | 0.26 | 0.344 | 0.48 | |
| Shinanoki | 1.33 | 1.18 | 0.26 | 0.369 | | |
| Castor aralia | 1.33 | 1.18 | 0.26 | 0.398 | | |
| Paulownia | 1.33 | 1.18 | 0.26 | 0.234 | | |
| Foreign broadleaved trees | 1.41 | 1.41 | 0.16 | 0.660 | | |
| Birch | 1.31 | 1.20 | 0.26 | 0.468 | | |
| Other broadleaved trees | 1.37 | 1.37 | 0.26 | 0.469 | | Applicable to Chiba, Tokyo, Kochi, Fukuoka, Nagasaki, Kagoshima and Okinawa |
| Same as above | 1.52 | 1.33 | 0.26 | 0.646 | | Applicable to Mie, Wakayama, Oita, Kumamoto, Miyazaki, and Saga |
| Same as above | 1.40 | 1.26 | 0.26 | 0.624 | | Applicable to all other prefectures |

Japan GHG Inventory Report * forest age class 1 to 4 ** forest age class 5 or older

### 3. System for Evaluating the Contribution of Investment Projects to Biodiversity Conservation

While climate change has a negative impact on ecosystems, efforts to conserve and restore them contribute to climate change mitigation, and measures against climate change and biodiversity conservation are inseparable. Deforestation would lead to the loss of forest ecosystems as well as reducing the sources of $CO_2$ absorption, thus accelerating global warming.

From this perspective, appropriate conservation and management of forests is required in any context. With regard to climate change, although it is possible to quantify the rise in temperature and $CO_2$ absorption and it is easy to consider target setting and direction of efforts, it is relatively difficult to quantify biodiversity. Therefore, setting goals and managing efforts are considered relatively difficult.

The main focus of this guideline is to determine how individual investment projects contribute to the realization of carbon neutrality. However, considering the discussions at COP26, it seems that climate change and biodiversity should be addressed at the same time.

In this regard, in the area of ESG (environment, society, and corporate governance) investments, there is a growing trend to incorporate ESG perspectives, including biodiversity conservation, into investment analysis and decision-making processes based on the United Nations Principle of Responsible Investment (PRI), and the rating of corporate value by ESG evaluation organizations is being promoted.

The Basic Plan for Forest and Forestry presents basic policies for achieving the basic principles of "the demonstration of public functions of forests" and "sustainable and sound forestry development."

Therefore, when evaluating investment projects under this guideline, it is decided that a qualitative confirmation of how the projects fit in the direction of the policies stipulated in the Basic Plan for Forest and Forestry will enable certain measurement of the contribution to ensuring biodiversity. In addition, measurement will be made for matters that directly lead to biodiversity through the maintenance and demonstration of public functions of forests. Furthermore, by checking the matters, auxiliary measurements will be made for matters that lead to stably securing businesses based on the characteristics of projects related to the forest/forestry/wood industry.

Because some matters to check can be judged quantitatively, those that can be evaluated numerically should be indicated by numerical values as much as possible, and examples of such numerical values are shown in parentheses in the following examples of matters to check.

#### ① Matters that directly lead to the maintenance and demonstration of forests' public functions

- ○ Appropriate forest practices in an entire investment project, including areas that are not harvesting areas
  - · Carrying out appropriate forest management, such as tending and thinning, in harvesting areas and other forest areas

· Carrying out measures to prevent damage by wildlife, such as installing anti-deer fences at planting areas

(Thinning areas, areas of creation of a collective Forest Management Plan, areas with anti-deer fences, etc.)

○ Status of efforts on forest certification systems

· Acquisition of forest certification (FSC, PEFC, SGEC), conservation of natural forests in investment projects, shift to mixed forests of conifers and broadleaf trees

(Areas with forest certification, forest conservation areas, etc.)

○ Risk factor analysis and response to natural disaster risks

· Whether risk factor analysis on natural disasters, including damage by disease and harmful insects, meteorological damage, and forest fires, is carried out for reforestation areas and other forest conservation areas in order to grow and preserve sound forests, and whether appropriate controls are conducted in order to avoid damage

· Possession of forest insurance

(Extension distance of firebreak, etc.)

○ Legally-harvested wood and wood products (Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products)

· Whether registration has been made as a type-1 wood-related business entity or type-2 wood-related business entity under the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products (Act No. 48 of 2016), if an investment project includes sawmills, chip plants, and woody biomass power plants

(The amount of wood and wood products that has been confirmed to be legitimate, etc., in the case of a registered wood-related business entity.)

**② Matters that contribute to the confirmation of the stability of businesses based on the characteristics of investment projects for the forest, forestry, and wood industry**

○ Creation of a Collective Forest Management Plan

Creation of a Collective Forest Management Plan to fully demonstrate forests' multiple functions through efficient forest practices and adequate forest protection based on the plan

(Area of creation of a Collective Forest Management Plan, etc.)

○ Introduction of advanced technology

· Introduction of smart forestry technology to achieve light labor, such as improving the efficiency of forest resource research and boundary clarification by using laser

measurement, and improving the efficiency of wood production/distribution management by using ICT such as log measuring applications.

· Introduction of advanced machinery for securing labor safety, such as the remote operation and automation of forestry machinery, and the introduction of advanced forestry machinery

(Area to obtain forest information by laser measurement, quantity of advanced forestry machines introduced, etc.)

○ Regional contribution

· Creation of employment as forestry workers through investment projects as well as creation of new jobs through sawmills, biomass energy use facilities, and the forest-related service industry, and the increase in involvement of urban residents

(Number of jobs created, involved population, sales of related business, etc.)

○ Improve occupational health/safety and the working environment

· Safety education, introduction of safety equipment adopting new technology, the occurrence of industrial accidents, training and education for improving workers' skills, etc.

(Number of accident-free days, implementation of safety education, number of trainees, number of qualified workers, etc.)

○ Reduction of labor and costs for planting

· Use of seedlings of the "elite trees" or other trees with excellent growth, use of drones and forestry machinery to transport seedlings, integrated harvesting and replanting, low density planting, simplification of weeding practices, etc.

(Planted area and percentage of “elite trees”, number of weeding practices, etc.)

○ Corporate governance and disclosure of corporate information

· Avoiding fraud and other risks through sound corporate management

· Disclosure of information through corporate annual reports, CSR reports, environmental reports, integrated reports, and websites

· Compliance with the "Guidelines for Harvesting, Transporting, and Replanting" or other guidelines specified by the prefecture and organizations, registration of certification, or preparation of voluntary rules by forestry contractors

(Number of discovered wrongdoings, presence of ethical behavior rules, information disclosure status, etc.)

○ Cooperation with local businesses, municipalities, etc.

· Cooperation with local businesses and support systems for investment projects, subsidies issued by the GOJ and municipal governments, etc.

**(References)**

About "Study Group on Proper Investments in Forest/Forestry/Wood Industry"

1 Purpose

The Basic Plan for Forest and Forestry, which was revised in June 2021 (decided by the Cabinet on June 15, 2021), calls for the realization of "green growth" in the forest/forestry/wood industry.

In Japan, forests have been integrated and shifted to efficiency through forest trusts, and corporate forests have been used to contribute to the environment and society. Under these circumstances, the Act on Special Measures for Facilitating Investment in Agricultural Corporations (Act No.52 of 2002) was revised to include the forestry sector into investment targets, and the Ministry of the Environment considered establishing a new decarbonization investment system in FY2022. The possibility of investment under the theme of forest management and use is expanding toward "green growth."

We hereby establish this study group as a private advisory body for the director-general of the Forestry Agency, in order to obtain a wide range of opinions from experts on how investments will be made for the forest/forestry/wood industry and how investments should be made to promote the Basic Plan for Forest and Forestry, and to search for appropriate methods for promoting policies.

2 Committee members (titles abbreviated, ○: Chairperson)

| | | |
|---|---|---|
| | Norichika Ando | Senior Manager of Norinchukin Research Institute Co.,Ltd. |
| | Hajime Utsugi | Research Director of Forest Research and Management Organization / Forestry and Forest Products Research Institute (Responsible for research on forestry production technology) |
| | Hidehiko Oshima | Special Advisor of Japan Finance Corporation |
| | Taro Sasaki | Advisor of National Federation of Forest Owners' Co-operative Association |
| ○ | Satoshi Tatsuhara | Associate Professor at the Graduate School of Agricultural and Life Sciences / Faculty of Agriculture, The University of Tokyo |
| | Koji Hongo | Vice Chairperson of the Japan Federation of Wood-industry Associations |
| | Akira Matsumoto | Secretary of the Regional Research Department of the Development Bank of Japan |
| | Michiyo Morisawa | Director of CDP Worldwide-Japan |

3 Meetings held so far

| Meeting | Date and time | Agenda |
|---|---|---|
| 1 | January 31, 2022<br>13:00 – 15:30 | (1) Situation surrounding decarbonization in forests<br>(2) Interviewing stakeholders |
| 2 | February 7, 2022<br>15:00 - 17:30 | (1) Review on the first meeting<br>(2) Interviewing stakeholders |
| 3 | February 28, 2022<br>15:00 - 17:30 | (1) Summary of issues based on the discussion so far<br>(2) Direction of consideration |
| 4 | March 30, 2022<br>10:00 - 12:00 | (1) Summary proposal |
| 5 | May 18, 2022<br>13:15 - 15:15 | (1) Interim summary draft |