

Annual Report on Forest and Forestry in Japan

Fiscal Year 2019

(Summary)

Forestry Agency

Ministry of Agriculture, Forestry and Fisheries, Japan



The “Annual Report on Forest and Forestry” is a report which the Government of Japan (GOJ) submits to the Diet every year, in accordance with article 10 of the “Forest and Forestry Basic Act.” This document is a summary of the annual report for fiscal year (FY) 2019.

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Note: The maps of Japan included in this summary report do not necessarily represent the territory of Japan comprehensively.

Forests and Forestry Topics for FY2019

Topic 1: Launching the Forest Management System and Forest Environment Transfer Tax and Revising the National Forest Management Law

In April 2019, the Forest Management Act took effect to launch a system under which municipal governments or specified forestry practitioners can manage forests which their owners are not able to manage appropriately.

In September 2019, the distribution of the Forest Environment Transfer Tax to local governments started.

National and prefectural governments support municipal governments assigned to implementing the Forest Management System.

Revising the National Forest Management Law

An act for revising the National Forest Management Law and others was enacted in June 2019 and put into force in April 2020 to develop forestry practitioners who will play a key role under the Forest Management System for private forest.

The act allows forestry practitioners to acquire a right to steadily harvest trees from certain designated areas of National Forests for a certain period of time.

Topic 2: Using Wood for Tokyo Olympics/Paralympics Facilities

Some 2,000 m³ of wood have been used in the National Stadium for, such parts as its roof and eaves. Wood from Japan's entire 47 prefectures is symbolically allocated for eaves.

Wood produced throughout Japan has been abundantly used for the Village Plaza for the Athletes Village and the Ariake Gymnastics Arena where the Tokyo Olympics/Paralympics will be held.

For these facilities, wood produced considering sustainability, such as wood subject to forest certification, has been used.

The event is expected to provide an opportunity for promoting the use of wood.



An exterior view of the Japan National Stadium

(©JAPAN SPORT COUNCIL)

Topic 3: Promoting Wood Use for Mid-to-High-Rise Buildings

As calls for a sustainable society are growing, momentum on the demand side including building clients is rising to use more wood for buildings.

New associations of businesses and industries are promoting initiatives to increase wood use in buildings.

Wooden buildings including mid-to-high-rises are under construction at various locations in Japan, with initiatives increasing to choose wooden interior, exterior and structures.



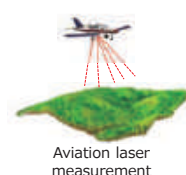
A 12-story apartment building using wooden materials (Tokyo)
(©Takenaka Corporation)

Topic 4: Promoting Forestry Innovations Including Smart Forestry

To transform forestry into a growth industry, Japan must address challenges such as the advanced use of forest-related information and the improvement of productivity, safety and profitability during the long cycle from planting to harvesting.

The Forestry Agency is promoting “forestry innovations” utilizing new technology, including machinery automation as well as smart forestry using information and communications technologies that have remarkably developed in recent years.

• Smart forestry utilizing ICT



Aviation laser measurement



Management of land boundary information

• Forestry machine automation



Automation of logging



Automation of transportation

Topic 5: Responses to Forest Damage and Mountainous Disasters from Typhoons (Faxai and Hagibis) in 2019

In September 2019, Typhoon Faxai (Typhoon No.15) hurt 639 ha of forest mainly in Chiba Prefecture, resulting in forest damage totaling about 3.9 billion yen.

In October 2019, record-breaking rainfall accompanying Typhoon Hagibis (Typhoon No.19) and other storms caused landslides at 1,256 locations and forest roads to collapse at 10,886 locations in the Tohoku and Kanto-Koshinetsu regions, resulting in forest damage totaling about 80.5 billion yen.

The damage caused by Typhoon Faxai (Typhoon No.15)



Fallen trees due to strong wind

Sanmu City, Chiba Prefecture

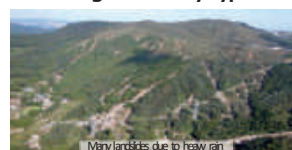
Technical support from Forestry Agency staff



Investigation of damage on forest roads

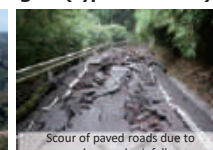
Tome City, Miyagi Prefecture

The damage caused by Typhoon Hagibis (Typhoon No.19)



Many landslides due to heavy rain

Marumori Town, Miyagi Prefecture



Scour of paved roads due to abnormal rainfall

Fuji City, Shizuoka Prefecture

Special topic: Key roles of Forest, Forestry and Wood Industry in SDGs

1. Sustainable Development Goals (SDGs) and Forests

(1) Growing Interest in SDGs

The 2030 Agenda for Sustainable Development (2030 Agenda) adopted at the United Nations Sustainable Development Summit in September 2015 is an integrated effort to realise a more sustainable planet while harmonising economy, society, and environment, the three integral aspects of our world. The Sustainable Development Goals (SDGs) are listed as 17 goals and 169 targets in the agenda.

The SDGs seek to build on the Millennium Development Goals (MDGs) and complete what they did not achieve. SDGs call for action and participation by not only governments and international organizations but also civil society, the private sector and others.

As indicated by increasing ESG (environment, society and governance) investment, interest in the SDGs is growing globally.

(2) Relationship between the Forest, Forestry and Wood Industry and SDGs

The United Nations Strategic Plan for Forests 2017-2030, adopted at the United Nations General Assembly in April 2017, provides a framework for forest-related contributions to the implementation of the 2030 Agenda, including the SDGs.

Japan's forest stock has increased year by year, paving the way for the wide use of forests. As calls are growing for addressing depopulation in rural regions and improving life quality, forests have the potential to make various contributions to the SDGs.

【Relationship between Japan's cyclical use of forests and the SDGs】

Goal 15 of the SDGs cites sustainable forest management. Furthermore, forests themselves contribute to various SDGs (Goals 6, 11, 13, 14 and 15). The use (including production, processing and distribution) of forest resources such as timber and mushrooms and recreational use contribute to various SDGs (Goals 2, 3, 4, 5, 7, 8, 9, 11, 12 and 13) (Fig. 1).

The use of forests leads to forest development and conservation as a greater cycle, representing the integration of economic, social and environmental dimensions by the SDGs.

Since the sustainable management of forests through the use of wood products certified as legal and planting after harvesting is the premise for the cycle, it indicates the forestry and wood industry's key role in the cycle.



Relationship between Japan's cyclical use of forests and the SDGs



Notes 1: Words below icons represent major expected effects rather than the explanation of goals.

2: In addition to the figure, Goal 1 calls for eradicating poverty for people depending on forests, Goal 10 for guaranteeing rights to use forests, and Goal 16 for promoting a governance framework for implementing sustainable forest management. Various initiatives are expected to make wider contributions to the SDGs, including effects that are not specified in the figure.

Fig. 1 Relationship between Japan's cyclical use of forests and the SDGs

2. Diversifying Relationship with Forests

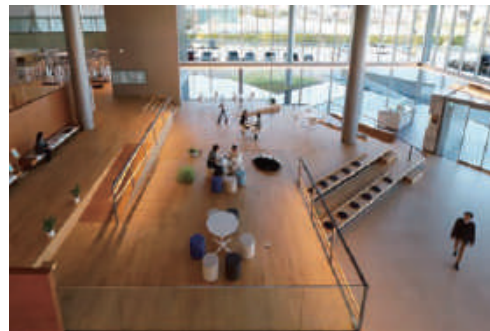
In Japan, people's relationships with forests are diversifying into forest management, forest resources use, and recreational use.

(1) Forest Management

As interest grows in forest conservation and global warming, various entities including nonprofit organizations and business corporations are participating in forest management. There are various forest development objectives, including water resources conservation, biodiversity conservation, soil conservation and marine environment improvement.

Some business corporations outside the forestry and wood industry are taking advantage of their strengths for participating in forestry.

Suntory Holdings Limited implements forest improvement activities to conserve underground water for its liquor products. It cooperates with experts in considering forest management plans while envisioning forests a century away. Suntory also uses wood produced through forest management for floors and tables at its facilities.



Wood used at a Suntory facility

(2) Forest Resources Use

Initiatives to use forest resources as sustainable materials are increasing.

Regarding buildings, wood is used at commercial, welfare and other facilities because of its warmth. Wood is expected to contribute to making office work easier. The use of wood for buildings contributes to sustainable forest management and regional vitalization in addition to lower environmental load or costs of construction (Fig.2).

New products, such as wooden and paper straws, are attracting attention as plastics substitutions. New wood-based biomass materials (including cellulose nanofibers (CNF) and glycol lignin) have been developed. Some prototypes taking advantage of their characteristics have been manufactured, and some of them have been for



Fig. 2 Wood used for a shop's exterior



Fig 3 A prototype vehicle using CNF components (©Ministry of the Environment)

commercial sale (Fig.3).

Woody biomass energy is being increasingly used as a renewable energy source. Woody biomass energy contributes to regional economic growth and employment through wood collection and processing.

Various entities use mushrooms, bamboo shoots, *gibiers* (game meat) and other forest resources. There are initiatives for forestry's cooperation with welfare such as Shiitake mushroom production by persons with disabilities.

(3) Recreational Use

Forests have been increasingly used for tourism, health promotion, education. Such recreational use contributes to forest management and conservation through progress in exchanges between urban and rural residents and in understanding about forests.

While many people enjoy nature through mountain climbing and hiking, forests have increasingly been used for other leisure purposes, including athletics and tree house making. Trail running is used for regional vitalization. Initiatives have been implemented to attract tourists with forestry experiences and forest walking programs.

Forests are used for preventing lifestyle diseases and promoting health in Japan. Some business corporations use forests for training and recreation to promote their employees' work motivation, teamwork and health (Fig. 4).

Forest kindergartens and other initiatives to provide infants with natural experience opportunities are increasing (Fig. 5). Various forest environment education programs have also been implemented for elementary school pupils.

Some business corporations have launched workation initiatives for telework in salubrious rural regions. In 2019, Wakayama and Nagano prefectural governments took leadership to create a council for local governments' cooperation in promoting workations through campaigns targeting business corporations.



Fig. 4 Health promotion walking



Fig. 5 Forest kindergarten

3. Business Corporations' Expectations and Initiatives for Forests

The Forestry Agency has polled Japanese business corporations about the SDGs and forest/wood use, gaining responses from 392 corporations ranging from small and medium-sized ones to large ones in various industries, including manufacturing.

Some 60% of the respondents are implementing or planning to implement initiatives involving forests, forestry and wood use. More than half of these corporations cited forest management and conservation as their forest-related activities (Fig. 6a).

The most frequently cited effect of forest-related activities is social contribution, followed by interchange with local communities (Fig. 6b).

Toward expanding forest-related activities, business corporations seek information on their advantages regarding such activities and the introduction of forest owners' cooperatives that are proactively exploring business partners.

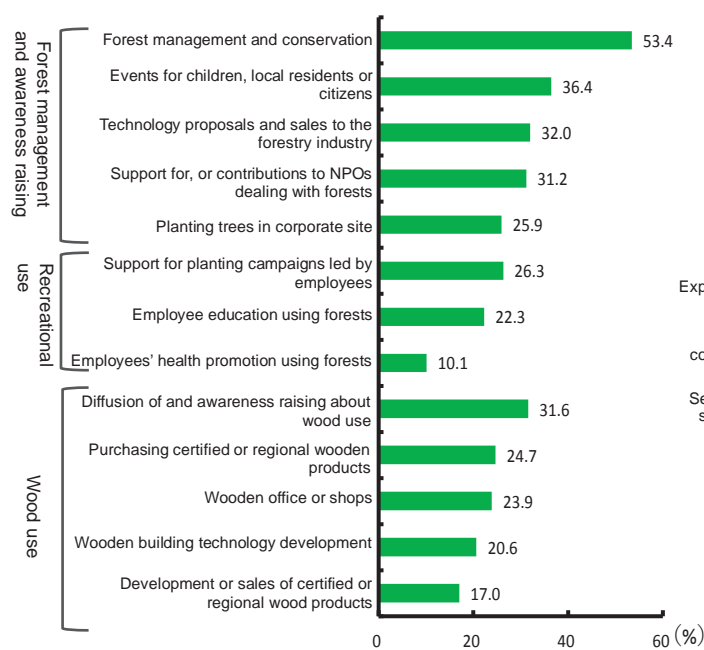


Fig. 6a Details of initiatives involving forests, forestry and wood use

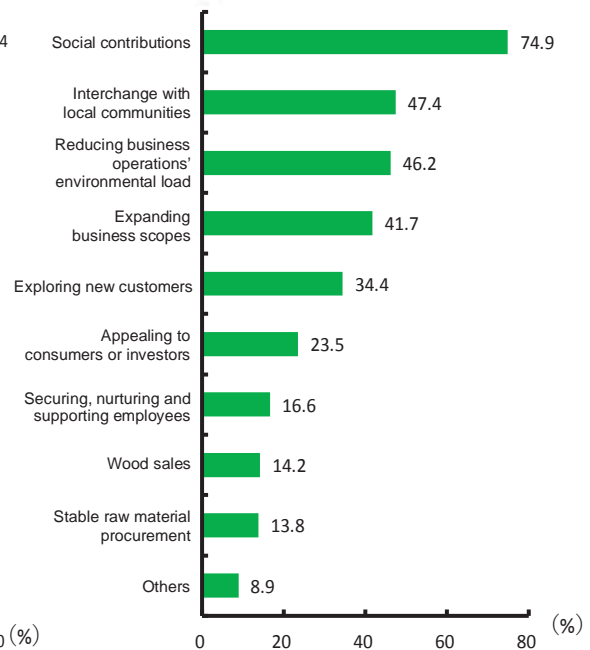


Fig. 6b Expected effects of forestry-related activities (major objectives)

4. Future Role and Challenges of Stakeholders

(1) Roles and Challenges of Forestry and Wood Industry from the viewpoint of the SDGs

Forestry and wood industry stakeholders' actions are indispensable for various entities' initiatives to use forests and wood. In addition, forestry and wood industry stakeholders' reconsideration of their business operations from the viewpoint of the SDGs contributes to their sustainability.

While sustainable forest management is fundamental, some logging sites have been

left without planting after harvesting. The reason is partly because present log prices are too low to cover planting and forest management costs. Forestry cost reduction and initiatives for cooperation with midstream and downstream sectors are important for increasing profits for upstream sectors.

As people have become aware of sustainability in line with their growing interest in the SDGs, building clients as well as contractors have begun to seek legal wood. Given that adequate arrangements are required for supplying legally harvested wood, it is important to confirm the legality of wood and register wood-related business entities under the Clean Wood Act.

As the productive population declines, it has become even more important to promote safe, easy-to-work and attractive workplaces. It is necessary to improve logging skills with equipment by repeated logging exercises and simulating logging operations.

While the number of female workers in the forestry industry has decreased faster than that of male workers, female workers for logging have increased in number due partly to progress in mechanization. The acceptance of female workers contributes to improving the forestry work environment and is expected to lead to the enhancement of the worker retention rate.

(2) Stakeholders' Roles in Supporting the Forest, Forestry and Wood Industry

Since not only forestry and wood industry but also various business corporations and individuals are related to forest in some way, so that they can influence forest management better and contribute to the SDGs in the context of sustainable forest management.

As there are many regions where forests are important local resources, regional business corporations' cooperation in using forests is expected to lead to favorable environmental, economic and social trends.

In the first step to engage with the SDGs, individuals become aware of these goals. Regarding forests, individuals feel the goodness of forests and wood by enjoying going to forests for tourism or leisure purposes or by using wooden products.

Local and national governments should support the vitalization of initiatives for forests. The GOJ has formulated SDGs implementation Guiding Principles and SDGs action plans. Based on them, the Forestry Agency has promoted sustainable forest management and supported the private sector's various relevant initiatives. The agency has also provided forestry-related assistance to developing countries in a bid to achieve the SDGs.

Chapter I Forest Management and Conservation

1. Promoting Appropriate Management and Conservation of Forests

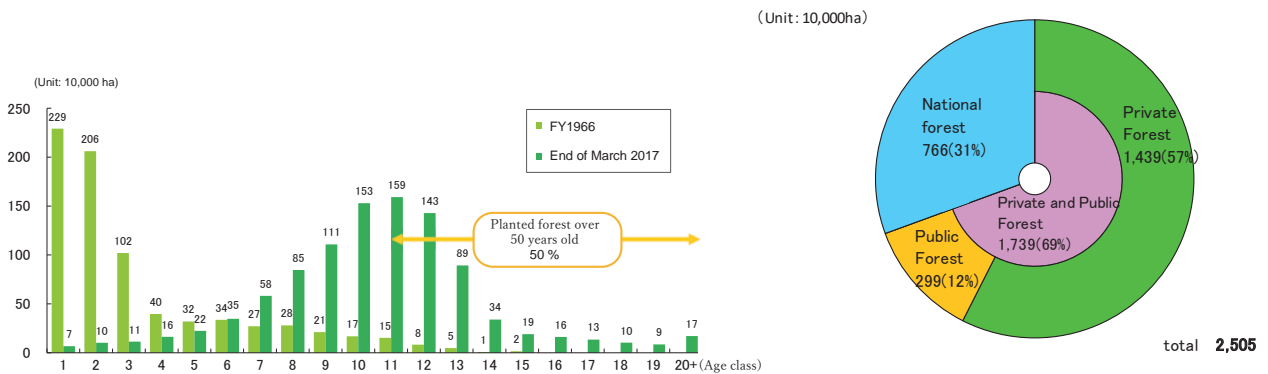
(1) Current State of Forests and Multiple Functions

Forests contribute to the people’s lives and economies through their multiple functions including land conservation, water resource conservation, and preventing 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.



Sources: Forestry Agency: State of Forest Resources (March 31, 2017), Forestry Agency: Forest Resources of Japan (April 1968)

Sources: Forestry Agency: State of Forest Resources (March 31, 2017)

Notes: Age-classes are divided by 5 year-period steps. “Age-class 1” includes the 1st to 5th year after planting with the year of planting counted as the 1st year.

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 Forest and “Forestry Basic Plan” (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”.

In October 2018, a new “National Forest Plan” was formulated including plans to

promote the “Forest Management System” and to control damage by flood wood.

(3) Forest Management System

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 (Fig. I – 3).

Some municipal governments have launched initiatives under 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”, additional 1,000 yen per capita per year will be imposed as part of the individual inhabitant tax from FY2024.

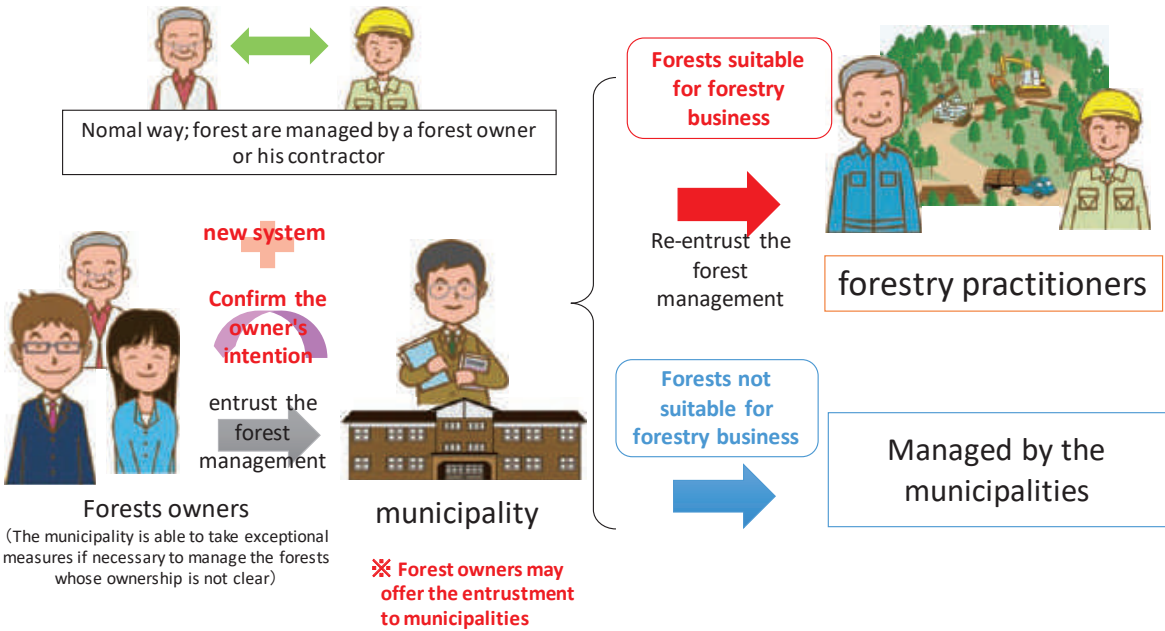


Fig. I – 3 Outline of Forest Management System

(4) 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.

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.

To encourage planting after harvesting, it is increasingly important to reduce planting costs and to stably supply seedlings. About 60 million seedlings for planting were produced in FY2018, and about 20% was for seedlings raised in the container (Fig. I – 4,5).

In order to tackle Sugi and Hinoki pollution, the Forestry Agency proactively promotes measures to reduce pollen production, including to increase the production of less pollen seedlings and pollen-free seedlings.

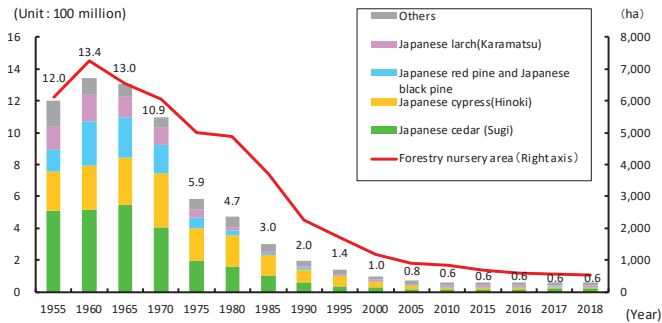
(Unit: 10,000ha)

	Type of work	Private and public forest	National forest	Total
Regeneration	Planted	2.2	0.9	3.0
	Underplanted	0.2	0.3	0.5
Post-Establishment Treatments		36	15	51
	Thinned	27	10	37

Source: Survey by Forestry Agency.

Note: Thinned area for promotion of forest sink activities

Fig. I – 4 Forest management area (FY2018)



Source: Forestry Agency “Forests and Forestry Statistical Manual.”

Notes: Excluding state-owned.

Fig. I – 5 Annual production of seedlings for planting

(2) 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, increasing nearly six-fold from FY2000. In recent years, the business sector shows growing interests to stimulate local economies through transforming the forestry into a growth industry.

3. Forest Conservation

(1) Management and Conservation of Protection Forests

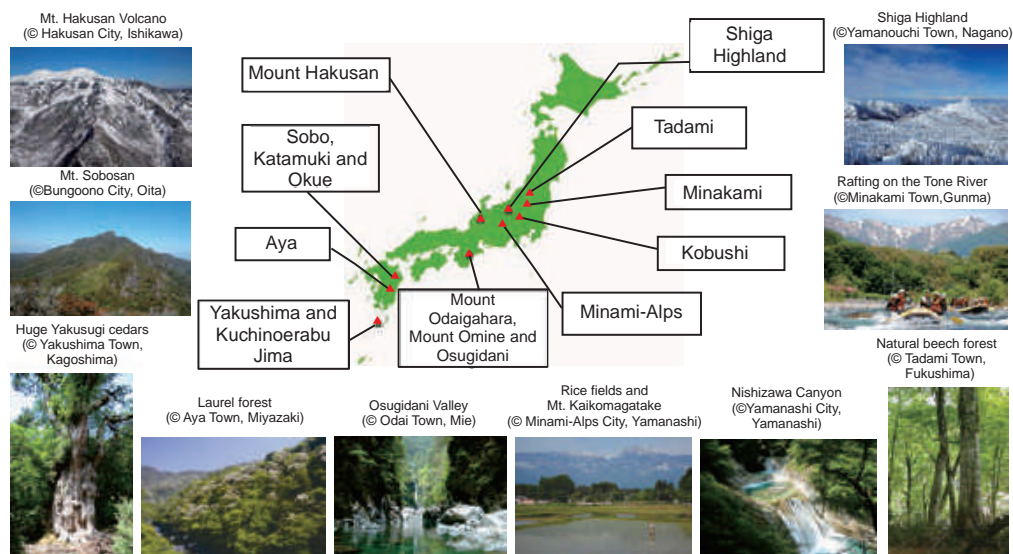
“Protection forest” are designated in accordance with the Forest Act when it is considered particularly necessary that they provide important public benefits. Felling and forest development are regulated in them. At the end of FY2018, 12.2 million ha of forests were designated as protection forests. 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.



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

Fig. I – 6 UNESCO Biosphere Reserve sites in Japan

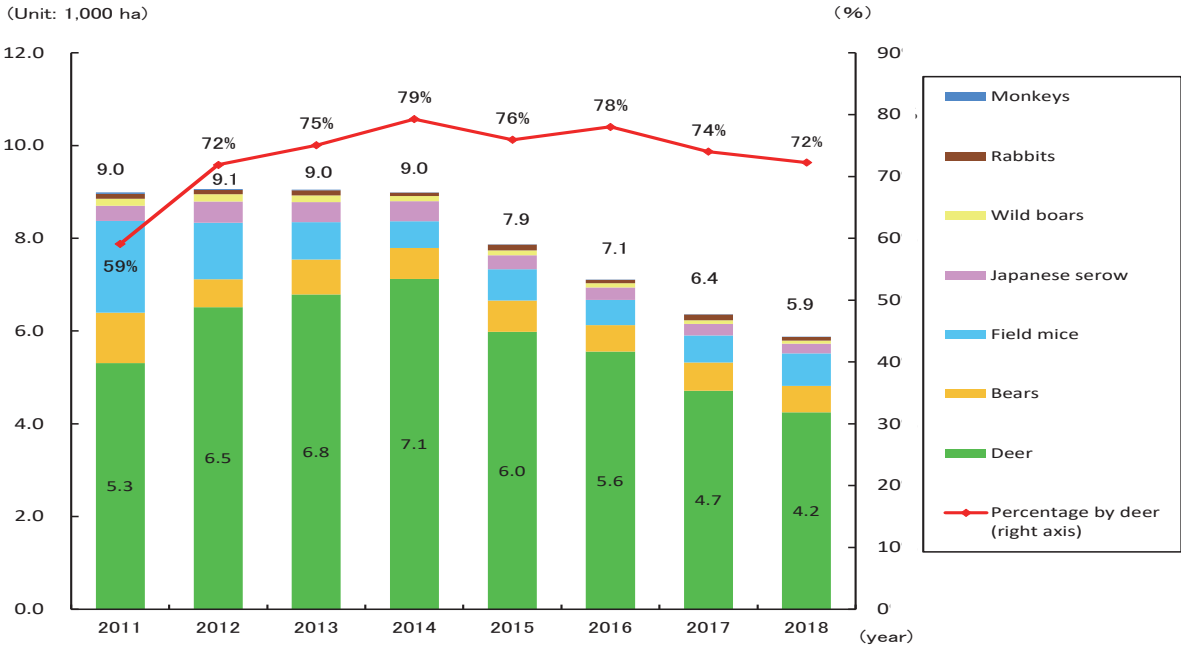
The Forestry Agency promotes the strict protection and management of forests in World Heritage sites and Biosphere Reserve sites (Fig. I – 6). The GOJ is promoting efforts to inscribe “Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island” on the World Heritage List as Natural Property in 2020.

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

In recent years, the area of forests damaged by wildlife has been declining, but it remains in a serious situation. In FY2018, about 5,900 ha of forests were damaged by wildlife, about 70% of which was caused by deer (Fig. I – 7). 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 FY2018, pinewood nematode damaged about 0.35 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 2018, 1,363 forest fires occurred, burning down 606 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.



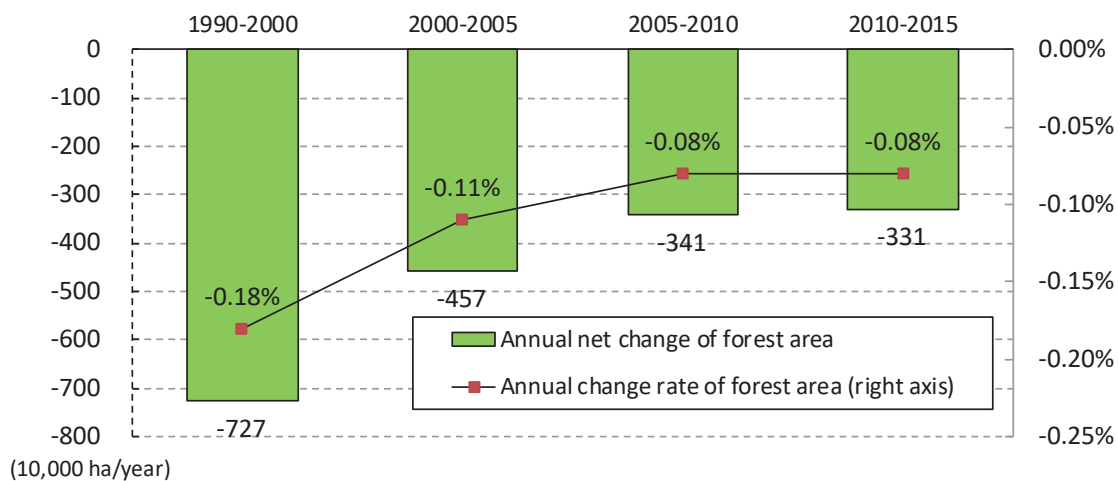
Source: Survey by Forestry Agency.

Fig. I – 7 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 world forest area was approximately 4 billion hectares in 2015 (about 31% of global land area). The world's forest area is decreasing, but the rate of forest loss is slowing (Fig. I – 8). Tropical forests in South America and other are declining, while forest area in Asia is expanding.



Source : Global Forest Resources Assessment 2015 (FAO), R.J. Keenan et al., (2015) Dynamics of global forest area: Results from the FAO Global Forest Resources Assessment 2015. *Forest Ecology and Management*, 352: 9-20.

Fig. I – 8 Changes in global forest area

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. 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 2.03 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.

The “Paris Agreement” was adopted at the twenty-first session of the Conference of

the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) held in 2015 as an effective legal framework applicable to all parties, and it came into force in November 2016.

COP24, held in Poland in December 2018, adopted the Paris Agreement Work Programme (PAWP) for full implementation of the Agreement. PAWP guides parties to set a target and to track the progress by using existing methods and guidance. It is expected that the carbon sink strategy will continue to have important role in achieving the long-term global temperature goal.

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.

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 2019, the “Convention on Biological Diversity (CBD)” has been signed by 194 countries, the European Union (EU) and the State of Palestine. A total of 123 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

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 \$640 million was provided into official development assistance (ODA) for the forestry sector worldwide in 2016, of which \$36 million was from Japan. Japan was the fourth largest donor following France, Germany, 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/or provision of equipment, training, etc. through the Japan International Cooperation Agency (JICA). At the end of December 2019, in the forestry sector, Japan was conducting 18 technical cooperation projects through JICA. The Forestry Agency dispatched 8 experts to 7 countries through JICA. Also, the GOJ provides financial support such as grants and loans through JICA; grants for support of afforestation and reforestation projects and for procurement of machinery and materials for forest management; and loans for promoting afforestation and reforestation projects and developing human resources.

The GOJ also provides financial support to cover the International Tropical Timber Organization (ITTO) and FAO.

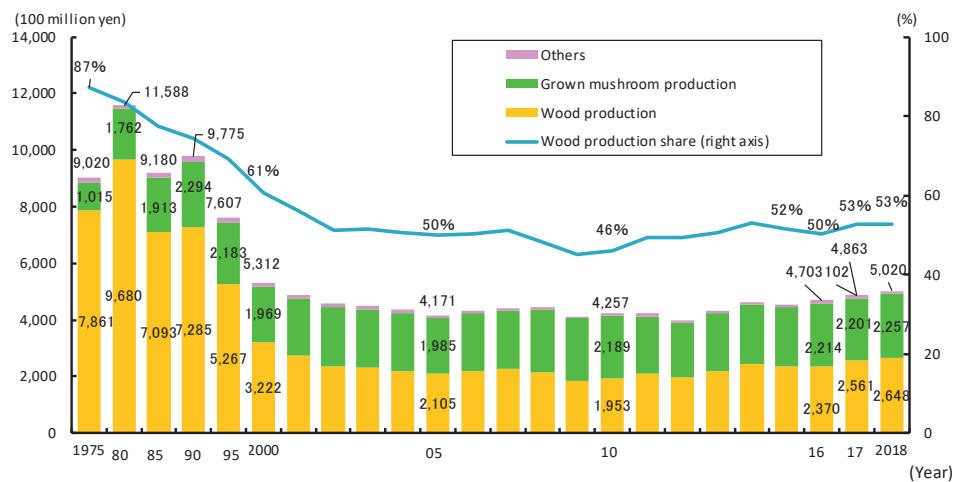
Chapter II Forestry and Hilly and Mountainous Rural Communities

1. Forestry

(1) Forestry Production

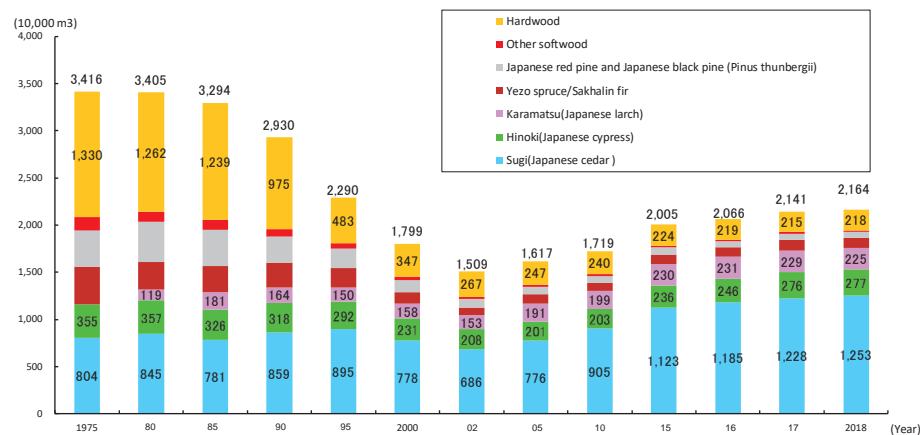
Total forestry output in 2018 was 502 billion yen, which was an increase of 3% over the previous year. Output rose beyond 500 billion yen for the first time in 18 years, since 2000. Percentage of wood production in forestry has stood around 50% since 2002 (Fig. II – 1).

Supply of domestic wood totaled 30.2 million cubic meters in 2018. Of the supply, logs for sawn lumber, plywood and chips accounted for 2,164 m³, maintaining an uptrend from 2002. By tree species, the volume of Sugi (Japanese cedar) production was 58%, Hinoki (Japanese cypress) 13%, Japanese larch 10%, and hardwood 10% (Fig. II – 2).



Source: MAFF: Forestry output

Fig. II – 1 Gross forestry output



Source: MAFF: Report on supply and demand of lumber

Fig. II – 2 Volume of domestic roundwood

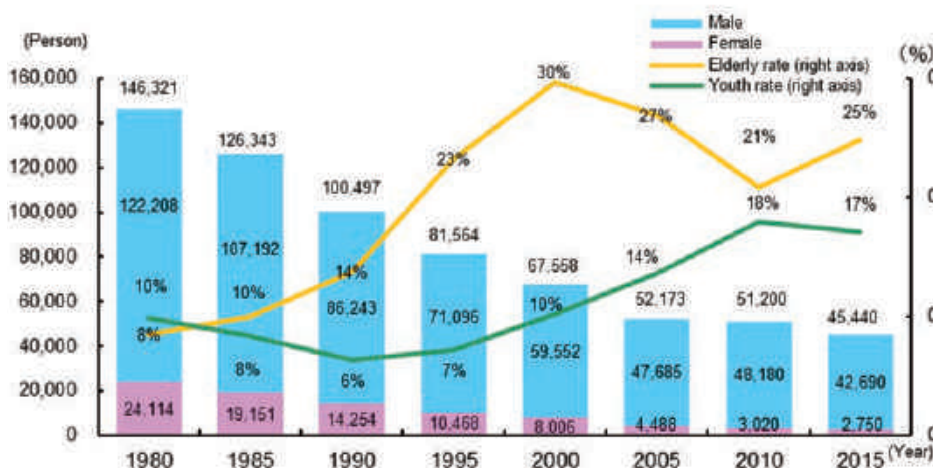
(2) Forestry Management

The 2015 Census of Agriculture and Forestry shows that the number of forestry households was 830 thousand, 88% of which owned less than 10 ha of forest area. Small-scaled forest ownership remains dominant.

The census shows that a total of 19.89 million m³ (increase of 27% over previous 5 years) of logs was produced by forestry entities. In addition, the quantity produced per forestry management entity has grown rapidly to 4,188 m³ (30% increase over previous 5 years). On the other hand, 46% of all forestry management entities produce less than 1,000 m³/year of logs, revealing that many are small-scale entities.

(3) Forestry Workforce

According to the 2015 national census, the number of forestry workers was 45,440, tending to decline in the long-term. The proportion of aged forestry workers (aged 65 or older) was 25%, while the proportion of young forestry workers (aged 35 or younger) was 17% in 2015 (Fig. II – 3). The workplace accident rate in the forestry industry, which represents the rate of deaths and injuries per 1,000 workers, was 22.4 in 2018. The rate continues to be the highest rate among all industries. Measures to achieve safer working environments are being promoted.



Source: Ministry of Internal Affairs and Communications, National Census

Notes: Elderly percentage of workers 65 years of age or older, and youth rate is percentage of workers 35 of age or younger.

Fig. II – 3 Number of forestry workers

(4) Improvement of Forest Productivity

Consolidating forestry operation

The Forestry Agency and prefectures are consolidating forestry operations by developing “Forest Management Planners” who will conduct proposal-based coordination with forest owners and consolidation of forestry operations.

Municipalities launched the forest area register system in April 2019 to unitarily compile

information on forest owners and ownership boundaries and provide part of such information to forestry contractors.

Initiatives on reduction in planting cost and labor after harvesting

As forest harvesting is expected to increase with many planted forests becoming ready for harvesting, the reduction of costs and the stable supply of seedlings for planting required after harvesting become even more important. The Forestry Agency promotes the introduction of an integrated harvesting and planting system to use forestry machine for simultaneously or sequentially implementing harvesting, land preparation and planting to reduce planting costs.

Forest Tree Breeding Center is developing the “elite tree” species featuring faster initial growth (Fig. II – 4). Given that weeding accounts for a major part of planting costs, pilot initiatives to reduce weeding frequency are implemented at various locations in Japan. Fast-growing trees are useful for these initiatives.

As Sendan (*Melia azedarach*) and other fast-growing trees are attracting attention, demonstrative initiatives for developing and using relevant forestry technologies are being implemented in Japan.



Fig. II – 4 The “elite tree” (in the fourth year after planting)

Planting, weeding and other operations depend mostly on human labor, facing problems such as heavy labor, high costs and labor shortages.

In FY2019, the Forestry Agency implemented the Sustainable Forest Action program for collaboration between experts in forestry and those with unique skills or knowhow in other fields, e.g. ICT to create businesses for solving the planting problems.

Sixty-nine people divided into 14 teams developed various business ideas and fabricated prototypes over about two months to present their achievements at a final examination meeting on December 7.

The top prize was given to the Morigatari (forest talk) for its business idea on environmental education service to provide virtual learning, on-site forestry experiences and furniture made of harvested wood. The service is designed to use experience learning and forests owned by forestry business operators for producing profits to those business operators and encouraging their planting after harvesting.



Final examination meeting

Cutting-edge technologies to improve forestry business efficiency

Forestry innovation initiatives are required for using information and communications, artificial intelligence and other cutting-edge technologies to save forestry costs and labor.

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

Practical initiatives are making progress at various locations in Japan, including those using airborne laser scanning surveys for collecting and providing forest resources information and geographical data, and those using road network design aiding software for labor saving.

Machines to automate forestry work are being developed for improving safety and labor saving.

2. Non-wood Forest Products

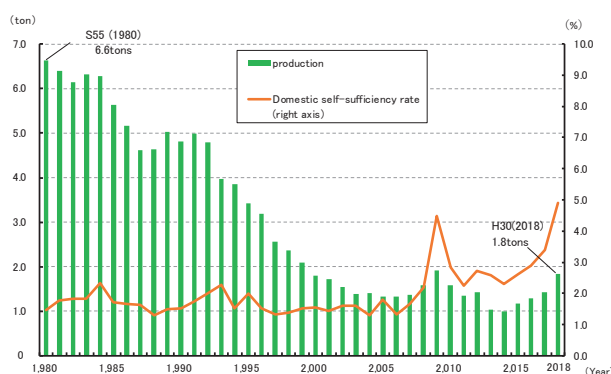
Non-wood forest products include mushrooms, edible nuts, wild vegetables, Japanese lacquer, bamboo, charcoal, etc. Non-wood forest products account for about half of the forestry output and play key roles in stimulating rural economies and ensuring employment. The value of non-wood forest products in 2017 was 282.8 billion yen, an increase of 2% over the previous year.

(1) Mushrooms

Mushrooms earned more than 80% of the value of non-wood forest products in 2018. Production of mushrooms has been flat in recent years, reaching 467,000 tons in 2018.

(2) Other Non-wood Forest Products

Japanese lacquer production has been increasing in recent years as Japanese lacquer has been adopted in principle for preserving and repairing national treasure and important cultural property buildings (Fig. II – 5). Total production of charcoal has been decreasing over the long term, reaching 22,000 tons in 2018. Bamboo material (raw material for bamboo paper) has been increasing since 2010, reaching 34,000 tons in 2018. Total fuelwood production was 48,000 m³ in 2018, and it has remained at approximately 50,000 m³ in recent years (converted to logs).



Source: Forestry Agency "Non-wood Forest Products Data"

Fig. II – 5 Japanese lacquer production

3. Hilly and Mountainous Rural Communities

(1) Current State of Hilly and Mountainous Rural Communities

Hilly and mountainous rural communities, where people engage in forestry, play a significant role in securing the multiple functions of forests. “Mountain Village Areas Due for Development”, designated pursuant to the Mountain Villages Development Act, cover about half of the total land area, accounting for approximately 60% of the total forest area. There are problems such as a decrease in job opportunities and an increase in abandoned farmland due to continuing depopulation and the aging population in such communities. In response to this situation, there is an initiative to use fast-growing trees such as Sendan (*Melia azedarach*) for the purpose of afforestation on farmlands that are difficult to reuse as farmlands (dilapidated farmlands).

(2) Revitalization of Hilly and Mountainous Rural Communities

In order to maintain forests around mountain villages, it is vital that regional residents engage with the mountain village forests continuously while utilizing forest resources. The Forestry Agency supports regional residents in maintaining mountain village forests and using forest resources.

The Forestry Agency is promoting effective exchanges between hilly and mountainous rural communities and urban societies including through hands-on activities, forest environmental education, and “Countryside Stay” (Rural Tourism), which helps tourists experience traditional Japanese life.

Also, the Forest Agency is promoting “Forest-related Service Industry” by linking forests and forestry with diverse fields such as medical care, welfare, tourism, and education to use forest space in ways matched to changes in the people’s values and their lifestyles.

Sendan (*Melia azedarach*) can be harvested for furniture only 20 years after planting, attracting attention as a fast-growing, excellent wood resource.

Kumamoto Prefecture has promoted Sendan planting in a bid to establish a Sendan production system. Through previous research, it has found that valley and flatland areas rich with soil nutrients and water are suitable for planting Sendan and that dilapidated farmlands (which are difficult to use as farmlands) that have milder slopes and are more accessible than mountains are also suitable for planting Sendan.

To secure stable Sendan wood supply in the future, Kumamoto Prefecture supports initiatives to plant Sendan and other fast-growing hardwood trees at dilapidated farmlands.

In Tara Town, Saga Prefecture, the Kito agriculture and forestry office took leadership in planting 70 Sendan seedlings at a dilapidated farmland in October 2019, planning to use the site as an experimental forest for training. These kinds of initiatives are expected to promote forestry and help resolve problems in hilly and mountainous regions.



Sendan trees planted at a dilapidated farmland (Kumamoto Prefecture)



Chapter III Wood Product Demand and Use of Wood

1. Supply and Demand for Wood

(1) Global Wood Supply and Demand

The total volume of industrial roundwood consumption at a global level had decreased a result of a rapid economic slump in the autumn of 2008, but in 2010 it started to increase again, according to the FAO.

Global consumption of industrial roundwood in 2018 increased 5% from the previous year to 2,032.72 million m³. China was the world's largest industrial roundwood importer in 2018, accounting for 43% of global imports of industrial roundwood.

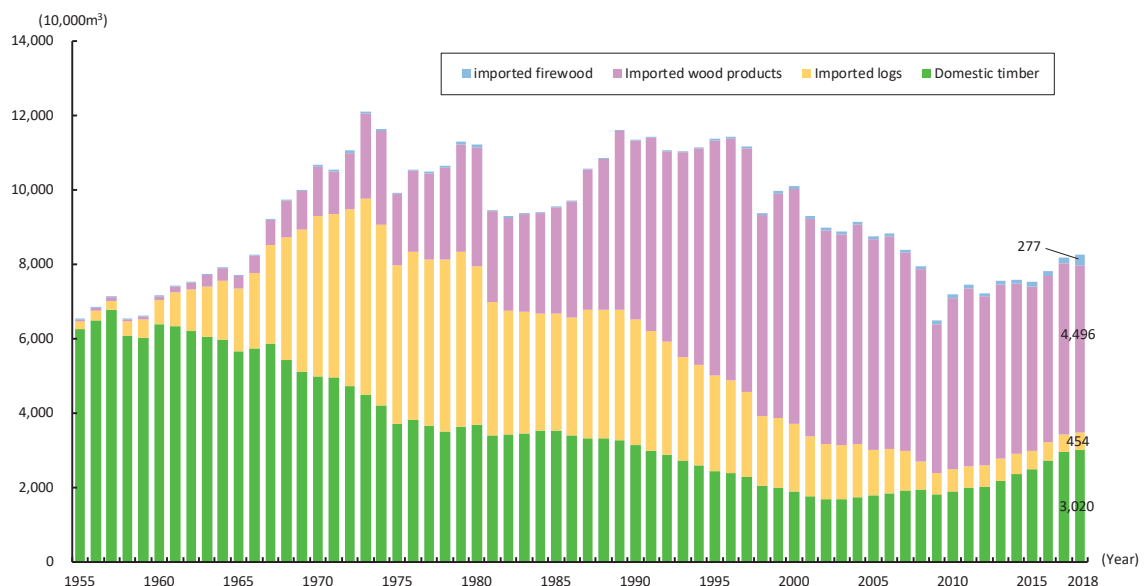
In 2018, consumption of coniferous sawn wood increased in Europe and North America. Production of it increased in Europe, North America and Russia in 2018.

(2) Wood Supply and Demand in Japan

Japan's wood demand bottomed out in 2009 and has recovered. Total wood product demand in Japan in 2018 was 82.48 million m³ (roundwood equivalent), which was a 0.8% increase over the previous year (Fig. III – 1).

Domestic wood supply bottomed out in 2002 and has recovered. It was 30.20 million m³ in 2018, which was a 1.8% increase over the previous year (Fig. III – 1).

The volume of imported wood in 2018 was 52.28 million m³ due to an increase in the import volume of wood chip, plywood and fuelwood, which was a 0.2% increase over the previous year (Fig. III – 1).



Source: Forestry Agency "Wood Supply and Demand Chart"

Fig. III – 1 Changes of wood supply

(3) Wood Prices

The prices of domestic roundwood and sawn wood products were almost flat in recent years. Domestic wood chip prices slightly rose.

(4) Illegal Logging Countermeasures

“The Clean Wood Act” came into force in May 2017. The Act stipulates that all businesses must endeavor to use legally harvested wood and wood products, and that Wood-related Business Entities in particular shall confirm the legality of the wood and wood products they handle.

Wood-related Business Entities that appropriately and reliably take steps to confirm the legality of wood and wood products may apply to a registration body (there are six such bodies in operation) to obtain registration as a “registered Wood-related Business Entities”. As of March 2020, 418 companies had completed this registration process.

(5) Wood Exports

The value of wood exports has been on a rising trend since 2013. In 2019, it reached 34.6 billion yen. Various organizations have been promoting wood products from domestic wood for export.

In August 2018, China's wooden structure design standards including Japanese wood and the wood post and beam construction method entered into force. The first two wood post and beam houses are under construction in Dalian, China, under the new standards. Japan held a workshop for engineers on wood post and beam houses in Nanjing, China. In this way, various Japanese entities are trying to increase Japanese wood consumption in China.



A workshop on wooden houses held in Nanjing, China



Wood post and beam houses under construction in Dalian, China



2. Wood Use

(1) Importance of Wood Use

Wood use can contribute to sustainable fulfillment of multiple functions of forests including prevention of global warming, as well as vitalization of local economies. Wood use is also considered to provide comfortable and healthy living conditions, through showing excellent properties of humidity conditioning, heat insulation, and shock

absorption, as well as the relaxing and stress-reducing effect of its scent.

(2) Wood Use in Housing and Construction

In Japan, about 80% of low-rise (up to three stories) residential buildings are wooden. However, wooden buildings account for less than 10% of mid-to-high-rise (four stories and above) buildings and non-residential ones.

Developments are ongoing for fire-resistant wooden materials, cross-laminated timber (CLT) and other technologies and products to use wood for mid-to-high-rise buildings and non-residential ones.



(3) Wood Use for Public Buildings

The proportion of wooden structured buildings was 13.1% of all public buildings (based on floor area) whose construction started in FY2018. It was 26.5% among low-rise buildings.

More than 60% of low-rise public buildings were constructed by private clients, and about 80% of them were medical care or welfare facilities.

(4) Use of woody biomass

The quantity of woody biomass for energy use has been increasing recently. Japan’s fuelwood consumption including wood chips, wood pellets, firewood and charcoal in 2018 increased 16% from the previous year to 9.02 million m³.

While the increased use of woody biomass is mainly caused by a boom in woody biomass power plants, the Forestry Agency is also encouraging heat-use, which has higher energy conversion efficiency.

High value-added products including lightweight, high-strength cellulose nanofibers (CNF) and heat-resistant, processible glycol lignin are being developed for using woody biomass for materials.

(5) Spread of the Use of Wood among Consumers

The Forestry Agency has been promoting “Kizukai Undo” (attention to wood use), an initiative to disseminate the importance of wood use among consumers, including the “Wood Design Award” which acknowledges outstanding wood products and related activities that contribute to the re-discovery of the excellence and value of wood from the consumers’ viewpoints.

The Forestry Agency has also been promoting “Mokuiku” (wood use education) educational activities to disseminate the excellence and significance of wood use among both adults and children.

Since FY2018, the Government of Japan (GOJ) has reappraised wood culture and wood hospitality in Japan mainly from the viewpoint of foreign tourists. It has thus created and provided new types of wood cultures and wood hospitality.
In FY2018, the GOJ formulated a guidebook introducing wood culture across Japan.
In FY2019, regional forestry and wood industry and tourism stakeholders cooperated in implementing workshops, model tours and other events in four regions to provide opportunities for people to experience regional wood culture and hospitality through forest tours and traditional craft fabrication.



Wood culture and hospitality guidebook



Craft fabrication in Odate, Akita Prefecture



3. Wood Industry

(1) State of the Wood Industry

The value of shipments of lumber and the wood industry bottomed out in 2009 and has since recovered. In 2017, the value rose to 2.7 trillion yen, which was an increase of 2.3% over the previous year.

(2) Sawmilling Industry

Shipments of sawn wood products fell until 2009 and have remained flat since the beginning of 2010. In 2018, shipments rose to 9.20 million m³, which was a decrease of 2.7% over the previous year. The quantity of industrial wood received by sawmills was 16.67 million m³ in 2018.

(3) Glued Laminated Timber Manufacturing Industry

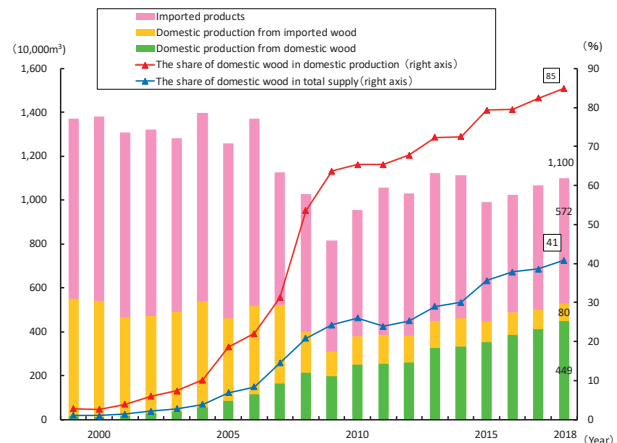
Glued laminated timber production in 2018 totaled 1.92 million m³. Domestic wood accounted for 39% of laminae used and imported wood for 61%. Japan's import of

glued laminated timber products in 2018 stood at 0.94 million m³.

(4) Plywood Industry

Production of plywood in 2018 was 3.30 million m³, which was an increase of 0.3% over the previous year. By use, 2.97 million m³ was structural use, while 50 thousand m³ was used as concrete formwork, revealing that most is structural use.

The share of domestic wood in domestic plywood production in 2018 rose to 85% (4.49 million m³). In 2018, the total wood demand for plywood, including imported products, was 11.00 million m³. Domestic wood accounted for 41% of total wood demand for plywood in Japan (Fig. III – 2).



Source: Forestry Agency "Wood Supply and Demand Chart"

Fig. III – 2 Changes of supply of wood for plywood

(5) Wood Chip Manufacturing Industry

Production of wood chips (excluding fuel use chips) in 2018 was 5.71 million tons, which was a decrease of 4% over the previous year.

Japan's import of wood chips in 2018 totaled 12.45 million tons, accounting for about 70% of wood chip consumption in Japan.

(6) Precut Processing Industry

"Precut lumber" refers to lumber that is pre-processed into the required shapes and sizes of building components, such as posts and beams, which enables quick and exquisite assembling of the components onsite.

The rate of use of precut lumber for the post and beam construction method, which is one of the main construction methods for houses in Japan, reached 93% in 2018.

(7) Cross Laminated Timber (CLT) and Other New Products and Technologies

New products and technologies have been developed and popularized to create wood demand in areas where wood has not been used very much in the past.

Even in Japan, apartment houses, hotels, office buildings, school buildings and other mid-to-high-rise buildings have been constructed with Cross Laminated Timber (CLT), wooden fire-resistant members and other wooden materials.

Chapter IV National Forest Management

1. Roles of National Forests

(1) Distribution and Roles of National Forests

National forests occupy 7.58 million ha of land, almost 20% of the land area of Japan, and approximately 30% of the total forest area. They are widely distributed in the remote mountainous areas and headwaters areas, and they play important roles in fulfillment of the multiple functions of forests, including land conservation, watershed conservation, etc.

National forests which have diverse ecosystems, are important for the conservation of biodiversity, and 95% of the land designated as World Natural Heritage sites in Japan (Shiretoko, Shirakami-Sanchi, Ogasawara Islands and Yakushima) is located in national forests.

(2) National Forests Management

National forests, an important asset of the country, are managed by the Forestry Agency in an integrated manner under the National Forest Management Program.

Since FY2013, this program has been executed under the General Account Budget with a view to further promoting the sound management of national forests aiming to enhance public benefits and to contribute to revitalization of Japan's forests and forestry.

2. Specific Initiatives under the National Forest Management Program

(1) Further Promotion of Management with Emphasis on Public Benefits

The Forestry Agency manages each national forest in accordance with the five forest types categorized based on the expected functions of "landslide prevention", "natural conservation", "recreational use", "comfortable environment development", and "watershed conservation".

Ninety percent of national forests are conservation forests such as watershed conservation. The Forestry Agency improves devastated land and conservation forests through forest conservation projects in order to ensure the people safe and worry-free lives.

The Forestry Agency designates and manages "Protected Forests" and "Green Corridors" in order to conserve biodiversity. As of April 2019, Protected Forests were designated at 667 locations covering 978,000 ha of land, which accounted for 13% of national forest area. "Green Corridors" were formed as of April 2019 at 24 locations, covering 584,000 ha of land, and accounting for 8% of national forest area. The Forestry Agency takes measures to protect rare species of wildlife, and prevents deer and other wildlife from damaging forests.

The Chubu Regional Forest Office in Nagano Prefecture is demonstrating a method to build a driftwood catching facility by exploiting an existing forest conservation dam. It has confirmed the excellent economic efficiency and workability of the method to build a driftwood catching facility at the upstream side of an existing forest conservation dam without adjusting the dam.



Facility location (Chushin, District Forest Office) [constructed in 2018]



The driftwood catching facility (Tono, District Forest Office) [constructed in 2018]



(2) Contribution to Transforming Forestry into a Growth Industry

Through the organizations, technical capabilities and resources of the National Forest Management Program, the Forestry Agency is (I) developing and disseminating technologies for low-cost forestry practices, such as utilization of containerized seedlings and “simultaneous operation of harvesting and planting”; (II) establishing cooperative forest management areas to collaborate with private forests to promote development of forestry road systems and forest operations; and (III) promoting stable wood supply to lumber and plywood mills through “System Sales”.

The Shikoku Regional Forest Office has introduced a system to improve trap patrolling efficiency and use wildlife for *gibiers* (game meat) because forests have been damaged by wildlife. The system uses LPWA (low-power, wide-area network) and mobile data communications to immediately inform hunters of trapped animals through mobile terminals.

The system improves not only the efficiency of hunter's trap patrolling and animal catching but also that of the administration sector's operations regarding forest damage prevention.

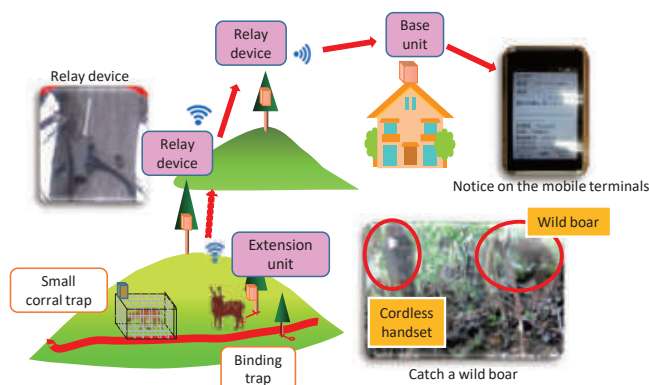


Image of a catch information system using IoT



(3) National Forests as “Forests for People”

The Forestry Agency provides various organizations (e.g. schools, voluntary groups, corporations, traditional woodworkers) with places for field activities such as forest environmental education and forest management practices, by designating forests for such activities within national forests. The Forestry Agency also undertakes “model projects” to manage forests in cooperation with local parties and nature conservation groups.

The Forestry Agency leases national forests to local governments and residents. “Recreation Forests” are managed and administered in partnership with municipalities and other stakeholders in local communities such as the tourist industry. In FY2018, a total of 140 million people visited “Recreation Forests”.

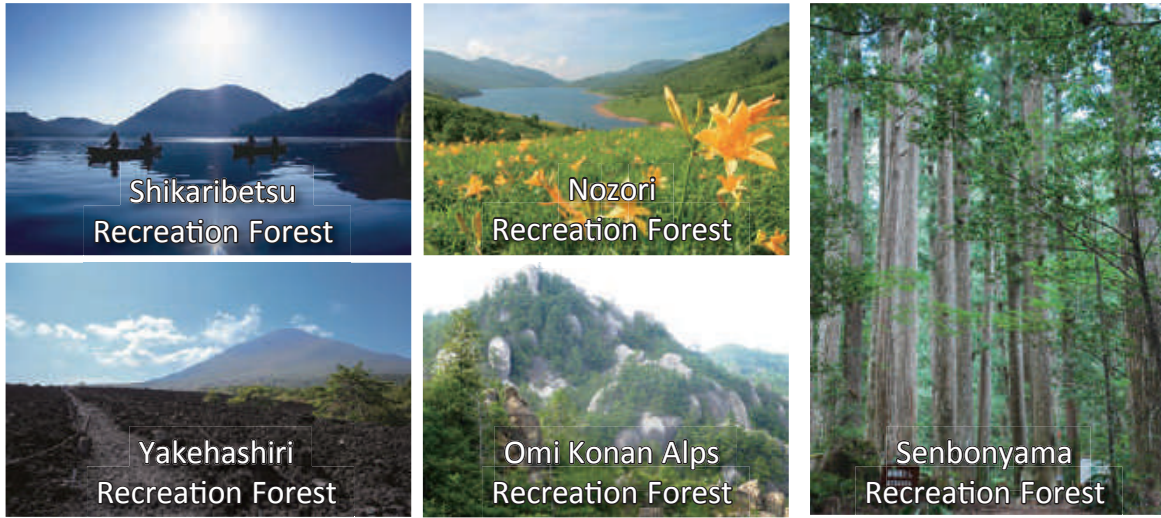
And 93 of “Recreation Forests” that have potential attractiveness as tourism resources were selected as “Japan’s Forests with Breathtaking Views” (Fig.IV – 1). To encourage more people to visit these forests, the Forest Agency has improved facilities and promotes these by posting multilingual signs, provides information on web sites in two languages.



**Recreation
Forests of
JAPAN**



QR Code for “Japan’s Forests with Breathtaking Views” website



Source: Forestry Agency.

Fig. IV – 1 Cases of “Japan’s Forests with Breathtaking Views”

Chapter V Reconstruction after the Great East Japan Earthquake

1. Recovery of Forests, Forestry and the Wood Industry

(1) Recovery of Forests, Forestry and the Wood Industry

In March 2011, the Great East Japan Earthquake caused damages to forests and forest conservation facilities and forest roads in 15 prefectures. By January 2020, 98% of the recovery works had been completed.

The Forestry Agency supported disposal, restoration, and improvement of wood processing and distribution facilities which were damaged (115 locations nationwide). As of April 2019, operations had restarted at 97 locations. Production of logs and wooden products have generally recovered to the respective levels before the earthquake.

(2) Restoration of Coastal Forests

Approximately 164 km of coastal disaster-prevention forests damaged by the tsunami required restoration work. Restoration works were started on all of them, and the works were completed on about 130 km of these damaged coastal disaster-prevention forests at the end of January 2020.

The restoration of coastal disaster-prevention forests is being done by planting and nurturing trees with the participation and cooperation of residents, companies, and NPOs.

(3) Promotion of Wood Use for Reconstruction and Contribution by Forests and Forestry

More than 25% of “emergency temporary houses” (about 15,000 dwellings) were constructed of wood in three prefectures (Iwate, Miyagi and Fukushima). By the end of September 2019, about 30% (about 9,000 dwellings) of completed public houses for disaster victims (reconstruction houses) were constructed of wood.

The large quantity of woody disaster debris produced by the earthquake and tsunami was used as raw material for engineered wood, boiler fuel, and biomass power plants.

To address population decline, hollowing of industry and other problems common to all regions of Japan, the forestry and wood processing industry also takes steps to achieve reconstruction using forest resources.

In October 2015, Minami Sanriku Town, Miyagi Prefecture, acquired an FSC^{※1} certificate to sustainably use mountain forests that account for 80% of its area.

Minami Sanriku Town is spreading local information to the public to take advantage of the certificate, through study tours at forests. It is also creating new relations with business corporations and consumers interested in the town and its environment.

Minami Sanriku Town has also acquired an ASC^{※2} certificate for oyster farming. The certificate is expected to contribute to enhancing the communication to the public of the local brand of Minami Sanriku, which links mountains to the sea.



A study tour in FSC forest

- ※ 1 FSC stands for Forest Stewardship Council.
- ※ 2 The ASC (Aquaculture Stewardship Council) certificate is given to safe, sustainable aquaculture giving consideration to the protection of nature and resources.



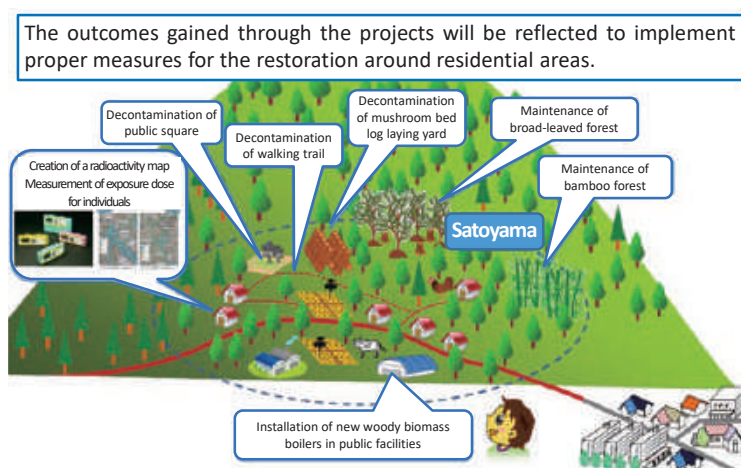
2. Reconstruction after the Nuclear Accident

(1) Measures against Radioactive Substances in Forests

Based on “Comprehensive Efforts towards the Regeneration of Forests and Forestry in Fukushima” (March 2016), the GOJ is undertaking efforts to restore “satoyama forests” around residential areas, to regenerate forestry and to disseminate information.

The GOJ conducts investigative research about trends of distribution of radioactive substances within forests.

The GOJ has conducted “Satoyama Forest Restoration Model Projects” which comprehensively promotes projected measures to restore satoyama forest. 14 model districts mainly within areas where evacuation orders have been lifted are selected by March 2019 (Fig. V – 1).



Source: Prepared by the Forestry Agency based on the Reconstruction Agency web site

Fig. V – 1 Illustration of the Satoyama Forest Restoration Model Project

(2) Supply Safe Forest Products

The Forestry Agency has developed “Guidelines Concerning Management of Bed-log Cultivation of Mushrooms to Decrease Radioactive Cesium”. Shipment restrictions on mushrooms are to be lifted when cultivation is managed based on this guideline and it has been determined that no mushrooms are produced whose radioactivity exceeds the standard values.

It is also to be noted that shipment restrictions for wild mushrooms and wild vegetables have been gradually lifted through appropriate inspection and shipment management.

To supply safe wood products to consumers, the Forestry Agency supports research and analysis on radioactive materials of wood products and the relevant work environment, and initiatives to develop arrangements for certifying the safety of wood products.

Appendix

1. Forestry-related Fundamental Figures

Item	Unit	2000	2005	2010	2014	2015	2016	2017	2018
i Nominal gross domestic product (GDP)	billion yen	526,706	524,133	500,354	513,876	531,320	535,537	545,897	547,126
Forestry	billion yen	172	134	190	214	206	211	215	226
Forestry / GDP	%	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04
ii Total number of workers	million	64.46	63.56	62.57	63.71	64.01	64.65	65.30	66.64
Forestry	million	0.07	0.06	0.08	0.08	0.07	0.06	0.06	0.07
Forestry / Total # of workers	%	0.11	0.09	0.13	0.13	0.11	0.09	0.09	0.11
iii Land area of Japan	million ha	37.79	37.79	37.80	37.80	37.80	37.80	37.80	37.80
iv Forest	million ha	25.15	25.12	25.10	25.08	25.08	25.08	25.05	25.05
Forest / Land area	%	67.5	67.4	67.3	67.3	67.3	67.3	67.2	67.2
v Protection forest	million ha	8.93	11.65	12.02	12.14	12.17	12.18	12.20	12.21
Protection forest / Forest	%	35.5	46.4	47.9	48.4	48.5	48.6	48.7	48.7
vi Growing stock of forest	billion m ³	3.5	4.0	4.4	4.9	4.9	4.9	5.2	5.2
vii Industrial wood supply	million m ³	101.01	87.42	71.88	75.80	75.16	78.08	81.72	82.48
Domestic production	million m ³	19.06	17.90	18.92	23.65	24.92	27.14	29.53	30.20
Import	million m ³	81.95	69.52	52.96	52.15	50.24	50.94	52.19	52.28
Self-sufficiency rate	%	18.9	20.5	26.3	31.2	33.2	34.8	36.1	36.6
viii New housing starts	million units	1.23	1.24	0.81	0.89	0.91	0.97	0.96	0.94
Ratio of wooden structure	%	45.2	43.9	56.6	54.9	55.5	56.5	56.5	57.2

Notes : "Industrial wood supply," "Domestic production," and "Import" in "vii" refer to the volume in roundwood equivalent.

Sources: i: Cabinet Office "SNA (System of National Accounts)"

ii: Ministry of Internal Affairs and Communications "Labor Force Survey" (Iwate, Miyagi and Fukushima Prefectures are excluded from the data for 2011.)

iii: Ministry of Land, Infrastructure, Transport and Tourism (MLIT) "Land Survey of Prefectures, Cities, Wards, Towns and Villages, Geographical Survey Institute"

iv, v, vi: Forestry Agency

vii: Forestry Agency "Wood Supply and Demand Chart"

viii: MLIT "Statistics on Building Construction Starts"

2. Forestry Output

(Unit: billion yen)

Item	2000	2005	2010	2014	2015	2016	2017	2018
Forestry output	531.15	417.05	425.70	464.00	454.46	470.25	486.33	502.02
Wood production	322.18	210.50	195.29	245.86	234.08	237.00	256.09	264.83
Softwood	265.33	177.41	170.16	215.88	198.19	195.39	206.06	209.99
Sugi (Japanese Cedar)	123.78	87.53	93.50	129.62	118.09	116.74	122.68	126.44
Hardwood	54.72	31.71	23.76	18.96	19.51	19.06	18.40	18.42
Fuelwood and charcoal production	6.16	6.09	5.08	5.66	5.31	5.49	5.44	5.54
Grown mushroom production	196.89	198.50	218.91	208.40	210.52	221.39	220.08	225.66
Minor forestry products production	5.92	1.96	6.42	4.08	4.54	6.37	4.73	5.98
Forestry income produced	351.91	245.78	229.22	252.62	251.02	260.10	269.54	266.58

Notes 1: Due to rounding, some totals may not correspond with the sum of the separate figures.

2: "Wood production" includes the output of wood chips for fuel since 2011.

3: "Fuelwood and charcoal production" includes the output of bamboo wood and charcoal dust since 2001.

4: "Grown mushroom production" includes the output of eryngii mushrooms and other varieties of grown mushrooms since 2001.

5: "Minor forestry products production" includes the output of Japan wax and Japanese lacquer since 2002, the output of wild grass (wild vegetables and wild herbs) since 2010 and the output of gibier since 2016.

Source: Ministry of Agriculture, Forestry and Fisheries (MAFF) "Forestry Output"

3. Current State of Forest Resources

(Unit: 1,000ha, million m³)

Classification		Total		Standing timber area (canopy cover more than 30%)				Treeless land (canopy cover less than 30%)		Bamboo groves
				Planted forest		Natural forest		Area	Growing stock	
		Area	Growing stock	Area	Growing stock	Area	Growing stock			
Total		25,048	5,241.50	10,204	3,308.42	13,481	1,932.45	1,197	0.64	167
National forest	Subtotal	7,659	1,225.93	2,288	513.04	4,733	712.45	637	0.44	0
	Under the Forestry Agency's jurisdiction	7,593	1,220.72	2,282	512.03	4,682	708.24	629	0.44	0
	State-owned	7,508	1,201.28	2,208	492.83	4,680	708.01	620	0.44	0
	Government reforestation	85	19.44	73	19.21	2	0.23	10	0	-
	Others	0	0	-	-	-	-	0	0	-
	Under other Agency's jurisdiction	65	5.21	7	1.00	51	4.20	8	-	0
Private and public forest	Subtotal	17,389	4,015.57	7,916	2,795.38	8,747	1,220.00	560	0.19	167
	Public forest	2,995	615.56	1,334	397.05	1,531	218.36	124	0.15	6
	Prefecture	1,292	252.69	529	145.59	709	107.01	53	0.09	1
	Municipality/Property ward	1,702	362.87	804	251.47	822	111.35	71	0.06	5
	Private forest	14,347	3,394.33	6,569	2,395.55	7,188	998.74	431	0.04	158
	Others	48	5.68	13	2.78	28	2.90	5	0	3

- Notes 1: Data cover the forests defined in Article 2 of the Forest Act.
2: "Others" refer to forests that are not subject to the "Regional Forest Plans" for non-national forest under Article 5 of the Forest Act, and for national forest under Article 7-2 of the Forest Act.
3: Figures are as of March 31, 2017.
4: Due to rounding, some totals may not correspond with the sum of the separate figures.

Source: Forestry Agency

4. Planted Area by Tree Species

(Unit: ha)

	Total	Softwood					Hardwood
		Sugi (Japanese cedar)	Hinoki (Japanese cypress)	Matsu (Pine)	Karamatsu (Japanese larch)	Others	
2000	(31,316)	(8,223)	(11,574)	(233)	(2,524)	(4,954)	(3,808)
	28,480	7,967	10,745	223	2,493	4,014	3,038
2005	(25,584)	(5,216)	(7,096)	(226)	(3,534)	(5,728)	(3,784)
	22,498	5,011	6,307	183	3,423	4,611	2,963
2010	(18,756)	(4,132)	(2,820)	(247)	(4,604)	(4,265)	(2,688)
	16,388	3,844	2,262	237	4,418	3,381	2,246
2014	(21,088)	(5,185)	(2,543)	(554)	(4,603)	(5,709)	(2,492)
	17,720	5,098	2,404	518	4,128	3,622	1,950
2015	(19,429)	(5,537)	(2,039)	(185)	(4,467)	(5,250)	(1,950)
	16,607	5,390	1,930	168	4,027	3,450	1,642
2016	(21,106)	(6,766)	(1,972)	(291)	(5,017)	(4,983)	(2,077)
	18,390	6,570	1,852	253	4,552	3,383	1,781
2017	(22,069)	(7,102)	(1,979)	(406)	(5,388)	(5,423)	(1,771)
	19,866	6,845	1,874	388	5,179	4,110	1,471
2018	(21,568)	(6,899)	(1,845)	(277)	(5,486)	(5,106)	(1,956)
	19,340	6,597	1,760	272	5,165	3,799	1,747

- Notes 1: Figures do not include national forest.
2: Figures in parentheses refer to the total area which includes area planted as lower layer of multi-layered forest.

Source: Forestry Agency

5. Planted Forest Area by Age Classes

(Unit: 1,000ha)

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
1985	604	895	1,263	1,691	1,762	1,569	947	337	240	205	178	137	111	83	148					
1989	436	700	943	1,351	1,691	1,746	1,413	777	270	224	183	151	118	93	79	52	62			
1994	278	421	699	937	1,336	1,686	1,719	1,388	735	262	213	172	139	112	86	67	105			
2001	131	226	350	589	874	1,149	1,599	1,677	1,522	946	353	204	171	144	112	89	62	52	70	
2006	88	168	227	352	593	873	1,143	1,582	1,649	1,500	918	345	200	168	141	106	90	62	120	
2011	73	114	159	231	347	584	852	1,111	1,565	1,631	1,473	921	345	194	164	138	105	87	174	
2016	68	102	114	164	224	348	582	846	1,108	1,529	1,592	1,428	893	340	190	162	135	104	86	172

Notes 1: Figures are as the end of each fiscal year.

2: For the year 1985, the class XV contains forests older than that class. For the years 1989 and 1994, the class XVII contains forests older than that class. For the years 2001, 2006 and 2011, the class XIX contains forests older than that class. For the year 2016, the class XX contains forests older than that class.

3: Data cover the forests defined in Article 5 or Article 7-2 of the Forest Act.

Source: Forestry Agency

6. Thinned Area and Use of Thinnings

(FY)	Thinned area (1,000ha)			Volume of thinnings used (million m ³)					
	Total	Private and public forest	National forest	Total	Private and public forest			National forest	
					Subtotal	Sawnwood	Roundwood		Others
2008	548	434	114	5.66	3.68	2.26	0.39	1.03	1.98
2010	556	445	110	6.65	4.43	2.70	0.42	1.31	2.22
2014	465	339	126	7.69	5.21	2.91	0.33	1.97	2.47
2015	452	341	112	8.13	5.65	2.97	0.35	2.32	2.48
2016	440	319	121	8.23	5.76	2.95	0.30	2.51	2.47
2017	410	304	106	8.12	5.56	2.75	0.28	2.53	2.56
2018	370	269	101	7.46	4.94	2.37	0.25	2.32	2.52

Notes 1: Volumes are in roundwood equivalent.

2: "Sawnwood" means the wood such as building materials and wood packaging materials.

3: "Roundwood" means the wood such as scaffolding timber and stakes.

4: "Others" means the wood such as wood chip and wood powder (sawdust).

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

Source: Forestry Agency

7. Forest Area by Owners

	2015	
	Forest area (ha)	Ratio to total area
Total	17,626,761	100.0%
Private	13,563,827	77.0%
Public	3,370,380	19.1%
Prefecture	1,271,571	7.2%
Public corporation	391,189	2.2%
Municipality	1,406,063	8.0%
Property ward	301,557	1.7%
Incorporated Administrative Agencies	692,554	3.9%

Notes 1: Due to rounding, some totals may not correspond with the sum of the separate figures.

2: "Incorporated Administrative Agencies" include Independent Administrative Agencies, National University Corporations and Special Corporations.

Source: MAFF "2015 Census of Agriculture and Forestry"

8. Number of Forestry Management Entities and their Forest Area

(Unit: #, ha)

	Total		-3ha		3-5ha		5-20ha		20-50ha		50-100ha		100ha-	
	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
Total	87,284	4,373,374	2,247	1,170	23,767	85,988	41,885	389,986	12,193	348,521	3,572	235,747	3,620	3,311,962
Corporation	5,599	1,470,626	1,065	237	397	1,495	1,315	14,029	894	27,849	658	45,473	1,270	1,381,544
Private company	2,456	774,282	707	144	193	706	538	5,481	333	9,838	196	12,829	489	745,285
Cooperative	2,337	497,968	304	85	109	425	480	5,559	448	14,529	379	26,598	617	450,772
Agricultural cooperative	87	19,669	-	-	4	16	9	101	21	779	14	1,041	39	17,732
Forestry cooperative	1,819	304,008	263	83	74	287	342	4,083	341	11,085	317	22,336	482	266,135
Other cooperatives	431	174,291	41	2	31	123	129	1,376	86	2,665	48	3,221	96	166,905
Other corporations	806	198,376	54	8	95	364	297	2,989	113	3,482	83	6,046	164	185,487
Non-corporation	80,396	1,349,519	1,181	933	23,329	84,334	40,417	374,113	11,129	315,103	2,768	180,050	1,572	394,985
Individual	77,692	1,215,213	1,073	901	22,922	82,773	39,327	362,792	10,575	298,201	2,494	160,726	1,301	309,821
Public	1,289	1,553,229	1	-	41	159	153	1,844	170	5,570	146	10,224	778	1,535,432

Notes 1: Symbol of "-" means not applicable.

2: "Forestry management entities" correspond to either of the following. (1) The forestry on the scale whose owned forest area exceed 3 hectares.

(2) Consigned forestation and raw materials production, and crude matters manufacturing through the purchase of standing trees.

Source: MAFF "2015 Census of Agriculture and Forestry"

9. Roundwood Production

(Unit: 1,000m³, %)

		2000	2005	2010	2014	2015	2016	2017	2018	Relative change from the previous year (%)	
Total		17,034	16,166	17,193	19,916	20,049	20,660	21,408	21,640	1.1	
By tree species	Subtotal	13,707 (80)	13,695 (85)	14,789 (86)	17,743 (89)	17,815 (89)	18,470 (89)	19,258 (90)	19,462 (90)	1.1	
	Sugi (Japanese cedar)	7,671	7,756	9,049	11,194	11,226	11,848	12,276	12,532	2.1	
	for sawnwood	7,258 <57>	6,737 <58>	6,695 <63>	7,872 <64>	7,869 <66>	8,095 <66>	8,200 <65>	8,237 <66>	0.5	
	Hinoki (Japanese cypress)	2,273	2,014	2,029	2,395	2,364	2,460	2,762	2,771	0.3	
	Akamatsu (Japanese red pine), Kuromatsu (Japanese black pine)	1,034	783	694	674	779	678	641	628	▲ 2.0	
	Karamatsu (Japanese larch), Ezomatsu (Yezo spruce), Todomatsu (Sakhalin fir)	2,410	2,910	2,816	3,327	3,268	3,325	3,380	3,366	▲ 0.4	
	Others	319	232	201	153	170	153	198	165	▲ 16.7	
	Hardwood	3,327 (20)	2,471 (15)	2,404 (14)	2,173 (11)	2,236 (11)	2,188 (11)	2,153 (10)	2,178 (10)	1.2	
	By use	Sawnwood	12,798 (75)	11,571 (72)	10,582 (62)	12,211 (61)	12,004 (60)	12,182 (59)	12,632 (59)	12,563 (58)	▲ 0.5
		Plywood	138 (1)	863 (5)	2,490 (14)	3,191 (16)	3,356 (17)	3,682 (18)	4,122 (19)	4,492 (21)	9.0
Chips		4,098 (24)	3,732 (23)	4,121 (24)	4,514 (23)	4,689 (23)	4,796 (23)	4,654 (22)	4,585 (21)	▲ 1.5	

Notes 1: Figures in parentheses refer to the percentage of each to total volume.

2: Figures in angle brackets refer to the percentage of sugi for sawnwood to the volume for sawnwood of all species.

3: Roundwood Production excludes forest residue.

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

5: Total figures is the sum of "Sawnwood", "Plywood" and "Chips".

6: Production of roundwood for LVL is added to "Plywood" since 2017.

Source: MAFF "Wood Supply and Demand Report"

10. Wood Supply and Demand Chart (roundwood equivalent)

(Unit: 1,000m³)

Supply	Demand										Domestic consumption										Export																	
	Total					Industrial use					Wood for mushroom production					Fuel wood					Total					Industrial use					Fuel wood							
	Subtotal	Sawwood	Pulp and chips	Plywood	Others	Wood for mushroom production	Fuel wood	Total	Subtotal	Sawwood	Pulp and chips	Plywood	Others	Wood for mushroom production	Subtotal	Charcoal	Firewood	Wood chips for fuel	Total	Subtotal	Roundwood	Sawwood	Pulp and chips	Plywood	Others	Subtotal	Charcoal	Firewood	Wood chips for fuel									
Total	(19,710)	(6,792)	25,708	32,009	(6,792)	11,003	4,465	274	(12,918)	9,020	(12,918)	19,710	(6,792)	79,643	70,353	9,016	881	48	8,087	(12,918)	2,836	2,831	1,136	230	1,232	211	22	4	3	1	0							
Roundwood	(6,792)	(6,792)	27,990	27,990	(6,792)	4,860	5,287	274	(6,792)	25,159	(6,792)	25,159	16,060	3,628	5,076	395				2,831	2,831	1,136	230	1,232	211	22												
Forest residue	230	230										230	230																									
Import	44,964	44,964	9,418	26,919	5,716	2,912			44,964	44,964	9,418	26,919	5,716	2,912																								
Wood for mushroom production	274							274							274																							
Fuel wood	(12,918)								(12,918)	9,020					(12,918)	9,016	881	48	8,087	(12,918)	2,830	2,826	1,136	229	1,232	207	22	4	3	1	0							
Total	30,201	23,680	12,563	5,089	4,492	1,536	274	6,248	27,371	20,854	12,334	3,857	4,285	377	274	6,244	61	47	6,135	2,830	2,826	1,136	229	1,232	207	22	4	3	1	0								
Roundwood	23,450	23,450	12,563	4,859	4,492	1,536			20,624	20,624	12,334	3,627	4,285	377						2,826	2,826	1,136	229	1,232	207	22												
Forest residue	230	230							230	230																												
Wood for mushroom production	274							274							274																							
Fuel wood	6,248							6,248												6,244	61	47																
Total	52,277	49,505	13,145	26,920	6,511	2,930		2,772	52,271	49,499	13,143	26,920	6,506	2,930		2,772	820	0	1,952	6	6	1	5	0														
Roundwood	4,541	4,541	3,727	1	795	18			4,535	4,535	3,726	1	790	18						6	6	1	5	0														
Subtotal	44,964	44,964	9,418	26,919	5,716	2,912			44,964	44,964	9,418	26,919	5,716	2,912																								
Sawwood	9,418	9,418							9,418	9,418																												
Pulp	5,548	5,548							5,548	5,548																												
Chips	21,371	21,371							21,371	21,371																												
Plywood	5,716	5,716							5,716	5,716																												
Others	2,912	2,912							2,912	2,912																												
Fuel wood	2,772							2,772												2,772	820	0																

Notes 1: Figures in parentheses refer to the volume of pulp and chips from mill residue or construction waste, which are already included in the volume of sawwood, plywood, or others.

Therefore these figures are excluded from "Total" and "Subtotal".

2: "Forest residue" refers to branches or roots carried into mills for use.

3: Wood pellets produced domestically are included in "Fuel wood" of Domestic production.

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

Source : Forestry Agency "Wood Supply and Demand Chart", 2018

11. Wood Supply/Demand (roundwood equivalent)

(Unit: 1,000m³)

	Wood supply/demand				Wood demand for industrial use by sector				Wood supply for industrial use by source	
	Total	Wood for industrial use	Fuel wood	Wood for mushroom production	Sawnwood	Pulp and chips	Plywood	Others	Domestic production	Import (roundwood and wood products)
1955	65,206	45,278	19,928	...	30,295	8,285	2,297	4,401	42,794	2,484
1960	71,467	56,547	14,920	...	37,789	10,189	3,178	5,391	49,006	7,541
1965	76,798	70,530	6,268	...	47,084	14,335	5,187	3,924	50,375	20,155
1970	106,601	102,679	2,348	1,574	62,009	24,887	13,059	2,724	46,241	56,438
1975	99,303	96,369	1,132	1,802	55,341	27,298	11,173	2,557	34,577	61,792
1980	112,211	108,964	1,200	2,047	56,713	35,868	12,840	3,543	34,557	74,407
1985	95,447	92,901	572	1,974	44,539	32,915	11,217	4,230	33,074	59,827
1990	113,242	111,162	517	1,563	53,887	41,344	14,546	1,385	29,369	81,793
1995	113,698	111,922	721	1,055	50,384	44,922	14,314	2,302	22,916	89,006
2000	101,006	99,263	940	803	40,946	42,186	13,825	2,306	18,022	81,241
2005	87,423	85,857	1,001	565	32,901	37,608	12,586	2,763	17,176	68,681
2010	71,884	70,253	1,099	532	25,379	32,350	9,556	2,968	18,236	52,018
2014	75,799	72,547	2,940	313	26,139	31,433	11,144	3,830	21,492	51,054
2015	75,160	70,883	3,962	315	25,358	31,783	9,914	3,829	21,797	49,086
2016	78,077	71,942	5,807	328	26,150	31,619	10,248	3,925	22,355	49,586
2017	81,854	73,742	7,800	311	26,370	32,302	10,667	4,403	23,312	50,430
2018	82,478	73,184	9,020	274	25,708	32,009	11,003	4,465	23,680	49,505

- Notes 1: "Others" include items such as roundwood for export.
 2: Due to rounding, some totals may not correspond with the sum of the separate figures.
 3: "Fuel wood" includes wood chip for fuel utilized by woody biomass power plants since 2014.
 Source: Forestry Agency "Wood Supply and Demand Chart"

12. Trend of Domestic and Imported Wood Supply/Demand (roundwood equivalent)

(Unit: 1,000m³)

		2000	2005	2010	2014	2015	2016	2017	2018	Relative change from the previous year (%)	
Total wood supply/demand		101,006	87,423	71,884	75,799	75,160	78,077	81,854	82,478	0.8	
Industrial use		99,263	85,857	70,253	72,547	70,883	71,942	73,742	73,184	▲ 0.8	
Fuel wood		940	1,001	1,099	2,940	3,962	5,807	7,800	9,020	15.6	
Wood for mushroom production		803	565	532	313	315	328	311	274	▲ 11.9	
Domestic production		19,058	17,899	18,923	23,647	24,918	27,141	29,660	30,201	1.8	
Import		81,948	69,523	52,961	52,152	50,242	50,936	52,194	52,277	0.2	
Self-sufficiency rate (%)		18.9	20.5	26.3	31.2	33.2	34.8	36.2	36.6	0.4	
Wood demand for industrial use by sector	Total	99,263	85,857	70,253	72,547	70,883	71,942	73,742	73,184	▲ 0.8	
	Domestic production	18,022	17,176	18,236	21,492	21,797	22,355	23,312	23,680	1.6	
	Import	81,241	68,681	52,018	51,054	49,086	49,586	50,430	49,505	▲ 1.8	
	Self-sufficiency rate (%)	18.2	20.0	26.0	29.6	30.8	31.1	31.6	32.4	0.8	
	Sawnwood	Subtotal	40,946	32,901	25,379	26,139	25,358	26,150	26,370	25,708	▲ 2.5
		Domestic production	12,798	11,571	10,582	12,211	12,004	12,182	12,632	12,563	▲ 0.5
		Import	28,148	21,330	14,797	13,928	13,354	13,968	13,738	13,145	▲ 4.3
		Self-sufficiency rate (%)	31.3	35.2	41.7	46.7	47.3	46.6	47.9	48.9	1.0
	Pulp and chips	Subtotal	(6,537)	(7,974)	(6,192)	(6,922)	(6,667)	(6,853)	(7,107)	(6,792)	▲ 0.9
		Domestic production	42,186	37,608	32,350	31,433	31,783	31,619	32,302	32,009	▲ 2.0
		Import	4,749	4,426	4,785	5,047	5,202	5,266	5,193	5,089	▲ 0.7
		Self-sufficiency rate (%)	11.3	11.8	14.8	16.1	16.4	16.7	16.1	15.9	▲ 0.2
	Plywood	Subtotal	13,825	12,586	9,556	11,144	9,914	10,248	10,667	11,003	3.1
		Domestic production	138	863	2,490	3,346	3,530	3,876	4,122	4,492	9.0
		Import	13,687	11,723	7,066	7,798	6,384	6,372	6,545	6,511	▲ 0.5
		Self-sufficiency rate (%)	1.0	6.9	26.1	30.0	35.6	37.8	38.6	40.8	2.2
Others	Subtotal	2,306	2,763	2,968	3,830	3,829	3,925	4,403	4,465	1.4	
	Domestic production	337	316	379	889	1,061	1,031	1,365	1,536	12.5	
	Import	1,969	2,447	2,589	2,942	2,767	2,894	3,038	2,930	▲ 3.6	
	Self-sufficiency rate (%)	14.6	11.4	12.8	23.2	27.7	26.3	31.0	34.4	3.4	

- Notes 1: Self-sufficiency rate is calculated by domestic production divided by total or subtotal in each category.
 2: "Others" include items such as roundwood for export.
 3: Figures in parentheses refer to the volume of wood chip from mill residue or construction waste, which are already included in the volume of sawnwood, plywood, or others. Therefore, these figures are excluded from "total" and "subtotal".
 4: Due to rounding, some totals may not correspond with the sum of the separate figures.
 5: "Fuel wood" includes wood chip for fuel utilized by woody biomass power plants since 2014.
 6: Among "relative change from the previous year", "self-sufficiency rate" field is the difference from the previous year.
 Source: Forestry Agency "Wood Supply and Demand Chart"

13. Wood Supply by Country (roundwood equivalent)

(Unit: 1,000m³, %)

			2000	2005	2010	2014	2015	2016	2017	2018
Imported wood	North America	Subtotal	(28.9)	(18.8)	(19.2)	(17.9)	(17.5)	(17.2)	(16.8)	(16.3)
		U.S.A	28,700	16,129	13,506	13,013	12,415	12,377	12,352	11,898
		Canada	14,460	6,844	5,838	6,153	6,057	6,083	6,233	6,273
	Southeast Asia	Subtotal	(13.7)	(12.2)	(8.9)	(9.2)	(8.3)	(7.7)	(7.8)	(7.4)
		Malaysia	13,569	10,511	6,287	6,718	5,848	5,525	5,751	5,421
		Indonesia	6,690	5,888	3,773	3,293	2,917	2,709	2,778	2,514
		Others	5,858	4,137	2,304	3,328	2,804	2,698	2,887	2,759
	Russia Federation	1,021	486	209	97	127	117	85	148	
	Europe	(7.5)	(8.6)	(3.3)	(3.1)	(2.9)	(3.3)	(3.3)	(3.3)	
		7,429	7,411	2,343	2,221	2,081	2,366	2,398	2,411	
		(4.7)	(6.9)	(7.1)	(7.6)	(7.6)	(8.5)	(8.7)	(8.0)	
		4,675	5,937	4,967	5,554	5,374	6,135	6,450	5,880	
	Others	New Zealand	(4.4)	(3.4)	(3.9)	(2.6)	(2.3)	(2.4)	(2.1)	(2.0)
			4,374	2,878	2,720	1,858	1,638	1,749	1,545	1,484
		Chile	(3.8)	(4.6)	(6.7)	(6.2)	(5.6)	(5.9)	(5.7)	(5.5)
		3,795	3,952	4,726	4,468	3,987	4,234	4,236	4,055	
Australia		(8.7)	(10.2)	(11.0)	(5.8)	(6.6)	(5.7)	(6.4)	(6.3)	
		8,604	8,729	7,722	4,203	4,662	4,067	4,684	4,604	
China		(2.5)	(3.0)	(3.0)	(3.4)	(2.8)	(2.7)	(2.7)	(2.6)	
	2,445	2,544	2,084	2,434	1,967	1,912	1,982	1,901		
	/	/	/	/	(7.6)	(6.9)	(6.7)	(8.1)		
					5,418	4,946	4,917	5,939		
	(7.7)	(12.3)	(10.9)	(14.7)	(8.0)	(8.7)	(8.3)	(8.1)		
	7,651	10,591	7,663	10,585	5,696	6,275	6,116	5,911		
Subtotal	(81.8)	(80.0)	(74.0)	(70.4)	(69.2)	(68.9)	(68.4)	(67.6)		
	81,241	68,681	52,018	51,054	49,086	49,586	50,430	49,505		
Domestic wood	(18.2)	(20.0)	(26.0)	(29.6)	(30.8)	(31.1)	(31.6)	(32.4)		
	18,022	17,176	18,236	21,492	21,797	22,355	23,312	23,680		
Total	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)		
	99,263	85,857	70,253	72,547	70,883	71,942	73,742	73,184		

Notes 1: Figures refer to the sum of domestic/imported roundwood volume and imported products volume (sawnwood, plywood, and pulp and chips) converted into roundwood equivalent.

2: "Others" of "Southeast Asia" include Philippines, Singapore, Brunei, Papua New Guinea, and Solomon.

3: "Others" of "Others" include African countries.

4: "Others" of "Others" include Viet Nam until 2014.

5: Figures in parentheses refer to the percentage of each volume to the "total" volume of each year.

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

Sources: Ministry of Finance "Trade Statistics of Japan", Forestry Agency "Wood Supply and Demand Chart"

14. Number of Mills/Factories and Production Volumes

		Unit	2000	2005	2010	2014	2015	2016	2017	2018
Sawnwood	Number of mills	mills	11,692	9,011	6,569	5,469	5,206	4,934	4,814	4,582
	Inputs for sawnwood production	1,000m ³	26,526	20,540	15,762	16,661	16,182	16,590	16,802	16,672
	Shipments	1,000m ³	17,231	12,825	9,415	9,595	9,231	9,293	9,457	9,202
Plywood	Number of mills	mills	354	271	192	186	185	183	181	180
	Inputs for plywood production	1,000m ³	5,401	4,636	3,811	4,405	4,218	4,638	5,004	5,287
	Surface-untreated plywood production	1,000m ³	3,218	3,212	2,645	2,813	2,756	3,063	3,287	3,298
	Surface-treated plywood production	1,000m ³	1,534	1,037	647	584	524	642	623	580
Glued laminated lumber	Number of factories	factories	281	259	182	165	157	150	165	165
	Production	1,000m ³	892	1,512	1,455	1,555	1,485	1,549	1,971	1,923
Cross Laminated Timber	Number of factories	factories	...	...	...	...	...	...	7	9
	Production	1,000m ³	...	...	...	...	...	...	14	14
Wood chips	Number of mills	mills	2,657	2,040	1,577	1,477	1,424	1,393	1,364	1,303
	Production	1,000tons (1,000m ³)	10,851	6,005	5,407	5,850	5,745	5,826	5,954	5,706

Notes 1: "Sawnwood" excludes sawmills with output power less than 7.5kW.

2: Figures of LVL is added to figures of "Plywood" since 2017.

3: Production of glued laminated lumber has used the data from Japan Laminated Wood Products Association until 2016.

4: "Wood chips" excludes chips for fuels.

5: "..." means "figures not available".

Source: MAFF "Wood Supply and Demand Report", Japan Laminated Wood Products Association

Full text (in Japanese) of the “Annual Report on Forest and Forestry for FY2019” is available on the website of the Forestry Agency:

<https://www.rinya.maff.go.jp/j/kikaku/hakusyo/r1hakusyo/index.html>



Please refer to those texts for further information on the issues contained in this brochure, or ask the Annual Report Group of the Forestry Agency:

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