Special Topic 1: Sustainable Forestry Management that Leverages the Potential of Forests

1. Current State of Forestry Management in Japan

(1) Importance of Forestry Management Entities

Forests have various multiple functions. It is important to properly manage forests such as thinning and reforestation and to expand wood use, which contribute to carbon neutrality by 2050.

In Japan, the area of planted forests aged more than 50 years, the general harvesting period, has increased 2.4 times in this decade. It is vital to utilize the planted forest resources effectively, which revitalizes hilly and mountainous rural communities.

Some logging sites, which are suitable for forestry, have been left without planting after harvesting. Forestry management entities have a role to manage forests appropriately not only for increasing their own profits but also for returning profits to forest owners.

(2) Current State of Forestry Management Entities

"Forestry management entities" refers to forest owners who perform forest management by themselves or by entrusting, and entities which perform forest management and wood production by entrustment and purchase of trees.

There are around 34 thousand forestry management entities in Japan. About half of the forest areas managed by the owners themselves are managed by unincorporated family-owned management entities. On the other hand, most of the forest areas managed under entrustment are managed by private enterprises and forest owners' cooperatives. Mainly, harvesting is carried out by private enterprises and afforestation is by forest owners' cooperatives.

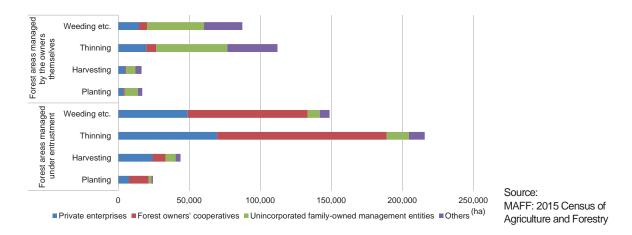


Fig. 1 Managed forest area categorized by the type of forestry organizations

Business Conditions of Forestry Management Entities

The amount of wood production per forestry management entity is increasing. The proportion of forestry management entities which produce more than 10 thousand m³ woods annually is also increasing.

However, forestry income of family-owned management entities is decreasing. Even those which have 100-500 ha of forests cannot make enough profits by forestry itself, on average.

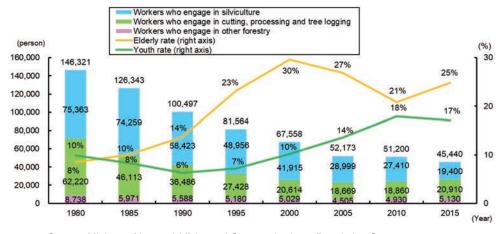
The national average business profits for forestry companies was 2.7 million yen in 2018. As the sales profits increase, the recurring profit margins increase, and the management becomes stable.

Sales-Size	Wood Production (m³)	The areas of planting and nurturing trees (ha)	The number of Employees	The number of advanced forestry machineries	Recurring profits (1,000 yen)	Recurring profit margins
Under 50 million yen	2,529	28.6	5.3	2.3	-1,958	-4.1%
50-100 million yen	5,073	57.4	9.3	2.8	3,739	3.6%
100-300 million yen	19,403	39.1	13.4	5.9	12,617	3.6%
Over 300 million yen	36,541	131.9	29.2	12.5	29,870	5.8%

Source: MAFF: 2018 "Forestry management statistical research"

Fig. 2 Business conditions of forestry companies

Although the number of forestry workers tends to decline, the proportion of young forestry workers is on a growing trend. It is important to attract and retain workers in the long term. The average annual income of forestry workers grew from 3.05 million yen in 2013 to 3.43 million yen in 2017, but it is lower than the average income for all industries. Therefore, it is necessary to improve the profitability and support the career development. In addition, since the forestry work accident rate is higher than other industries, safer working environments should be ensured.



Source: Ministry of Internal Affairs and Communications: Population Census

Notes1: "Elderly rate" reflects the rate of people aged 65 and over

2: "Youth rate" reflects the rate of people under 35

Fig. 3 Changes in the number of forestry workers

(3) For the Purpose of Sustainable Forest Management

According to a trial calculation of harvesting of a 50-year-old Sugi (Japanese Cedar) plantation, the current stumpage price is not enough to motivate forest owners to reforest. For this reason, it is vital to improve wood sales and to reduce the cost for logging, wood transportation and reforestation.

It is necessary to secure profits and return them to forest owners and forestry workers, which will lead to forest and business sustainability.

Sources: MAFF: 2020 Wood Supply and Demand Report, Japan Real Estate Institute: Survey of Mountain forest base & stumpage price, Forestry Agency: State of Forest Resources (March 31,2017)

Notes1: The provisional calculation is about 50 years old Sugi planted forest per ha.

The cost for wildlife control can make silviculture cost higher.

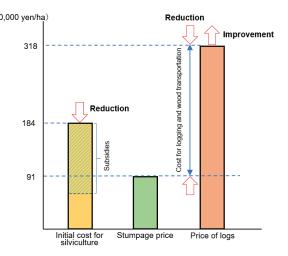


Fig. 4 Image of balance of payments in wood production

2. Improving the Profitability of Forestry Management Entities

(1) Sales Enhancement

Sales Growth through Stable Supply of Wood

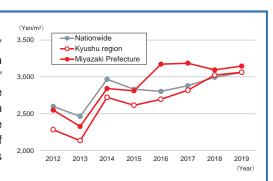
Forestry management entities can stabilize transaction prices through a stable wood supply under the cooperation and the sales agreement. These efforts can also improve their price negotiating power.

They can also sell woods in higher price through logging and sorting wood according to customer needs.

The revision of Forest Owners' Cooperative Associations Act has introduced various cooperation methods between cooperatives, which is expected to strengthen their marketing functions.



Miyazaki Prefecture federation forest owners' cooperative association established a council on stable supply of wood with forest owners' cooperatives and log production enterprises in the prefecture. The council regularly holds discussion with large sawmills and reflects the result in the wood collection. As a result, the stumpage price of Sugi (Japanese Cedar) in Miyazaki Prefecture has grown to top class in Japan.



The change in stumpage price of Sugi in Miyazaki Prefecture

Sales of Various Woods

Even when forestry management entities produce high-quality wood or perform long-term management in order to sell wood to small and medium-sized construction shops or carpenters, it is important for entities to catch customer needs directly. Some entities select high-quality hardwoods and sell them for furniture at a higher price than that for chips.

<u>Diversification of Income for Stable Management</u>

One option for small-scale entities is to stabilize their income through supplement income with other business such as agriculture and outdoor guides, taking advantage of their locations and environments. Some entities stabilize the income through utilizing forests in various ways like recreational use.

(2) Saving Costs for Wood Production and Reforestation

It is important for the forestry management entities to take the initiative in saving costs of re-planting and weeding by themselves, since the sales price of wood may be influenced by the demand.

Saving Costs for Wood Production and Distribution

The costs of logging, shipping and distribution in Japan are higher than those in Austria, which has similar terrain to Japan.

It is necessary to improve the operating rate of advanced forestry machineries for saving production costs. Therefore, it is vital to systematically secure and consolidate the operation areas, select work systems, manage the processes, and improve the forestry road system.

For small-scale entities, it is difficult to increase the operating rate even if they introduce advanced forestry machineries. It is rational to select a system with a small capital investment that matches the amount of wood production.

The costs for distribution can be reduced through simplifying sales channels and increasing the size of trucks and trailers.

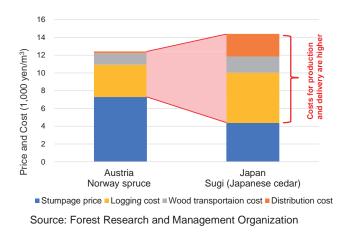


Fig. 5 Cost comparison of wood prices



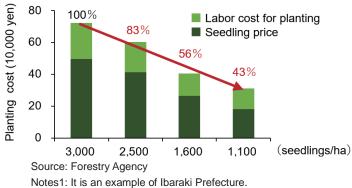
Fig. 6 Processing in use of an advanced machinery

Saving Costs for Reforestation

Initiatives for saving cost and labor have been developed in each process of ground preparation, planting, and weeding. Since costs depend on the afforestation method, it is important to save costs through looking ahead to future wood use and customers.

Although the Forestry Agency promotes to introduce an integrated harvesting and planting system to use forestry machine for simultaneously or sequentially implementing harvesting, land preparation and planting, the system has been introduced in less than 10% of all afforestation. The cooperation between harvesting entities and planting entities is important.

The "elite tree" species with excellent growth is expected to spread in Japan in the future.



2: The cost is calculated by 165 yen per containerized seedling.

Fig. 7 Example of cost reduction by low density planting

Innovation for Forestry Efficiency

The GOJ promotes initiatives that use information and communications technologies for collecting forest resources data and improving efficiency in wood production and distribution stages.

The GOJ supports machine development for automation and remote control of logging, conveying, weeding for safety and saving labor.



Fig. 8 Aeronautical laser measurement results

3. Improvement of Human Resources and Working Conditions in Forestry

(1) Maintenance and Development of Human Resources in Forestry

Forestry workers are important for improving productivity. It is necessary to recruit forestry workers, train their technical skills and develop them. Forestry management entities are expected to motivate forestry workers through introducing systems such as a capacity evaluation system.

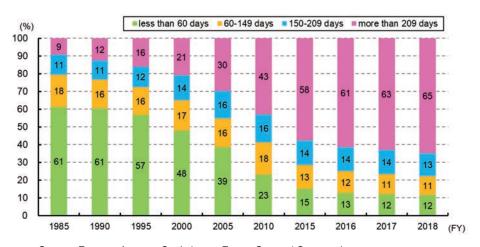
The GOJ supports events such as employment counseling and trial employment and conducts training through the Green Employment Program so that entities can recruit and develop new workers. Some local governments have College of forestry.

(2) Improvement of Working Conditions in Forestry

Safe workplaces are essential to protect forestry workers and to retain workers continuously. Forestry management entities and workers are required to comply with health and safety regulations and guidelines for logging. It is vital to take safety patrol guidance and training, and to introduce and use safety equipment and devices.

A stable employment is also important. In forest owners' cooperatives, the proportion of full-time employment workers who work all year round, workers with social insurance and monthly salary workers are increasing.

The number of female forestry workers who engage in harvesting, processing and logging is increasing. Creating an environment where women can work comfortably contributes to "work style reform" for all forestry workers.



Source: Forestry Agency: Statistics on Forest Owners' Cooperatives Note: Due to rounding, some percentages may not total 100.

Fig. 9 Annual working days of employees in forestry owners' cooperatives

4. Development of Human Resources and Systems for Sustainable Forestry

(1) Development of Human Resources for Sustainable Forestry

It is vital to retain forestry sites and retain customers so that forestry workers can focus on the job and fully demonstrate their abilities. The GOJ has developed Forest Practice Planners who will conduct proposal-based coordination with forest owners and consolidation of forestry operations. In addition, the GOJ has developed Forest Management Planners who will engage in selling woods strategically since 2020.

(2) System Development for Forest and Business Sustainability

Forestry management entities can make a long-term plan, anticipate future harvesting, and develop permanent road networks by owning the forest and acquiring the right to operate it in the long term. The Collecting Forest Management Plan System and the Forest Management System support coordination and consolidation of forestry operations and long-term entrustments.

Forestry management entities are expected to plant after harvesting by themselves or under cooperation. It is vital to coordinate reforestation with forest owners when planning harvesting.

Some sawmills and wood markets start to manage forest and subsidize afforestation and seedling production, for sustainable wood production.

5. The Future of Forestry Business

The bar chart below illustrates a trial calculation about how productivity would be improved and how much afforestation costs would be reduced by the initiatives.

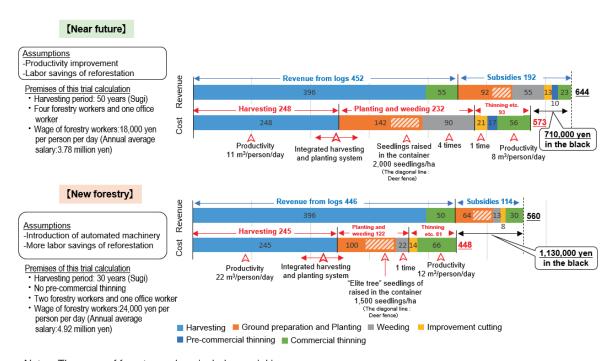
Assuming general wood price, the income and expenditure per ha would be 710,000 yen in the black after improving the worker wages by 10% or more through improving productivity and reducing costs such as planting with 2,000 seedlings per ha in the near future. Furthermore, planting the "elite tree" species in the density of 1,500 per ha and introducing automation machineries could increase the surplus.

Since this estimate doesn't take account of the sales price increase, there is a possibility of further improvement in profits through market development and cooperation among forestry sectors.

These surpluses are expected to increase the motivation for reforestation because entities distribute them to not only executive remuneration and capital investment but also return to forest owners who decide reforestation.

It is noted that this estimate is based on the premise that the forestry area is large enough to operate advanced forestry machineries efficiently. It is rational that small-scale entities select a simple work system that matches a small amount of wood production, reduce logging cost and secure profits.

In the future, it is expected that each forestry management entity will grow with its creativity and ingenuity, enhancing forest and business sustainability.



Notes: The wage of forestry workers includes social insurance.

Due to rounding, some totals may not correspond with the sum of the separate figures.

Fig. 10 A trial calculation about balance of payments of forestry in the future (per ha)

Special Topic 2: Impact of and Responses to the Covid-19 Pandemic in the Forestry and Wood Industry

1. Impact of the Covid-19 Pandemic

(1) Impact on Economy and Society in Japan

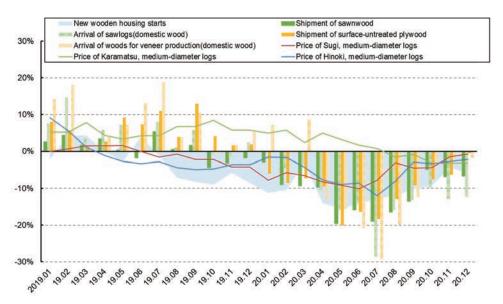
The global pandemic of the Covid-19 has had serious effects on the Japanese economy and society.

(2) Impact on Supply and Demand in Wood Industry

Log exports from Japan to China plummeted from January to March in 2020, but recovered after April and remained solid.

The number of new housing starts in 2020 decreased by 10% from the previous year to 820,000, of which 470,000 were wooden houses.

As of April 2020, 40 % of sawmills and 60% of plywood mills had reduced production, due to delays and decreases in housing construction. The amount of log input and that of product output at sawmills and plywood mills bottomed out in July and August, and have since been gradually recovering. However, the rate of recovery varies among regions: it has been slow in Hokkaido due to sluggish demand for packaging materials.



Sources: MAFF: "Statistical Survey on Wood" "Statistical survey on the Price of Wood", Ministry of Land, Infrastructure, Transport and Tourism: "Housing Starts"

Fig.1 Changes in forestry and wood industry related figures from 2019 to 2020

(3) State of Forestry

From January to March 2020, log exports to China stagnated and logs piled up in ports and stockyards, especially in the main log exporting region of Kyushu, which

negatively affected log production. Forest management entities reduced log production after April 2020 and some shifted to other forest management practices in order to maintain employment, as sawmills and plywood mills reduced production and restricted the input of logs.

The prices of medium-diameter logs of Sugi (Japanese Cedar) fell by 10% year-onyear in June 2020 due to decreasing wood demand. The prices later recovered in some areas as the result of the shortage of log supply caused by the torrential rains of July and preceding adjustment in log production, as well as the reduced supply of North American and European wood for Japan since autumn.

As for non-wood forest products, the demand for mushrooms provided in school lunch and restaurants declined.

2. Responses in the Forestry and Wood Industry

(1) Japanese Government Responses

The GOJ has implemented various measures for the forestry and wood industry to continue operation and mitigate the impact of the pandemic.

The GOJ held national and regional forums, involving all stakeholders, to share information and the understanding of the current situation and to inform them of its various support measures.

(2) Business Management under the Covid-19 Pandemic

Business entities are seeking new business opportunities to adapt to the Covid-19 pandemic. For example, some entities have commercialized wooden-framed partitions used to reduce the risk of infection. The use of remote meetings for sales promotion and online bidding systems may become more widely adopted in the forestry and wood industry in the coming future. Some facilities for remote working have been constructed in areas with abundant forests.

Forestry can provide employment opportunities for those who move out of cities to live in rural areas. In 2020, a total of 2,744 people, which was more than in the previous year, participated in the "Forest Work Guidance Events" held in the main metropolitan areas and online.

(3) For the Future Response

According to a survey by the National Federation of Forest Owners' Co-operative Associations, 70% of forestry management entities answered that their sales had decreased since January 2020, while 98% maintained employment by utilizing support measures or other means.

The Forestry Agency will continue to monitor the situation and respond appropriately in cooperation with Prefectures.

Chapter I Forest Management and Conservation

1. Promoting Appropriate Management and Conservation of Forests

(1) Current State of Forests and Multiple Functions

Forests contribute to the people's lives and economies through their multiple functions including land conservation, water resource conservation, and mitigating global warming.

The part of forests' multiple functions that can be monetarily evaluated is estimated at 70 trillion yen a year.

Forests cover about 25 million hectares, which accounts for 2/3 of the national land. About 40% of forests are planted forests. Half of the planted forests are more than 50 years old and entering their period of use (Fig. I-1, 2).

The growing stock is steadily expanding mainly on planted forests, reaching about 5.2 billion m³ by the end of March 2017.

Forests contribute to the achievement of SDGs and carbon neutrality by 2050 through their multiple functions and the economic and social benefits of forestry and wood industry.

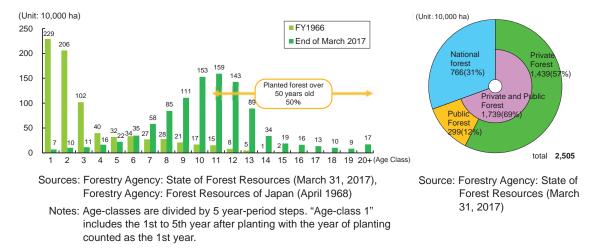


Fig. I-1 Changing forest age class configuration of planted forests

Fig. I-2 Forest area by owners

(2) The Fundamental Framework of Forest Plans for Appropriate Management and Conservation

To make sure forests perform their multiple functions sustainably, the GOJ formulated the Basic Plan for Forest and Forestry (revised in May 2016) in accordance with the Forest and Forestry Basic Act as well as the National Forest Plan formulated under the Forest Act.

(3) Research and Development

The GOJ, prefectural governments, the Forestry and Forest Products Research Institute (FFPRI), universities and private sectors jointly conduct research and technology development in order to secure the fulfillment of the multiple functions of forests and to develop forestry, to ensure the supply and use of forest products, and to lower the cost of planting after harvesting. The achievements of research and technology development are spread by forestry extension agents.

The GOJ develops Foresters who support municipal governments' forest administration and management.

2. Forest Management

(1) Promotion of Forest Management

In order to sustainably secure the fulfillment of the multiple functions of forests, it is necessary to appropriately use forest resources and work steadily on thinning and planting after harvesting. It is also necessary to lead the way to diverse and sound forests by promoting the creation of multi-layered forests, long-term management, creating mixed forests of conifers and broadleaf trees, and forming broad-leafed forests, depending on natural conditions. For those reasons, the GOJ promotes systematic and appropriate forest management based on the Forest Planning System under the Forest Act.

Furthermore, it is vital to enhance carbon absorption of forests through thinning and reforestation for the Paris Agreement and the carbon neutrality by 2050. The GOJ has promoted thinning and production of the "specified mother tree" with excellent growth, based on the Thinning Promotion Special Law. In March 2021, this law was revised to prompt reforestation using saplings grown from the "specified mother tree" with excellent growth.

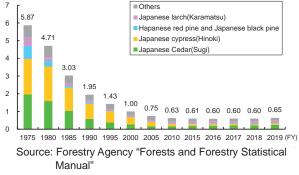
To encourage planting after harvesting, it is increasingly important to reduce planting costs and to stably supply seedlings. About 65 million seedlings for planting were produced in FY2019, and about 30% was for seedlings raised in the container (Fig. I-3, 4).

(Unit:10,000 ha)						
	Type of work	Private and public forest	National forest	Total		
Degeneration	Planted	2.3	1.1	3.3		
Regeneration	Underplanted	0.2	0.3	0.6		
Post Establishment		36	14	50		
Treatments	Thinned	27	10	37		

Source: Survey by Forestry Agency
Note: Thinned area for promotion of forest

sink activities

Fig. I-3 Forest management area (FY2019)



Note: Excluding state-owned

Fig. I-4 Annual production of seedlings for planting

(2) Forest Management System and Forest Environment Tax

The Forest Management System, based on the Forest Management Act was enforced in April 2019.

The Forest Management System is a new scheme that differs from any past systems in Japan. In this scheme, municipalities are entrusted with the management of forests which their owners are not able to manage appropriately. Then the municipalities re-entrust the forests suitable for forestry to forestry practitioners who manage forests sustainably through certain proceedings.

In FY2019, a quarter of municipalities conducted intention surveys on about 150,000 ha of forest. Approximately 70% of municipalities worked on or prepared for the forest management system.

And in 2019, the Forest Environment Tax and Forest Environment Transfer Tax were created with the idea that all citizens equally support Japan's forests. As Forest Environment Tax will be imposed as a national tax at a rate of 1,000 yen per capita per year, utilizing the tax collection system of the individual inhabitant tax from FY2024.

The Forest Environment Transfer Tax is earmarked for municipalities' expenses related to forest management. In 2019, half of the municipalities used the tax for forest management.

(3) People's Participation in Forest Management

Forest management activities by NPOs and companies, etc. are expanding. The number of planting groups in Japan topped 3,303 in FY2018, nearly six-fold from FY2000. In recent years, more companies are willing to get involved in forest management with increasing interest in SDGs and ESG investment.

3. Forest Conservation

(1) Management and Conservation of Protection Forests

"Protection forest" are designated in accordance with the Forest Act when it is considered particularly necessary that they provide important public benefits. Felling and forest development are regulated in them. At the end of FY2019, 12.2 million ha of forests were designated as protection forests. Additionally, even when a forest, except a protection forest, is diverted, the Forest Land Development Permission System secures public benefits.

(2) Disaster Control

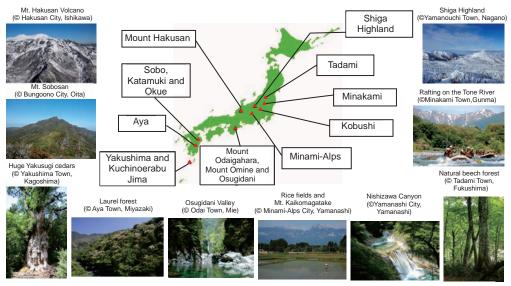
The GOJ promotes integrated forest conservation projects including accurately clarifying mountain disaster hazard regions, restoration of devastated forests, and development of coastal forests. When natural disasters occur in mountainous areas,

the Forestry Agency conducts immediate surveys and elaborates recovery works.

(3) Conservation of Forest Biodiversity

Based on the National Biodiversity Strategy of Japan 2012-2020 (adopted in September 2012), the Forestry Agency promotes appropriate thinning and diverse forest creation and the protection and management of primeval forest ecosystems.

The Forestry Agency promotes the strict protection and management of forests in World Heritage sites and Biosphere Reserve sites (Fig. I-5). The GOJ is promoting efforts to inscribe "Amami-Oshima Island, Tokunoshima Island, Northern part of Okinawa Island and Iriomote Island" on the World Heritage List as Natural Property in 2021.



Source: Prepared by Forestry Agency based on Ministry of Education, Culture, Sports, Science and Technology' Figures

Fig. I-5 UNESCO Biosphere Reserve sites in Japan

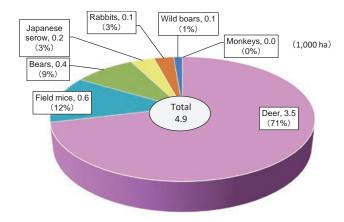
(4) Forest Damage by Wildlife, Pests and Forest Fire

Forest damaged by wildlife is serious. In FY2019, about 4,900 ha of forests were damaged by wildlife, about 70% of which was caused by deer (Fig. I-6). To prevent the damage, the GOJ promotes comprehensive measures including subsidies for barrier fences and population control through capturing wildlife.

Damage by pinewood nematode (*Bursaphelenchus xylophilus*) is also declining; it remains the worst forest pest in Japan. In FY2019, pinewood nematode damaged about 0.30 million m³ of wood. To prevent the spread of this pest, the Forestry Agency propagates pest-resistant seedlings, implements prevention measures with chemicals, and eradicates the nematode and mediating insects by logging and fumigation of affected trees.

In addition, damage by Japanese Oak Wilt, which is transmitted by *Platypus quercivorus*, is increasing. In FY2019, this pest damaged 61 thousand m³ of wood. To prevent the spread of this pest, the Forestry Agency promotes the extermination of insects by fumigation of damaged trees and the prevention of insect invasion by applying adhesives to and covering with vinyl sheets on healthy trees.

In 2019, 1,391 forest fires occurred, burning down 837 ha of forest. The number of forest fires are declining in the long term. Forest fires intensively occur in winter and spring, with most of the cases caused by people carelessly using fire.



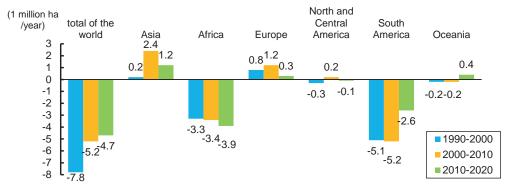
Source: Survey by Forestry Agency

Fig. I-6 Area of forests damaged by major wildlife species

4. Addressing Global Policy Agenda

(1) Promotion of Sustainable Forest Management

According to the Food and Agriculture Organization of the United Nations (FAO), the global forest area in 2020 is estimated at 4.06 billion ha, which is 31 percent of the total land area. The world's forest area declined by about 178 million ha in the 30 years from 1990 to 2020. The rate of forest loss has decreased since 1990, a result of reduced deforestation in some countries and forest gains in others (Fig. I-7).



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

Fig. I-7 Changes in global forest area

The GOJ promotes efforts toward sustainable forest management through participating in international dialogues on forests such as the United Nations Forum on Forests (UNFF), the FAO Committee on Forestry (COFO), the Montreal Process, etc.

Since illegal logging is one of the factors obstructing global environment conservation and sustainable forest management, the international community is making efforts to combat illegal logging through various international frameworks. The GOJ supports the establishment of legal and sustainable supply chain in producing countries through the contribution to the International Tropical Timber Organization (ITTO). Japan has joined the Experts Group on Illegal Logging and Associated Trade (EGILAT) of Asia-Pacific Economic Cooperation (APEC), which shares information and exchanges views regarding measures to combat illegal logging.

In Japan, two forest certification schemes have been widely in place, one of which is run by the Forest Stewardship Council (FSC), an international organization, and the other is run by the Sustainable Green Ecosystem Council endorsed by Programme for the Endorsement of Forest Certification schemes (SGEC/PEFC-J), which had been established as the domestic certification scheme in Japan, and was endorsed by the Programme for the Endorsement of Forest Certification (PEFC) in 2016. About 10% of forests in Japan are certified by FSC (about 0.41 million ha) and/or SGEC (about 2.16 million ha).

(2) Global Warming and Forests

Global warming is one of the most serious environmental problems. Adverse impacts caused by the rising global average temperature are causing concern.

In the Paris Agreement, it is stipulated to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) in the second half of this century.

In order to achieve greenhouse gas (GHG) reduction targets stipulated in the Plan for Global Warming Countermeasures (May 2016), Japan enhances the steady implementation of forest sink measures, including forest management through thinning and use of wood.

In response to the declaration of carbon neutrality by 2050, i.e. achieving net-zero GHG emissions by 2050, the plan will be reviewed.

The GOJ has taken initiatives in "Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of carbon stocks in developing countries" (REDD+), and has promoted adaptation measures based on the Climate Change Adaptation Plan (formulated in November 2018, by GOJ).

(3) International Discussions on Biodiversity

As of December 2020, the Convention on Biological Diversity (CBD) has been signed by 194 countries, the European Union (EU) and the State of Palestine. A total

of 129 countries and regions including Japan have ratified the Nagoya Protocol on access to genetic resources and sharing of benefits arising from their utilization.

(4) International Cooperation

The GOJ contributes to the promotion of sustainable forest management in developing countries by providing technical cooperation and financial assistance by bilateral cooperation and multilateral cooperation through international bodies.

Approximately \$1,340 million was provided into official development assistance (ODA) for the forestry sector worldwide in 2019, of which \$33 million was from Japan. Japan was the fourth largest donor following Germany, France, and the United Kingdom.

Japan's technical cooperation is conducted as technical cooperation projects, which optimally combine the "dispatch of experts", "acceptance of training participants" and "provision of equipment", training, etc. through the Japan International Cooperation Agency (JICA). At the end of December 2020, in the forestry sector, Japan was conducting 16 technical cooperation projects through JICA. The Forestry Agency dispatched 7 experts to 6 countries through JICA. Also, the GOJ provides financial support such as loans and grants through JICA: loans for promoting afforestation and reforestation projects and developing human resources, and grants for procurement of machinery and materials for forest management.

The GOJ also provides financial support to projects conducted by ITTO and FAO. In the projects, ITTO establishes traceability system and timber legality framework in producing countries, and FAO promotes afforestation and reforestation efforts to maximize forest carbon stock and enforces knowledge and understanding of national legal frameworks governing forestry and timber supply chains.