

# Annual Report on Forest and Forestry in Japan

Fiscal Year 2016

(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 X of the Forest and Forestry Basic Act. This document is a summary of the annual report for fiscal year (FY) 2016.

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## Forest and Forestry Topics in FY2016

### TOPIC 1. Revision of the “Forest and Forestry Basic Plan”

The GOJ revised its “Forest and Forestry Basic Plan” for the first time in five years, in May 2016.

Forest Resources, planted after World War II, are getting mature and now ready for harvest. It is an urgent issue to transform forestry and wood products manufacturing sector into a growth industry as early as possible through utilizing such forest resources, which contributes to creating job opportunities and raising the overall income level in rural mountainous areas.

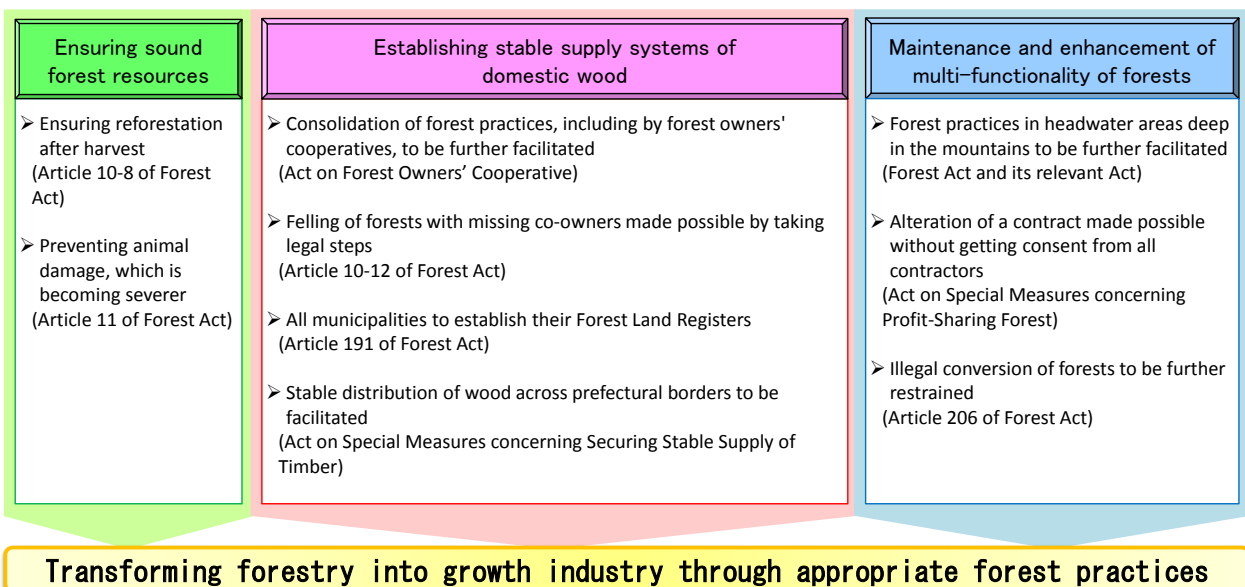
The revised “Forest and Forestry Basic Plan,” taking account of the situation above, states as follows:

- To transform forestry into a growth industry through promoting an appropriate forest management cycle
- To establish stable supply systems of wood
- To strengthen competitiveness of wood products industry and to expand new wood demand
- To contribute to rural development through transformation of forestry and wood products manufacturing sector into a growth industry
- To implement measures for preventing climate change and conserving biodiversity

### TOPIC 2. Revision of the Forest Act and other relevant Acts

Five Acts, including the Forest Act, were revised in May 2016, in order to tackle many challenges faced by forests, forestry, and wood products industry from the legal point of view.

These revised Acts are intended to promote establishing stable supply systems of domestic wood, ensuring sound forest resources after harvest, and maintenance and enhancement of multi-functionality of forests, as well as to realize transformation of forestry into a growth industry through appropriate forestry practices.



### **TOPIC 3. Enactment of the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products (“Clean Wood Act”)**

In May 2016, the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products, commonly known as “Clean Wood Act,” was enacted. This Act stipulates, among others, that Wood-related Entities should confirm that the wood and wood products which they handle were harvested in accordance with relevant laws of the region/country of harvesting.

In the G7 Summit Meeting held in Japan this year, the G7 Ise-Shima Leaders’ Declaration in May as well as the G7 Niigata Agriculture Ministers’ Meeting Declaration in April expressed their commitment to eliminating illegal logging.



Furniture made of domestic hinoki wood was used for the G7 Ise-Shima Summit



G7 Niigata Agriculture Ministers’ Meeting

### **TOPIC 4. Development of the Standards and Announcement of New Roadmap to Disseminate CLT**

The notifications on common design methods for building with Cross Laminated Timber (CLT) were promulgated and enforced in March and April 2016. The notifications made it possible to build wooden buildings with CLT, by simply implementing structural calculations mentioned in the notifications.

The GOJ is disseminating designs and execution methods for building with CLT, which have been collected through constructing innovative wooden buildings with CLT.

In January 2017, the GOJ released “New Roadmap towards Dissemination of CLT for its Further Demand Expansion.”

### **TOPIC 5. Occurrence of and Recovery Work from Kumamoto Earthquake and Typhoon Disasters**

The Kumamoto Earthquake occurred in April 2016 and caused severe damage to forests, forestry, and wood products industry.

The Forestry Agency opened its regional office building in Kumamoto as a refuge for the public, and supported implementation of municipalities’ disaster control measures by dispatching its officials. It also implemented aerial laser measurement to capture detailed information on cracks and landslides in the forest area, which helped implement emergency restoration measures.

Many typhoons landed on the Japanese Islands in autumn 2016, causing severe damage to forests in Hokkaido, Tohoku, and Kyushu regions.

The GOJ investigated damage soon after the typhoons passed, ensuring close cooperation with relevant prefectures, and has been implementing restoration measures so that they can be completed as soon as possible.

# Chapter I Introduction of Innovative Techniques and Technologies for Transforming Forestry into a Growth Industry

## 1. Transforming forestry into a growth industry and introduction of innovative techniques and technologies

### 1.1 Challenges for transforming forestry into a growth industry

In Japan, forest resources have grown mature and are fully ready for harvest, while productivity of forestry remains at a low level, particularly due to structural characteristics of small-scaled forest ownership dominance as well as inadequate coordination and consolidation of forestry practices among different forest owners, under-development of forestry road networks, and slow adoption of efficient log production systems.

It is an urgent challenge to transform forestry into a growth industry so that forestry can contribute to development of rural areas in a sustainable manner.

### 1.2 Necessity for introduction of innovative techniques and technologies

Transformation of forestry into a growth industry requires improvement of productivity of forestry practices such as harvesting and re-planting as well as creation of the wood demand in areas where wood has not been used so much.

For this reason, development and introduction of innovative techniques and technologies is considered to be a basis for transformation of forestry and is expected to generate profits that conventional methods would never achieve. If these profits go to forest owners or stakeholders in forestry, it will promote an appropriate forest management cycle.

## 2. Introduction of innovative techniques and technologies

### 2.1 Techniques and technologies for improving productivity of forestry

#### 2.1.1 “Simultaneous operation of harvesting and planting”

It is necessary to promote harvesting of matured planted forests in a sustainable manner and re-planting where appropriate. To this end, it is crucial to introduce innovative techniques to reduce costs for re-planting and treatment, which are currently high.

Recently, an integrated operation from harvesting to site preparation and to planting called “simultaneous operation of harvesting and planting” is being promoted, as it can significantly reduce labor input by effective use of forestry machinery, compared with conventional methods.



Fig.I-1: Figures of “simultaneous operation of harvesting and planting”

The National Forest Management Program is playing a leading role in conducting efficiency examination on and dissemination of “simultaneous operation of harvesting and planting.”

The Forestry and Forest Products Research Institute (FFPRI) has conducted demonstrative research on efficiency of “simultaneous operation of harvesting and planting” (Fig.I-2).

Conventional bare-root seedlings choose spring and autumn as their best planting seasons, which has been an impediment to year-round use of “simultaneous operation of harvesting and planting.” However, containerized seedlings can be planted even in summer. Now, there are many initiatives underway to disseminate use of containerized seedlings.

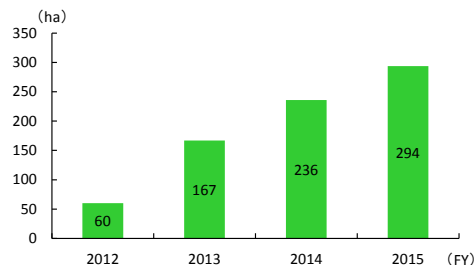
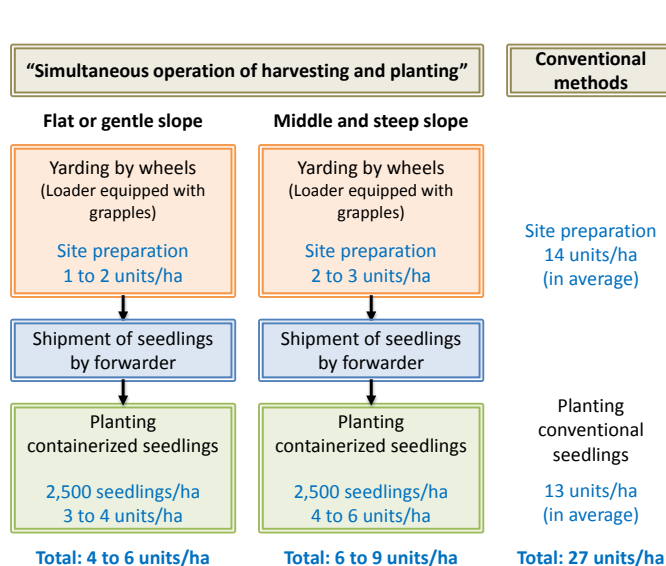


Fig.I-3: “Simultaneous operation of harvesting and planting” by National Forest Management Program

Fig.I-2: Comparison between “simultaneous operation of harvesting and planting” and conventional method

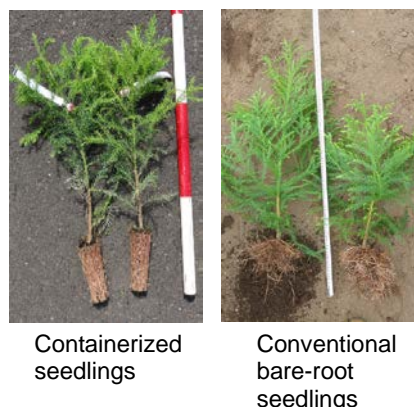
### 2.1.2 Mass-production of containerized seedlings

It is crucial to establish a mass-production system of containerized seedlings with fewer costs and in a stable way, as the area for harvesting and subsequent planting is expected to increase. Initiatives are being undertaken to develop automation technology of packing soils to containers.

In order to reduce costs for producing containerized seedlings, it is effective to sow seeds directly on containers thereby omitting the process of transplanting seedlings from a nursery bed to containers. Thus, an innovative method was developed to distinguish fertile seeds by using near infrared rays.

Process	Method	Production capacity	Cost
sowing seeds	Conventional manual operation	Capacity: 16,384seeds/ unit Duration: 61days	7.0 yen/ seedling
	Machine operation	Capacity: 81,920seeds/ unit Duration: 12days	3.1 yen/ seedling
Packing soil to containers	Conventional manual operation	Capacity: 3,080seedlings/ unit Duration: 325days	2.3 yen/ seedling
	Machine operation	Capacity: 18,480seedlings/ unit Duration: 54days	1.5 yen/ seedling

Fig.I-4: Table on cost for producing containerized seedlings by method



### 2.1.3 Planting at lower densities and development of excellent varieties

Recently, planting at lower densities has drawn attention, as it could contribute to saving labor for site preparation, planting, and weeding. The GOJ and several prefectural governments are tackling to develop a system of forestry practices with lower density planting, based on the outcomes of their experiments.

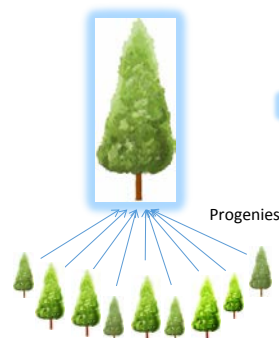
The Forest Tree Breeding Center, FFPRI is tackling to develop excellent varieties of dominant lumber production species including *Cryptomeria japonica* (sugi, Japanese cedar), *Chamaecyparis obtusa* (hinoki, Japanese cypress), *Larix kaempferi* (karamatsu, Japanese larch) with excellent growth and wood qualities. It is also tackling “forward selection” and “genome breeding” to shorten the duration for developing varieties (Fig.I-5).



Excellent growth of sugi (5 years old)

**【Backward selection】**

To develop new varieties using information of their progenies



**【Forward selection】**

To develop new varieties using information of their own and of their relatives such as parents and brothers

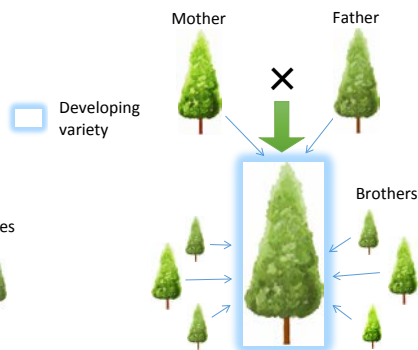


Fig.I-5: Image of “forward selection” in forest tree breeding

**2.1.4 Techniques for introducing fast-growing tree species**

Hardwood is usually utilized for the materials of furniture and flooring. Recently, attention is being paid to producing domestic hardwood trees, mainly due to a decrease in hardwood resources abroad. On the other hand, it is generally difficult to produce hardwood trees with a straight trunk and it takes more than 80 years from planting to harvest in most cases.

Particular attention is paid to fast-grow broadleaves trees, *Melia azedarach* (Sendan) and *Choerospondias axillaris* (Chanchin-modoki). There are several initiatives by prefectural governments to develop forestry practice systems for fast-grow tree species, one of which includes removal of axillary or lateral buds (Fig.I-6).

Attention is also paid to *Cunninghamia lanceolate* (Kouyouzan), a fast-growing coniferous tree. This tree species can be regenerated by coppicing, which is expected to reduce costs for reforestation.



Fig.I-6: Image of the operation technology research of fast-grow broadleaves tree species (*Melia azedarach*)

**2.1.5 Techniques for mitigating animal damage**

There is increasing damage to forest by deer year by year, due to their increased population and expanded habitat. Thus, it is crucial to develop and introduce effective techniques and technologies to mitigate animal damage, which are divided into ‘protective measures’ and ‘population control.’

Patch-defense is being introduced as a new technique of ‘protective measures.’ This can reduce risks of expansion of damage to a whole forest stand.



There are also innovative techniques and technologies introduced for 'population control,' such as sharp shooting, a portable enclosure trap, and a trap utilizing ICT.

One private sector, located in Mie Prefecture, developed an innovative instrument for capturing deer to mitigate their damage to forest. This instrument has a digital camera and remote control system of trap using solar power.



## 2.1.6 Introduction of high-performance forestry machines

The size of harvested wood is getting larger, as forests are getting mature. In addition, many of forest stands in Japan are located at the places too steep to construct forestry road networks.

Bearing the above in mind, the GOJ has developed high-performance forestry machines, including tower-yarder, in order to establish an efficient cable-yarding system, with which heavy wood can be yarded even in complicated terrains.

In addition, the GOJ is tackling to develop an unmanned forwarder and a harvester with automatic classification of wood quality.



Tower-yarder

Self-propelled carriage

Auto hook

## 2.2 Utilization of Information & Communication Technology (ICT)

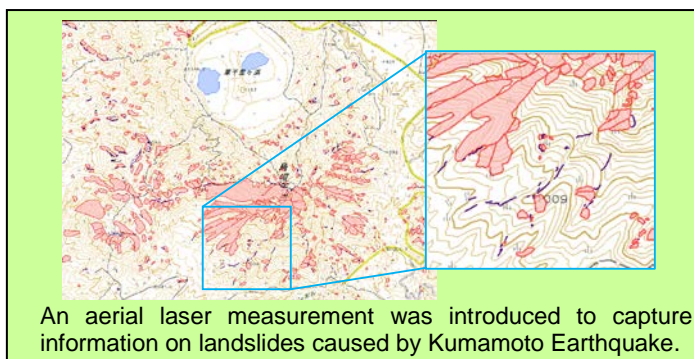
### 2.2.1 Grasping forest information

Coordination and consolidation of forestry practices and construction of forestry road networks requires grasping forest information, including regional forest resources, terrains, borders, and ownerships, in an efficient manner.

Forest GIS has been introduced to align such forest information. It is necessary to revise continuously and improve the accuracy of forest information uploaded in the Forest GIS. In addition, it is necessary to establish a framework to share forest information as appropriate among stakeholders who belong to different organizations.

Taking the above into account, the GOJ has developed "Forest Cloud" and provided its standard specifications.

Development of technologies has also made progress in measuring forest resources, including laser radiation on the ground and aerial laser measurement.



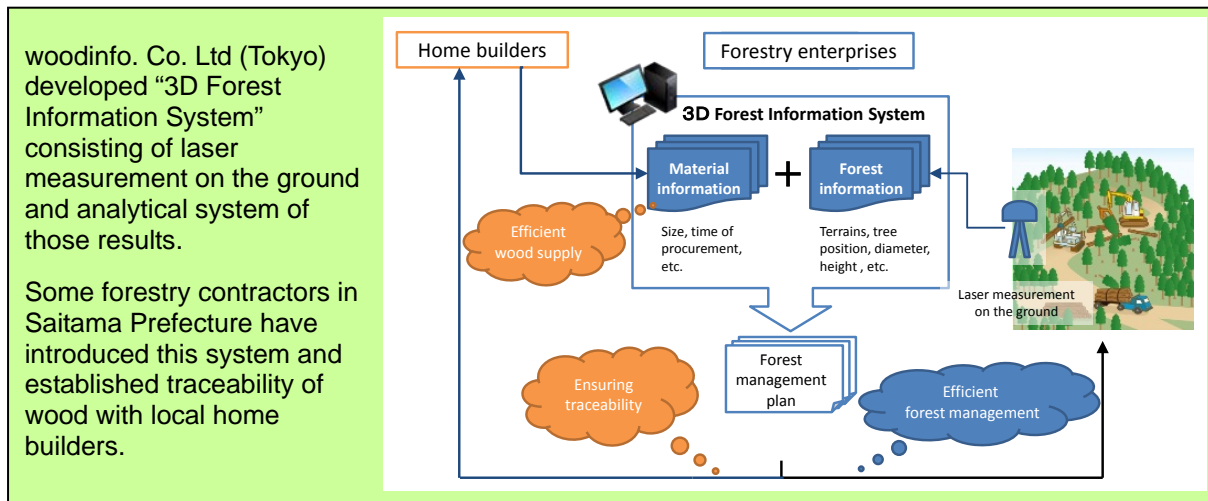
An aerial laser measurement was introduced to capture information on landslides caused by Kumamoto Earthquake.

### 2.2.2 Utilization of ICT in forestry management and wood distribution

Efficient forestry requires production management methods, including capturing the quantities and qualities of wood in stockyards and adjusting shipment in response to demand. Recently, the introduction as well as the development of such methods has made progress by utilizing ICT.

It is sometimes difficult to share information on supply and demand for wood, as a wide range of stakeholders are engaged in wood distribution. Recently, there are several initiatives utilizing ICT for efficient wood distribution by integrating information on forest and wood supply.

There is also growing interest in forestry among people engaged in software development. Some “Hackathons” were held, focusing on development of technologies for forestry.



## 2.3 Techniques and technologies to expand the wood demand

### 2.3.1 Wood use in building construction other than housing

While approximately half of the new housing starts are built with wooden structure, wood use in high- or medium-rise buildings other than housing remains less significant.

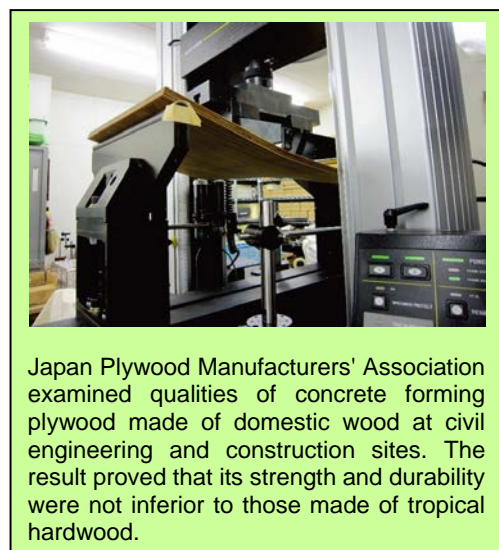
Use of CLT is expected to contribute to the promotion of construction of high- or medium-rise wooden buildings. The GOJ is disseminating designs and execution methods for building with CLT, based on the data collected through its experiments. In January 2017, the GOJ released “New Roadmap towards Dissemination of CLT for its Further Demand Expansion.”

Large-sized or high-rise wooden buildings can be built with the appropriate use of wooden fire-resistant materials. There are several buildings using such wooden materials.

### 2.3.2 Expansion of demand in areas where domestic wood use remains at a low level

Technical development of a “spindle-less rotary lathe,” which accommodates small diameter logs, has brought a rapid growth in the use of domestic wood for structural plywood. In addition, R&D and field tests are underway to expand the use of domestic wood for concrete forming plywood, most of which is made of tropical hardwood.

Improvement of kiln drying and of production of sawn lumber without heartwood part is underway to promote the use of domestic wood for horizontal structural members. The development and dissemination of “trussed girder” and “vertical log housing method” are also underway which enable the use of generic lumber for large- and middle-scale buildings.



### 2.3.3 Technologies to promote use of woody biomass

As for energy use, the development of technology to use bamboo for bio-fuel is underway.

The GOJ has supported initiatives to develop technologies to produce and utilize cellulose nanofiber, an innovative material with light weight and excellent strength, made from Japanese sugi and bamboo, in a manner that it can be produced at small-sized plants of low environmental impact in remote mountainous areas.

FFPRI has made progress in developing technologies to produce improved lignin with stable properties, as well as hybrid film made from such lignin.

### 2.3.4 Technologies to prevent production of pollen

Countermeasures against pollinosis need to be developed to prevent pollen production, as approximately 30% of the Japanese people are suffering from it. Progress is being made to develop low-pollen or pollen-free excellent varieties of sugi and hinoki, and to use a specific fungal parasite preventing production of sugi pollen.

## 3. Conditions for introduction of innovative techniques and technologies

### 3.1 System to disseminate innovative techniques and technologies

It is necessary to actively promote dissemination of innovative technologies whose effectiveness has been proved. To this end, coordination is crucial among stakeholders including national and prefectural governments, research institutes, and private sectors.

### 3.2 Development of forestry contractors equipped with advanced management skills

It is crucial to develop forestry contractors who are equipped with advanced management skills and to employ people that can introduce and utilize innovative techniques and technologies. Recently, initiatives are promoted to educate young forestry workforce at the pre-employment stage, including by establishing forestry colleges.



The University of Kagoshima has conducted open seminars for forestry contractors, in which techniques for cost-effective reforestation and harvesting, as well as technologies on forest resources measurement can be learned.

### 3.3 Awareness-raising and promotion of investment

Awareness-raising, especially for the importance of transformation of forestry into a growth industry as well as promotion of wood use, and for the roles of forest carbon sinks including harvested wood products (HWP) as global warming countermeasures, is essential in order to promote investment in R&D.

## Chapter II Forest Management and Conservation

### 1. Current State of Forests and Basic Policy for Forest Management and Conservation

#### 1.1 Forest Resources and Multiple Functions

Two-thirds of Japan's land area is covered with forests. 40% of these forests are planted forests. The total growing stock has reached approximately 4.9 billion m<sup>3</sup>.

Forests provide a variety of goods and services indispensable for people's lives and national economy, through fulfilment of multiple functions such as land conservation, watershed conservation, and prevention of global warming.

#### 1.2 Fundamental Policy on Forest and Forestry

"Forest and Forestry Basic Plan," as well as "Nation-wide Forest Plan," was revised in May 2016.

The Forest Act and other relevant Acts were revised in the Diet May 2016, which aims to tackle many challenges faced by forests, forestry, and wood products industry by relaxing some requirements as well as adding new obligations in the these Acts (See TOPIC 2 on page 1).

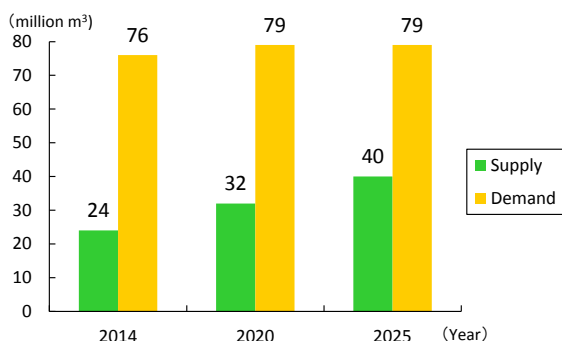


Fig.II-1: Target for wood supply and perspective of wood demand set out in "Forest and Forestry Basic Plan"

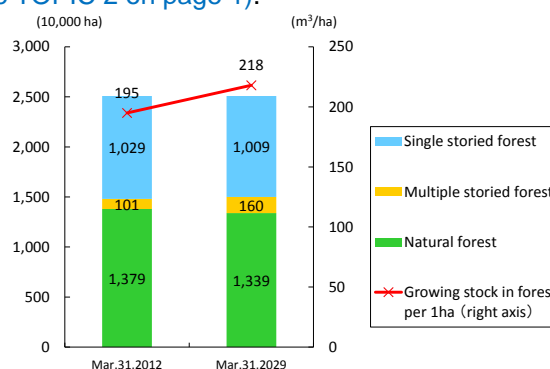


Fig.II-2: Target of forest management and conservation set out in "Nation-wide Forest Plan"

## 2. Forest Management

### 2.1 Promotion of Forest Management

It is necessary to have diverse and sound forests by carrying out thinning practices and re-planting after regeneration cutting, and promoting transition to mixed forests with coniferous and broad-leaved tree species or broad-leaved forests, depending on their respective locational conditions.

As for thinning, it is necessary to carry out thinning of an annual average area of 520,000 hectares between FY2013 and FY2020 in order to ensure the carbon sequestration required for achieving Japan's greenhouse gas (GHG) emission reduction targets.

To supply seedlings in a stable manner, the production of containerized seedlings as well as the development of second-generation elite trees is being promoted (Fig.II-3).

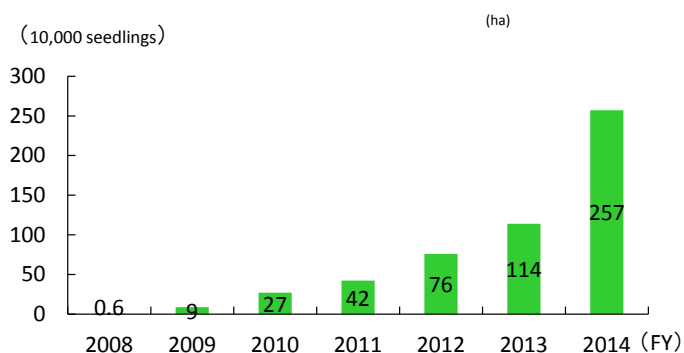


Fig.II-3: Annual production of containerized seedlings

## 2.2 People's Participation in Forest Management

In June 2016, the 67th National Tree Planting Ceremony was held in Nagano Prefecture, followed by the 40th National Tree Tending Ceremony held in Kyoto Prefecture in October.

In recent years, voluntary forestry activities by NPOs and private companies are expanding. Additionally, the business sector shows growing interest in revitalization of forestry and its contribution to local development.

Donations for forest management are solicited through the "Green Fund-raising Campaign" (approximately 2.2 billion yen was donated in 2015).

37 of 47 prefectures have introduced their own local taxation systems with the objective of supporting forest management activities (total revenue collected through the taxation systems was estimated approximately at 30 billion yen in FY2016).

## 2.3 Dissemination

While the number of Forestry Extension Advisors stipulated in the Forest Act is 1,310 in total as of April 2016, that of those registered in accordance with the same Act as Comprehensive Forest Management Advisor (called "Forester") is 982 as of the end of the same year. While Forestry Extension Advisors are assisting primarily private forest owners, Foresters are providing support to local municipalities for policy planning on forests and forestry.

## 3. Forest Conservation

### 3.1 Protection Forests

Protection forests are designated in accordance with the Forest Act when it is considered necessary that they provide important public benefit, such as watershed conservation and erosion prevention. The area of protection forests reached 12.17 million hectares as of March 2016.

### 3.2 Disaster Control

When natural disasters occur in mountainous areas, the GOJ quickly conducts surveys of landslides and cracks and elaborates recovery work.

The GOJ and prefectural governments conduct "forest conservation projects." These projects include installation of disaster control facilities, replanting of trees for stabilization of mountain slopes, restoration of devastated mountain streams, and development of coastal disaster-prevention forests.

There occurred a lot of huge landslides in Kumamoto Prefecture, which were caused by heavy rainfall in June 2016. It was proved that seven disaster control facilities constructed by the prefectural government in the past prevented landslides and soil erosions, and contributed to protecting downstream communities.



### 3.3 Conservation of Forest Biodiversity

The GOJ is promoting appropriate thinning, development of ecologically diversified forests, and conservation of forest ecosystems with high wilderness value, based on the "National Biodiversity Strategy of Japan 2012-2020," which was adopted in September 2012.

In February 2017, the GOJ submitted to UNESCO a document to nominate "Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island" for inscription on the World Heritage List.

In August 2016, Japanese Coordinating Committee for MAB (UNESCO's Man and the Biosphere Programme) decided to nominate "Sobo, Katamuki and Okue" and "Minakami" as new Biosphere Reserves.

### 3.4 Wildlife and Pest Control

In FY2015, approximately 8,000 hectares of forests were damaged by wild animals, 77% of which was caused by deer (Fig.II-4). This serious situation is thought to have been caused by increased population of deer and the expansion of their habitat. The revised Forest Act 2016 provides that municipalities shall designate “animal damage prevention forests” when establishing “Municipality’s Forest Improvement Plan.”

Damage to pines by pinewood nematode (*Bursaphelenchus xylophilus*) is still the worst among all caused by forest pests and diseases in Japan (Fig.II-5). The GOJ is implementing preventive measures through application of chemicals as well as logging and fumigation of affected trees.

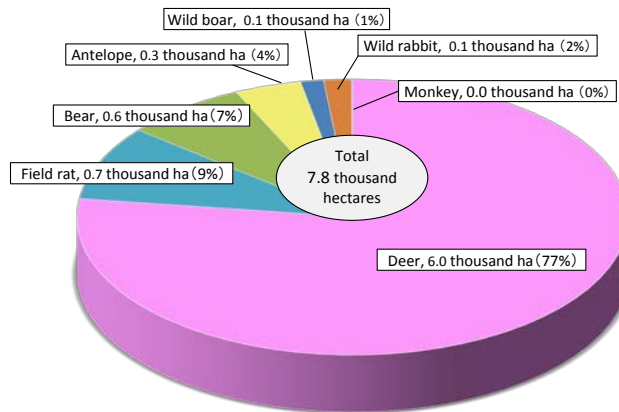


Fig.II-4: Area of forests damaged by major wild animals in FY2015

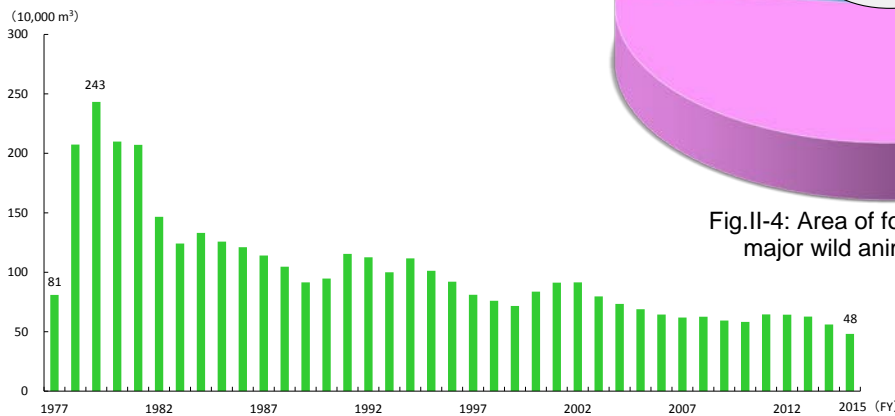


Fig.II-5: Annual Damage to pines by pinewood nematode

## 4. International Cooperation

### 4.1 Promotion of Sustainable Forest Management

As of 2015, the world forest area was approximately four billion hectares, or 31% of global terrestrial land area according to Food and Agriculture Organization (FAO) of the United Nations. During five years between 2010 and 2015, the world’s forest area decreased by 3.31 million hectares annually. FAO points out that even though, globally, the extent of the world’s forest continues to decline as human population continues to grow and the demand for food and land increases, the rate of net forest loss has been cut by over 50 percent over the past 25 years (Fig.II-6).

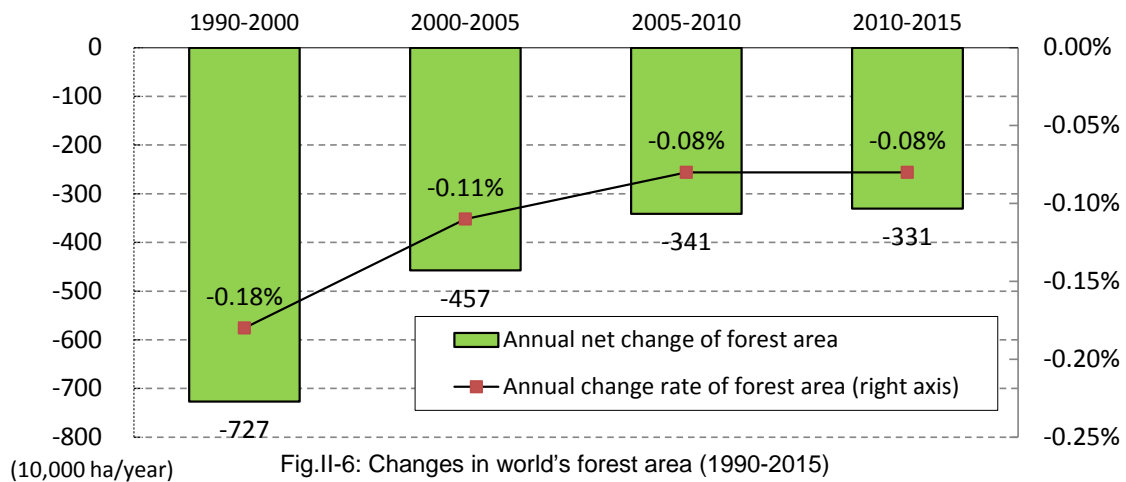


Fig.II-6: Changes in world’s forest area (1990-2015)  
Source: FAO’s Global Forest Resources Assessment 2015

Several initiatives are being undertaken to develop international criteria and indicators (C&I) for sustainable forest management. Japan is a member of the Montreal Process for the conservation and sustainable management of temperate and boreal forests consisting of 12 Pan-Pacific countries.

Illegal logging hinders the efforts toward sustainable forest management. The GOJ is promoting international efforts to combat illegal logging in this regard. In May 2016, the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products, known as “Clean Wood Act,” was enacted.

Forest certification is a private sector’s initiative aiming to promote sustainable forest management by advocating consumers’ purchase of wood products produced from such forests. In Japan, two forest certification schemes, run by the Forest Stewardship Council (FSC), an international organization, and the Sustainable Green Ecosystem Council (SGEC), an independent organization solely operating in Japan, have been in place. The percentage of certificated forests in Japan is relatively low compared with those in European and North American countries. In June 2016, the mutual endorsement scheme between SGEC and the Programme for the Endorsement of Forest Certification (PEFC) was approved.

#### **4.2 Global Warming and Forests**

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 Paris in 2015, as a new international framework to undertake ambitious efforts to combat climate change and adapt to its effects in the post-2020 period. This Agreement is fair and applicable to all Parties and entered into force in November 2016.

The Plan for Global Warming Countermeasures, decided by the GOJ in May 2016, determined GHG emission reduction targets. In order to meet these targets, Japan implements thinning of planted forests of an annual average area of 520,000 hectares between FY2013 and FY2020 and of 450,000 hectares between FY2021 and FY2030. In 2015, thinned area was 450,000 hectares equivalent to the absorption amount of 13.67 million ton-C including the absorption amount of 0.75 million ton-C by HWP.

It was also agreed within the GOJ to consider and conclude a new framework by the end of 2017, for introducing taxation system with the objective of supporting forest management and environment conservation activities.

Furthermore, the GOJ has been promoting the “Reducing Emissions from Deforestation and Forest Degradation in developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks” (REDD+ initiative). In this regard, the GOJ has provided not only bilateral assistance to developing countries but also a significant amount of funds to Forest Carbon Partnership Facility (FCPF) and Forest Investment Program (FIP), both established by the World Bank, UN-REDD established by the FAO, the United Nations Development Program (UNDP) and the United Nations Environment Program (UNEP) and Green Climate Fund (GCF) established under the UNFCCC.

#### **4.3 International Discussions on Biodiversity**

It is estimated that at least 80% of the earth’s remaining terrestrial biodiversity is found in forests. As of February 2017, the “Convention on Biological Diversity (CBD)” has been signed by 194 countries and the European Union (EU). At the 13<sup>th</sup> Conference of the Parties (COP13) of the CBD, the members discussed the roles of international organizations in conserving forest biodiversity. The high-level segment of COP13 adopted “Cancun Declaration,” which contains “Guidance for Mainstreaming Conservation and Sustainable Use of Biodiversity in the Agriculture, Forestry, Fisheries and Tourism Sectors.”

#### 4.4 Japan's Cooperation

Japan is implementing international cooperation for promotion of sustainable forest management in developing countries by providing technical and financial assistance through bilateral and multilateral schemes.

According to data from the Organization for Economic Co-operation and Development (OECD), official development assistance (ODA) provided with forestry sector in the world amounted to 740 million US dollars in 2015, 26 million US dollars of which was from Japan. Japan was the third largest donor in 2015, following UK and Germany.

Bilateral assistance, in the form of technical cooperation, and provision of grants and loans, has been implemented mainly through the Japan International Cooperation Agency (JICA). The GOJ has also provided financial support to the International Tropical Timber Organization (ITTO) headquartered in Yokohama, Japan.

Table II-1: Forestry projects conducted by JICA since 1976 (as of December 2016)

Region	Number of countries	Number of projects finished	Number of projects underway	Total of projects
Asia, Middle East, and Oceania	17	82	7	89
Latin America	12	28	4	32
Europe and Africa	12	18	10	28
Total	41	128	21	149



## Chapter III Forestry and Rural Mountain Communities

### 1. Forestry

#### 1.1 Forestry Production

In 2015, the value of gross forestry production was 436.3 billion yen, a 3 % decrease from the previous year. It has a declining trend in a long term since the peak in 1980 (Fig.III-1).

The volume of domestic roundwood production bottomed out at 15.09 million m<sup>3</sup> in 2002 and it has increased to 20.05 million m<sup>3</sup> in 2015. By tree species, the volume of sugi production was the largest at 11.23 million m<sup>3</sup> (56%), followed by hinoki at 2.36 million m<sup>3</sup>.

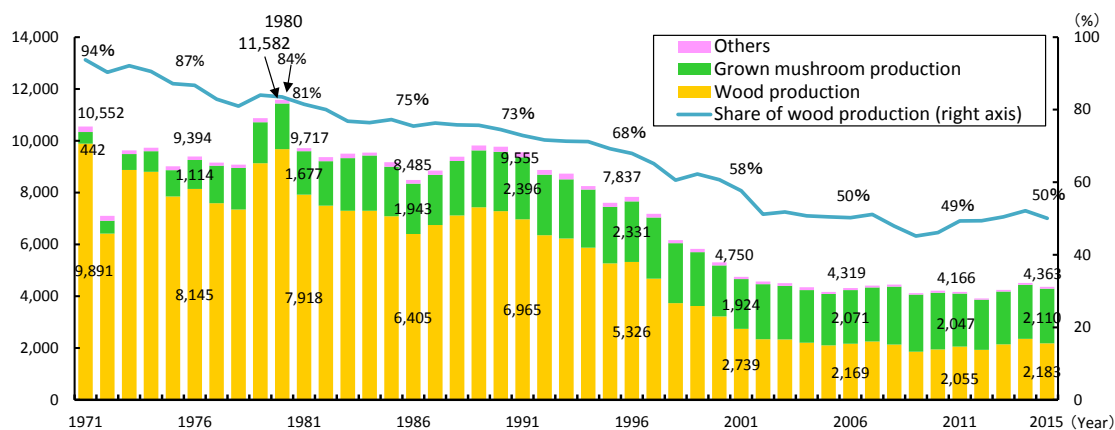


Fig.III-1: Value of gross forestry production

#### 1.2 Forestry Management

According to the Census of Agriculture and Forestry 2015, the tenure of forest area per forestry household has increased by 11% in 10 years, while the number of households has decreased by 10%. The tenure of forest area per forestry management entity increased by 74% in 10 years, while the number of forestry management entities has decreased by 57%. There is a trend of expansion of forest tenure observed (Fig.III-2).

The revised Forest Act 2016 provides that municipalities shall establish their Forest Land Registers, part of whose contents shall be accessible for sharing of data on regional forest borders, ownerships, etc.

According to the Census of Agriculture and Forestry 2015, logs produced by forestry management entities increased by 44% in 10 years (Fig.III-3). In addition, those produced per forestry management entity increased by 87%. It is also to be noted that approximately 80% of such logs were produced through logging contracts with forest owners or purchase of standing trees from forest owners.

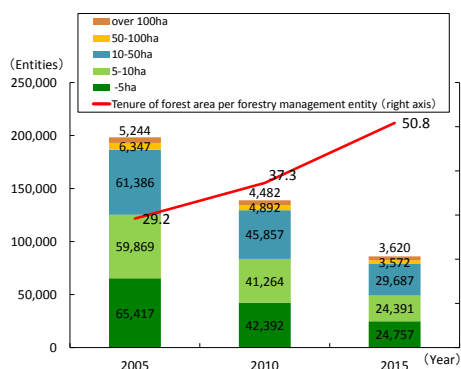


Fig.III-2: Number of forestry management entities and tenure of forest area per forestry management entity

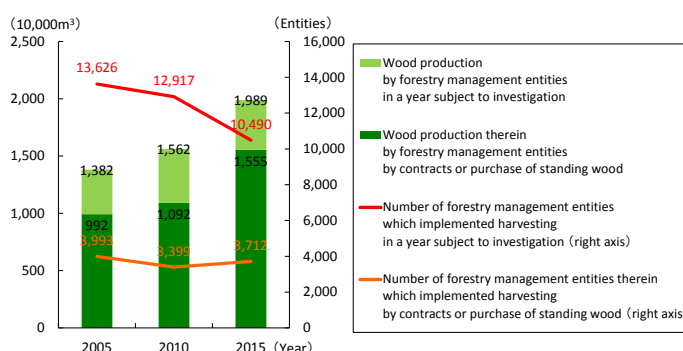


Fig.III-3: Number of forestry management entities that harvested wood, and total wood production by forestry management entities

### 1.3 Improvement of Forestry Productivity

To improve forestry productivity, coordination and consolidation of forestry practices among small-scale forest owners is necessary. To this end, the GOJ has been implementing the training program for “Forest Management Planners” who should lead proposal-based coordination with forest owners and consolidation of forestry practices, and the forest management planning system under the Forest Act in a flexible manner in accordance with the on-the-ground situation. Conducting field surveys and consensus-building activities are supported for this purpose.

At the same time, it is extremely important to accelerate the development of the forestry road system using the best applicable combination of three forest road types: the mainline “forest road” for general vehicles, the “forestry exclusive road” for truck vehicles, and the “forestry operation road” for forestry machinery.

It is also vital to promote the efficient log production system utilizing forestry machines (Fig.III-4) and to develop and improve the performance of those machines that are suitable for the forest conditions in Japan.

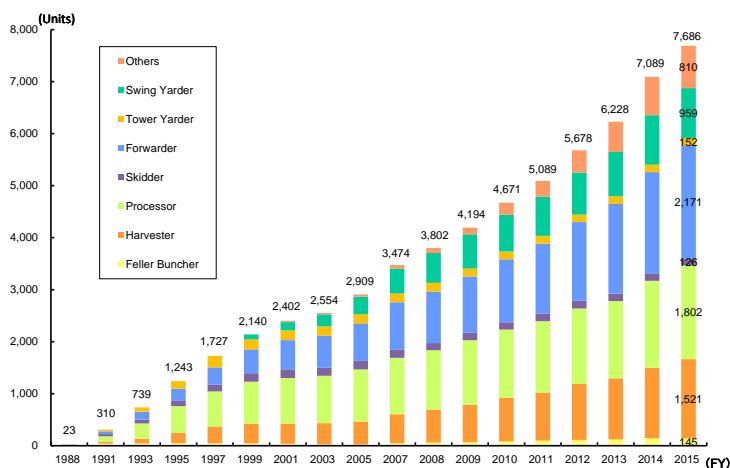


Fig.III-4: Number of advanced forestry machines

### 1.4 Forestry Workforce

In recent years, there has been some sign that the number of forestry workers will bottom out (approximately 51,000 in 2010). The share of aged forestry workers (aged 65 or older) still remains high at 21%, but the share of young forestry workers (aged 35 or younger) has risen up to 18% (Fig.III-5).

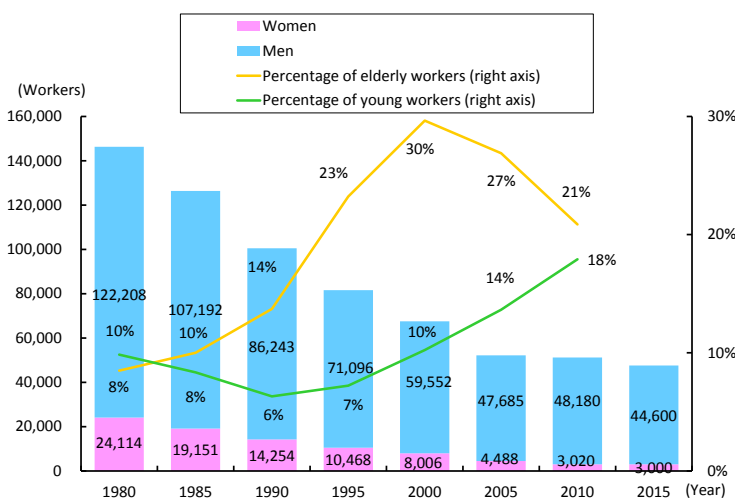


Fig.III-5: Number of forestry workers

Since FY2003, the GOJ has been implementing “Green Employment Program” to provide young people with opportunity to learn basic forestry skills. The outcome of the Program has led to a significant increase in the number of new forestry workers (Fig.III-6).

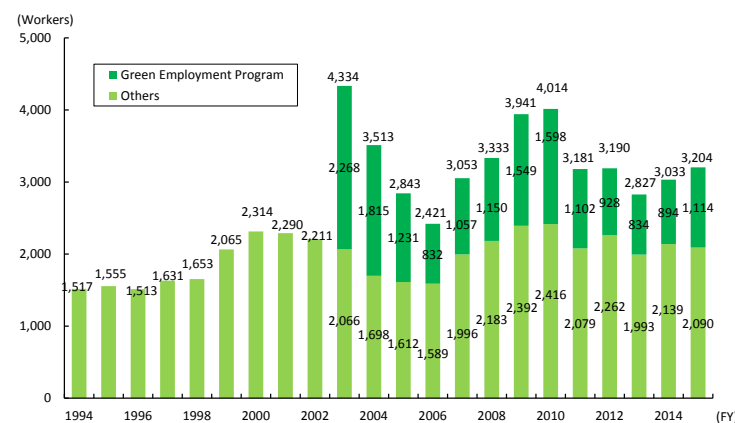


Fig.III-6: Number of new entrants to forestry workforce

The occupational accident rate of forestry industry remains high, and therefore it is crucial to secure safe working conditions.

## 2. Non-Wood Forest Products

Non-wood forest products production, accounting for approximately 50% of gross forestry production, contributes to development of rural communities. Nearly 90% of non-wood forest products production was derived from mushroom production. However, mushroom production has a decreasing tendency since 2011 and the production in 2015 was slightly decreased compared with the previous year (Fig.III-7). The number of households producing mushrooms has also been decreasing, but bottoming out is observed.

In 2015, the overall price of mushrooms went up, and a sign was shown to grow out of declining tendency. It should also be noted that the price of dried shiitake mushroom rapidly increased by 66%, due to harvest failure caused by unseasonable weather (Fig.III-8).

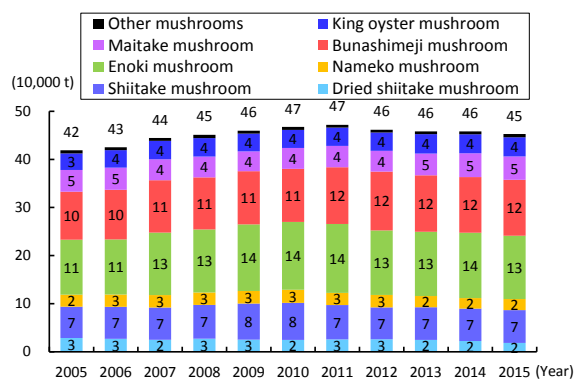


Fig.III-7: Volume of mushroom production

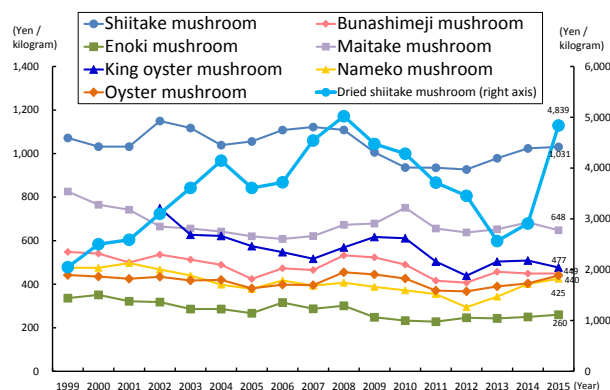


Fig.III-8: Price of mushroom

## 3. Rural Mountain Communities

### 3.1 Current State of Rural Mountain Communities

Rural mountain communities, where people engaged in forestry are living, play a significant role in securing multiple functions of forests. In Japan, "Mountain Village Areas Due for Development," designated pursuant to the Mountain Villages Development Act, cover 50% of the total land area, accounting for 60% of the total forest area. It is becoming more difficult to maintain the management of forests due to continuing depopulation and aging population in such communities.

On the other hand, some of urban residents have come to show greater interests in the life in rural mountain communities as rich forests and water resources, beautiful landscapes, traditions, and cultures are available there.

### 3.2 Revitalization of Rural Mountain Communities

The GOJ is providing supports to initiatives by rural mountain communities to create job opportunities and to improve their income level, including through promoting utilization of rural resources, such as fuel wood and wild vegetables. In addition, effective exchanges between rural mountain communities and urban societies are conducted through hands-on activities in agriculture, forestry, and fisheries.

The GOJ is also providing supports to initiatives by local residents, including self-harvesting forest owners (who cut their trees by themselves), to conserve satoyama forests (forests which are close to residential areas in rural communities but underutilized), to utilize forest resources as appropriate, and to conduct forest environmental education.

Recently, more and more attention has been paid to initiatives by self-harvesting forest owners, as they can play an important role in rural forestry and contribute to revitalizing rural communities.

Initiative have been undertaken in Kochi Prefecture to revitalize a local community through utilization of rural bamboo resources. Dried bamboo shoots are sold for restaurants, and chopped or smashed stems sold as soil conditioner.



## Chapter IV Wood Products Industry and Wood Use

### 1. Supply and Demand for Wood

#### 1.1 Global Wood Supply and Demand

In 2015, consumption of sawn softwood in North America showed recovery trend. In Europe, exports of sawn softwood to North America and China has increased. In Russian Federation, exports of sawn softwood marked a record high, with China as the largest importer. In China, imports of industrial roundwood of softwood has decreased, but China remains the world largest importer of industrial roundwood of softwood for the 15 consecutive years.

In December 2016, the Diet approved the conclusion of the Trans-Pacific Partnership (TPP) and its relevant domestic Acts. The GOJ is initiating measures to improve international competitiveness in accordance with the “Comprehensive Policy Principles related to TPP.”

#### 1.2 Wood Supply and Demand in Japan

Japan’s wood demand is showing signs of recovery after the bottom in 2009, but has not reached the level of 2008. The volume of wood demand was 75.16 million m<sup>3</sup> in 2015 (roundwood equivalent).

Domestic wood supply has been increasing since the bottom in 2002. In 2015, the volume of domestic wood supply was 24.92 million m<sup>3</sup> (roundwood equivalent).

In 2015, the volume of imported wood was 50.24 million m<sup>3</sup> (roundwood equivalent). Approximately 90% of imported wood was processed wood products including lumber and plywood.

#### 1.3 Wood Prices

Prices for domestic roundwood and domestic sawn lumber of sugi remained stable in 2016 (Fig.IV-1). The prices of imported wood chip declined, while the prices of domestic wood chip rose in 2016.

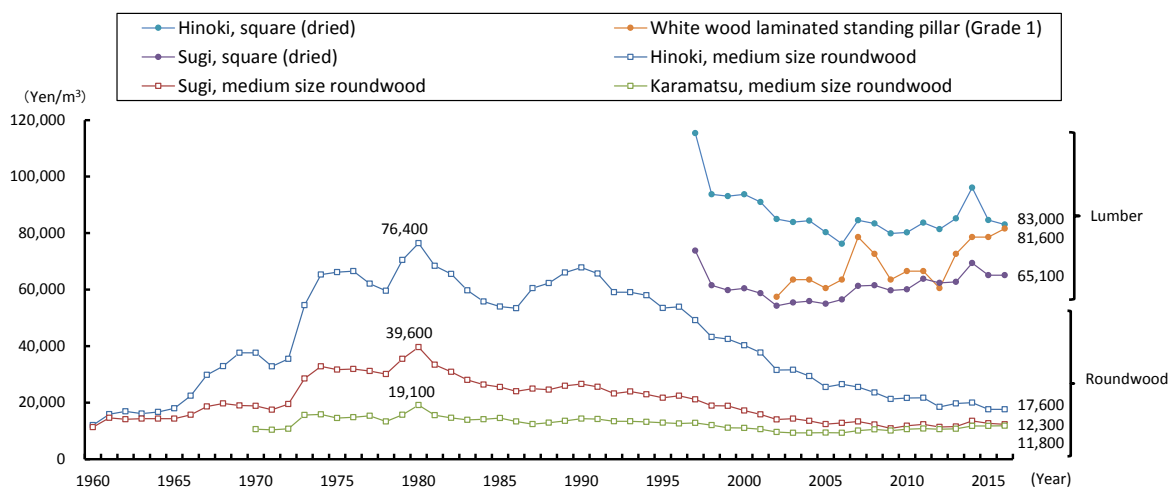


Fig.IV-1: Wood prices in Japan

#### 1.4 Combating Illegal Logging

The GOJ is promoting use of legally and sustainably produced wood products based on a basic philosophy that “illegally-harvested wood and wood products should not be used.”

Based on the “Basic Policy on Promoting Green Procurement,” the GOJ procures legally-harvested wood and wood products in governmental procurement and also encourages private companies and general consumers to use legally-harvested wood products. The USA, EU, and Australia have already introduced and enforced legal frameworks to regulate the distribution and use of illegally-harvested wood and wood products.

The GOJ has been promoting the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products, which was adopted in the Diet in May 2016, for the preparation of the Act to be enacted in May 2017.

## 1.5 Wood Exports

In 2016, the value of wood exports reached 23.8 billion yen, a 4% increase from the previous year (Fig.IV-2).

In May 2016, the GOJ adopted the “Strategies to enhance capacity to export products of agriculture, forestry and fisheries,” which sets the strategy for wood exports to shift from log-oriented trade to value-added wood products trade with Japan’s advanced technologies and to develop new export destination regions/countries.

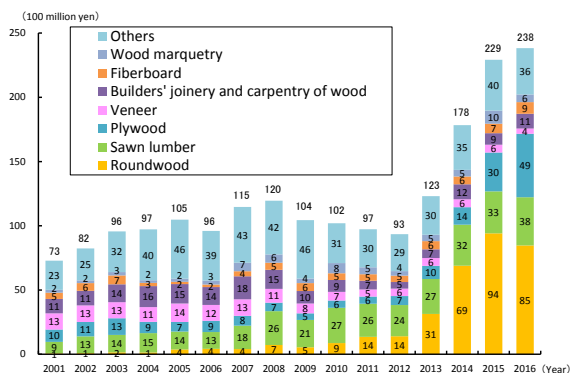


Fig.IV-2: Japan's value of wood exports



## 2. Wood Products Industry

As for lumber production, shipments from domestic lumber mills are on the decline. The share of domestic wood in the raw material input for lumber mills was 74% in 2015. Large scale lumber mills are becoming dominant in terms of their share of total lumber production. It is crucial to supply lumber with clearly specified quality and strength performance, including kiln-dried lumber.

As for glued laminated lumber production, the share of domestic wood in material input for domestic manufacturers of glued laminated lumber has been gradually rising, but it still remained at 15% in 2015.

As for plywood production, the share of domestic wood in material input for domestic manufacturers of plywood is on the rise, reaching 80% in 2015. The share of domestic wood in the total wood demand for plywood production, including imported plywood products, was 36% in 2015.

As for wood chip production, almost all the materials for domestic wood chip mills are domestic wood, however, the share of domestic wood chips in total wood chip consumption was remaining around one-third in 2015.

As for pre-cut timber production, the share of pre-cut timber in the total wood used for post and beam construction method was 91% in 2015. Some pre-cut timber mills have shifted their material input from imported wood to domestic wood.

## 3. Wood Use

### 3.1 Importance of Wood Use

Wood use could contribute to the prevention of global warming, sustainable fulfillment of multiple functions of forests, and vitalization of local economies, as well as the provision of comfortable and healthy living conditions.

### 3.2 Wood Use in Housing Sector

In Japan, approximately 40% of wood demand and more than half of domestic wood demand are for building construction. Approximately half of the new housing starts in Japan are wooden constructions.

The GOJ has been promoting the housing projects in which forest owners, log producers, lumber producers, and local home builders cooperate, as well as the human resource development of architects with necessary knowledge and skills in wood use.

**3.3 Wooden Public Buildings**

The Act for Promotion of Use of Wood in Public Buildings entered into force in 2010 with the aim to promote wood use in public buildings, many of which are not currently built with wood. Several prefectures have adopted local rules to promote wood use.

The Fundamental Policy based upon the Act has set low-rise public buildings as the target for wooden structure, excluding those which require fire-resistant performance.

In FY2015, the GOJ constructed 110 such low-rise public buildings, out of which 60 were built with wooden structure, and renovated 186 public buildings with wooden exteriors/interiors.

In March 2017 the first wooden schoolhouse with three stories of one-hour fire-resistant structure was constructed in Tsuruoka City, Yamagata. Structural laminated lumber, CLT, and domestic wood produced from school forest were used for construction.



**3.4 Energy Use of Woody Biomass**

Woody biomass used for energy production derives from residue of lumber production, construction waste, and thinnings. The use of woody biomass derived from thinnings is increasing.

Recently, many boilers and stoves fueled with woody biomass are used in public facilities, ordinary households, and horticultural facilities.

Many woody biomass power plants have started operation utilizing the “Feed-in Tariff (FIT) Scheme for Renewable Energy,” which was introduced in July 2012. While woody biomass is expected to contribute to vitalization of local economies, its stable supply is a key for success.

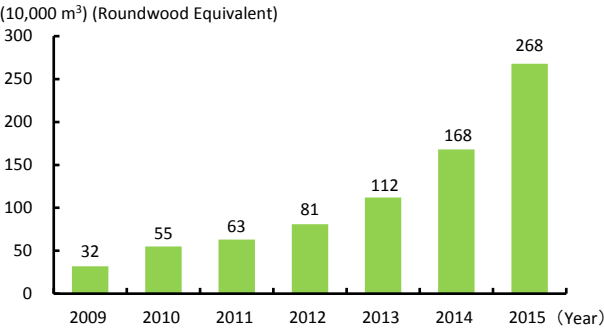


Fig.IV-3: Woody biomass for energy use derived from thinnings



In December 2016, a woody biomass power plant started its operation in Asago City, Hyogo, based upon an agreement among five stakeholders for the promotion of wood use.

**3.5 Dissemination of the Importance of Wood Use to Consumers**

Since 2005, the GOJ has been promoting the “Kizukai Undo,” an initiative to disseminate the importance of wood use to consumers, including “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 consumers’ viewpoints. The GOJ has also been promoting “Mokuiku,” educational activities to disseminate the excellence and significance of wood use to both adults and children.

## Chapter V National Forest Management

### 1. Roles of National Forests

#### 1.1 Distribution of National Forests and Their Expected Roles

National forests, directly managed by the GOJ, represent approximately 30% of the total forest area, or almost 20% of the total land area in Japan. Widely distributed in remote mountainous areas and headwater areas, the national forests perform vital roles in fulfillment of multiple functions of forests, including land conservation, watershed conservation, and biodiversity conservation.

90% of the national forests are designated as protection forests in accordance with the Forest Act. Furthermore, 95% of the land designated as “World Natural Heritage” sites in Japan (Shiretoko, Shirakami Sanchi, Ogasawara Islands, and Yakushima) is located in the national forests.

#### 1.2 National Forest 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 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

#### 2.1 Further Promotion of Management with Emphasis on Public Benefit

National forests are managed in accordance with the five forest types categorized based on expected functions: “landslide prevention,” “natural conservation,” “recreational use,” “comfortable environment development,” and “watershed conservation.”

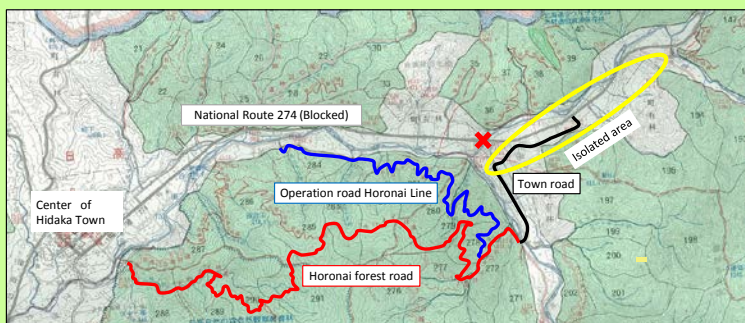
In managing the national forests, some key thematic activities, including thinning as forest carbon sink measures and wood use in “forest conservation projects,” are also implemented.

Furthermore, in order to conserve biodiversity, the GOJ designates and manages “Protected Forests,” including Forest Ecosystem Reserves, and “Green Corridors.”

The GOJ is also dealing with damage by deer and other wild animals in the national forests.



Kyoto-Osaka District Forest office in Kinki-Chugoku introduced an innovative trap for deer, ensuring close cooperation with civil society and academia.



Hidaka-Hokubu District Office in Hokkaido mended its forestry road for local communities affected by a typhoon so that they can use it as a temporary bypass.

## 2.2 Contribution to Transforming Forestry into a Growth Industry

Through National Forest Management Program, The GOJ 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) developing human resources including forestry contractors and technical experts (nationally certified “Foresters”), (iii) promoting development of forestry road systems and forest operations in collaboration with private forests by establishing cooperative forest management areas, and (iv) promoting stable wood supply through “System Sales” contracts with lumber and plywood mills.

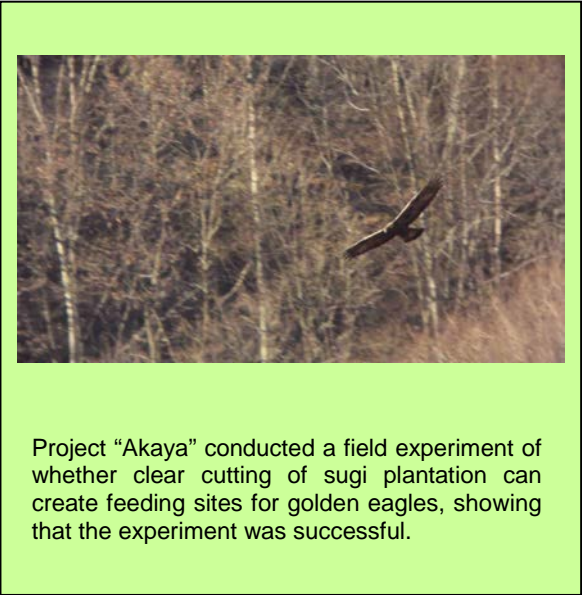


## 2.3 National Forests as “Forests for People”

The GOJ provides various organizations with places for field activities such as forest environmental education and forest management and conservation by designating forests for such activities within national forests. It also implements special projects in collaboration with local parties and nature conservation groups.

Some national forests are being leased to local governments and residents for development of local industry and improvement of welfare. “Recreation Forests” are managed and administered in partnership with municipalities and other stakeholders in local communities like tourist industry.

For recovery from the Great Earthquake, the GOJ is implementing restoration of coastal disaster-prevention forests. Some national forest sites are being used for the temporary storage of soil removed through decontamination work.





## Chapter VI Reconstruction from the Great East Japan Earthquake

### 1. Recovery of Forest, Forestry, and Wood Products Industry

#### 1.1 Recovery of Forest, Forestry, and Wood Products Industry

The Great East Japan Earthquake caused damage to forests, forest conservation facilities, and forest roads in 15 prefectures. Recovery works have been implemented in such damaged areas, approximately 95% of which have already been completed.

115 wood processing/distribution facilities also suffered major damage from the earthquake, 98 of which have resumed operation to date. Forestry production and production of wood products generally recovered to the respective levels before the earthquake (Fig.VI-1).

#### 1.2 Restoration of Coastal Forests

The recovery works in the damaged coastal disaster-prevention forests are underway, with completion to be achieved within ten years from 2011. The recovery works have been commenced in a total of around 157km of coastal disaster-prevention forests, except for areas where entering is prohibited due to radioactivity, while the works have been completed in 57km.

In the course of recovery works, citizens' participation in planting and tending of trees is being promoted. Stable supply of a large number of seedlings as well as continuous treatment of planted trees needs to be secured.

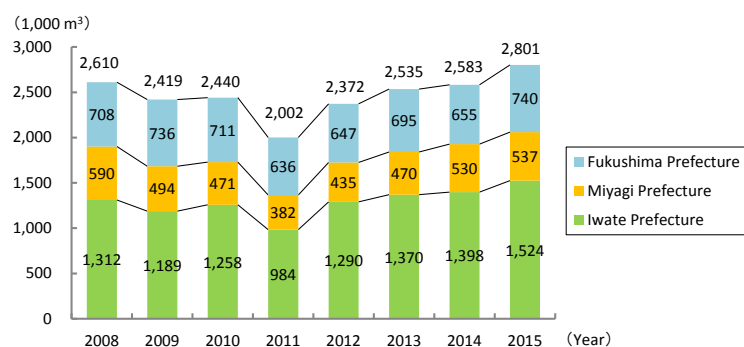


Fig.VI-1: Harvested wood within affected areas of Iwate, Miyagi and Fukushima



#### 1.3 Promotion of Wood Use for Reconstruction and Contribution by Forest and Forestry

The local governments in the earthquake-stricken areas have provided approximately 54,000 "emergency temporary houses," with a quarter of those houses (approximately 15,000 houses) built with a wooden structure. They have also been constructing approximately 7,000 public houses (reconstruction houses) with a wooden structure.

Permanent houses for disaster victims are also being built with wood constructions, while the initiative to utilize wood in non-residential buildings and recovery and reconstruction works in the civil engineering sector is underway.

A large amount of woody debris that occurred due to the earthquake and tsunami has been utilized for producing wood-based panels and fuel input for boilers and power plants. In Aizu-wakamatsu City in Fukushima Prefecture, Miyako City in Iwate Prefecture, and Kesenuma City in Miyagi Prefecture, woody biomass power plants have already started operation.

## 2. Reconstruction from Nuclear Accident

### 2.1 Measures against Radioactive Materials in Forests

In March 2016, the “Project Team of Related Ministries and Agencies for Revitalization of Forests and Forestry in Fukushima” announced the “Comprehensive Approaches towards Revitalization of Forests and Forestry in Fukushima.”

The GOJ has been conducting a monitoring and researches on distribution of radioactive materials in forests, as well as conducting verification tests for necessary measures to carry out forestry practices.

The GOJ set up 10 model sites by the end of 2016, including within areas to which evacuation orders have been issued. In such sites, comprehensive initiatives are being undertaken to revitalize satoyama in close cooperation with the prefectural government and municipalities.

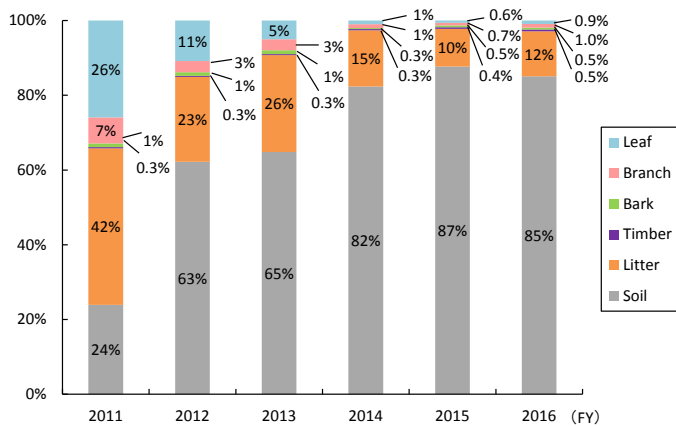
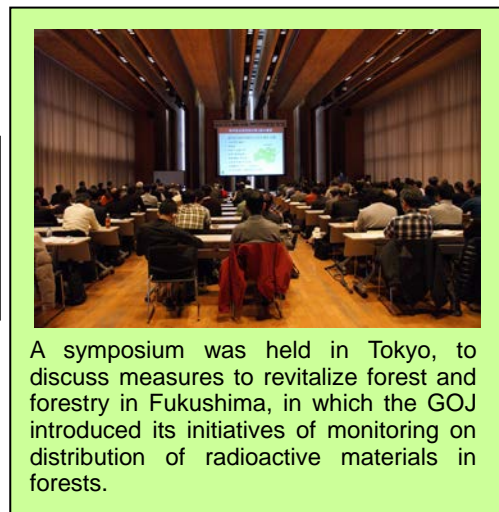


Fig.VI-2: Change of radioactive cesium by tree part (sugi forest)



A symposium was held in Tokyo, to discuss measures to revitalize forest and forestry in Fukushima, in which the GOJ introduced its initiatives of monitoring on distribution of radioactive materials in forests.

### 2.2 Supply of Safe Forest Products

Shipment restrictions on mushrooms are to be lifted when it is determined that cultivation is being practiced based on the “Guidelines Concerning Management of Mushroom Cultivation from Roundwood to Decrease Radioactive Cesium” and that no mushrooms are produced whose radioactivity exceeds the standard value.

The GOJ is providing support for continuation or resumption of mushroom production.

It is also to be noted that shipment restriction for wild mushrooms and wild vegetables have been gradually lifted.

### 2.3 Disposal of Contaminated Bark and Roundwood for Mushroom Production

Some of tree bark from lumber mills in Fukushima and neighboring prefectures, which had been generally used as fuel or compost before the accident, was retained in the lumber mills due to possibility of contamination with radioactive cesium. The GOJ is providing assistance in disposal of such bark in waste disposal facilities and the amount of retained bark is decreasing. The disposal of roundwood for cultivating mushrooms which can no longer be used is also carried out.

### 2.4 Damage Compensation

Private forestry organizations and mushroom growers in Fukushima and other prefectures have been claiming compensation for inconvenience in their business caused by evacuation orders as well as for damages and/or losses concerning shiitake mushroom production. In response to these claims, Tokyo Electric Power Company (TEPCO) has been making payment of compensation. Since September 2014, TEPCO has also accepted applications for compensation for the loss of value in real estate pertaining to forests in evacuation order areas.

## Appendix

### 1. Forestry-related Fundamental Figures

Item	Unit	1995	2000	2005	2010	2011	2012	2013	2014	2015
i Gross domestic product (GDP)	billion yen	512,542	526,706	524,133	500,354	491,409	494,957	503,176	513,698	530,545
Forestry	billion yen	271	172	134	190	202	185	201	214	211
Forestry / GDP	%	0.05	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04
ii Total number of workers	million	64.57	64.46	63.56	62.57	59.77	62.70	63.11	63.51	63.76
Forestry	million	0.09	0.07	0.06	0.08	0.07	0.08	0.08	0.08	0.07
Forestry / Total # of workers	%	0.14	0.11	0.09	0.13	0.12	0.13	0.13	0.13	0.11
iii Land area of Japan	million ha	37.78	37.79	37.79	37.79	37.79	37.79	37.79	37.79	37.80
iv Forest	million ha	25.15	25.15	25.12	25.10	25.10	25.08	25.08	25.08	25.08
Forest / Land area	%	67.5	67.5	67.4	67.3	67.3	67.3	67.3	67.3	67.3
v Protection forest	million ha	8.57	8.93	11.65	12.02	12.05	12.09	12.12	12.14	12.17
Protection forest / Forest	%	34.1	35.5	46.4	47.9	48.0	48.2	48.3	48.4	48.5
vi Growing stock of forest	billion m <sup>3</sup>	3.5	3.5	4.0	4.4	4.4	4.9	4.9	4.9	4.9
vii Industrial wood supply / Consumption	million m <sup>3</sup>	113.70	101.01	87.42	71.88	74.40	72.19	75.46	75.80	75.16
Domestic production	million m <sup>3</sup>	24.30	19.06	17.90	18.92	20.09	20.32	21.74	23.65	24.92
Import	million m <sup>3</sup>	89.40	81.95	69.52	52.96	54.31	51.87	53.72	52.15	50.24
Self-sufficiency rate	%	21.4	18.9	20.5	26.3	27.0	28.1	28.8	31.2	33.2
viii New housing starts	million units	1.47	1.23	1.24	0.81	0.83	0.88	0.98	0.89	0.91
Ratio of wooden structure	%	45.3	45.2	43.9	56.6	55.7	55.1	56.1	54.9	55.5

Notes 1: "Protection forest area" in "v" refers to the area excluding duplication.

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

Source: 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.)

iv, v, vi: Forestry Agency, vii: Forestry Agency "Wood Demand and Supply Chart," viii: MLIT "Statistics on Building Construction Starts"

### 2. Gross Domestic Product classified by Economic Activities (at current prices)

(Unit: billion yen)

Item	2000	2005	2010	2011	2012	2013	2014	2015
Gross domestic product	526,706	524,133	500,354	491,409	494,957	503,176	513,698	530,545
Agriculture, forestry, and fishing	8,090	5,898	5,515	5,285	5,651	5,556	5,422	5,618
Forestry	172	134	190	202	185	201	214	211
Mining	611	414	304	313	281	311	327	325
Manufacturing	118,815	113,448	104,239	96,639	97,663	97,799	101,204	108,029
Electricity, gas and water supply, and waste management service	16,898	15,237	13,797	11,054	9,962	10,655	12,072	14,143
Construction	36,215	29,186	23,984	24,093	24,485	26,779	28,440	29,419
Wholesale and retail trade	68,830	75,313	69,088	70,580	72,789	74,271	73,152	73,650
Transport and postal services	25,643	26,573	25,231	24,497	25,250	25,366	26,737	27,179
Accommodation and food service activities	16,580	14,350	12,847	12,451	11,858	12,345	12,632	13,274
Information and communications	24,236	25,911	25,514	25,384	25,354	25,718	26,061	26,505
Finance and insurance	25,637	31,192	24,115	23,110	22,442	23,055	22,798	23,557
Real estate	54,138	54,571	59,531	59,528	59,372	59,889	60,115	60,430
Professional, scientific and technical activities	30,291	33,394	34,940	35,682	35,546	36,513	37,127	38,614
Public administration	27,314	26,930	26,306	26,423	26,032	25,759	26,445	26,558
Education	19,003	18,620	18,247	18,520	18,487	18,377	18,860	19,057
Human health and social work activities	27,874	28,916	32,025	32,496	34,132	34,818	34,506	36,120
Other service activities	27,353	25,700	23,454	22,904	23,056	22,891	23,238	23,275

Source: Cabinet Office "SNA (System of National Accounts)"

### 3. Gross Forestry Output

(Unit: billion yen)

Item	2000	2005	2010	2011	2012	2013	2014	2015
Gross output of forestry	531.10	416.77	421.69	416.59	391.69	424.71	451.41	436.27
Roundwood production	322.13	210.23	194.55	205.52	193.33	214.34	235.45	218.27
Softwood	265.33	177.41	170.16	185.05	171.40	193.66	215.88	198.19
Japanese Cedar (sugi)	123.78	87.53	93.50	101.77	97.31	112.02	129.62	118.09
Hardwood	54.72	31.71	23.76	19.81	21.29	20.06	18.96	19.51
Wood fuel production	6.16	6.09	5.08	5.06	4.39	5.53	5.66	5.31
Mushroom production	196.89	198.50	218.91	204.72	193.15	203.73	209.02	210.98
Forestry by-product	5.92	1.96	3.15	1.29	0.83	1.10	1.28	1.71
Value-added of forestry	351.87	245.60	225.50	223.73	208.99	228.03	243.69	238.67

Note: Total figures may not be equal to the sum of each item due to round off.

Source: MAFF "Report of Statistics on Forestry Income".

### 4. Current State of Forest Resources

(Unit: 1,000ha, million m<sup>3</sup>)

Classification	Total		Standing timber area (canopy cover more than 30%)				Treeless land (canopy cover less than 30%)		Bamboo groves	
	Area	Growing stock	Planted forest		Natural forest		Area	Growing stock	Area	
			Area	Growing stock	Area	Growing stock				
Total	25,081	4,900.51	10,289	3,041.87	13,429	1,858.19	1,201	0.45	161	
National forest	Subtotal	7,674	1,151.82	2,327	467.32	4,717	684.06	629	0.45	0
	Under the Forestry Agency's jurisdiction	7,610	1,146.20	2,321	466.03	4,667	679.72	623	0.45	0
	State-owned	7,509	1,126.81	2,240	446.86	4,664	679.50	604	0.44	0
	Government reforestation	93	19.39	81	19.17	2	0.22	9	0.00	0
	Others	9	0.00	0	0.00	0	0.00	9	0.00	0
Under other Agency's jurisdiction	64	5.62	6	1.28	51	4.34	7	0.00	0	
Private and public forest	Subtotal	17,407	3,748.69	7,962	2,574.56	8,712	1,174.13	572	0.00	161
	Public forest	2,919	557.70	1,287	350.30	1,495	207.40	131	0.00	6
	Prefecture	1,210	218.53	479	120.88	672	97.66	58	0.00	0
	Municipality	1,709	339.16	808	229.42	823	109.75	73	0.00	5
	Private forest	14,437	3,184.21	6,662	2,221.18	7,186	963.03	437	0.00	153
Others	51	6.79	14	3.09	30	3.70	4	0.00	3	

Note 1: Data cover the forests defined in Article 2 of the Forest Act.

Note 2: "Others" and "Under other agency's jurisdiction" 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.

Note 3: Total figures may not be equal to the sum of each item due to round off.

Note 4: Figures are as of March 31, 2012.

Source: Forestry Agency

### 5. Planted Area by Tree Species

(Unit: ha)

	Total	Softwood					Hardwood
		Japanese cedar (sugi)	Japanese cypress (hinoki)	Pine (matsu)	Japanese larch (karamatsu)	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
2011	( 19,596 )	( 4,598 )	( 2,830 )	( 178 )	( 4,950 )	( 4,220 )	( 2,819 )
	16,697	4,311	2,347	169	4,713	2,839	2,318
2012	( 20,277 )	( 4,648 )	( 2,643 )	( 245 )	( 5,155 )	( 4,687 )	( 2,897 )
	16,992	4,425	2,103	214	4,821	3,112	2,318
2013	( 22,225 )	( 5,429 )	( 2,780 )	( 330 )	( 5,099 )	( 5,811 )	( 2,777 )
	18,906	5,215	2,512	231	4,620	3,942	2,386
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

Note 1: Figures do not include national forests.

Note 2: Figures in parentheses refer to the total area which includes area planted as lower story of multiple storied forest.

Source: Forestry Agency

## 6. 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
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

Note 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 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.

Source: Forestry Agency

## 7. Thinned Area and Use of Thinnings

(FY)	Thinned area (1,000ha)			Volume of thinnings used (million m <sup>3</sup> )					
	Total	Private and public forest	National forest	Total	Private and public forest			National forest	
					Subtotal	Sawnwood	Roundwood		Others
2007	521	395	126	5.37	3.44	2.14	0.47	0.83	1.93
2008	548	434	114	5.66	3.68	2.26	0.39	1.03	1.98
2009	585	446	140	6.37	4.23	2.57	0.48	1.18	2.14
2010	556	445	110	6.65	4.43	2.70	0.42	1.31	2.22
2011	552	437	115	7.11	4.86	2.88	0.40	1.58	2.25
2012	488	368	121	7.59	5.21	3.00	0.36	1.86	2.38
2013	521	400	121	8.11	5.65	3.23	0.44	1.97	2.46
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

Note 1: Volumes are in roundwood equivalent.

2: Total figures may not be equal to the sum of each item due to round off.

Source: Forestry Agency

### (Private and public forest)

(FY)	1990	1995	2000	2003	2004	2005	2006	2007
Thinned area (1,000ha)	277	215	304	312	277	281	282	395
Volume of thinnings used (million m <sup>3</sup> )	Total	2.34	1.83	2.74	2.83	2.84	3.24	3.44
	Sawnwood	1.70	1.25	1.95	1.85	1.84	1.81	2.14
	Roundwood	0.37	0.34	0.41	0.50	0.45	0.41	0.47
	Others	0.26	0.24	0.38	0.48	0.55	0.62	0.83

Note 1: Volumes are in roundwood equivalent.

2: Total figures may not be equal to the sum of each item due to round off.

Source: Forestry Agency

## 8. Forest Area by Owners

	2015	
	Forest area (ha)	Ratio to total area
Total	17,626,113	100.0%
Private	13,565,022	77.0%
Public	3,368,731	19.1%
Prefecture	1,271,529	7.2%
Public corporation	391,189	2.2%
Municipality	1,404,456	8.0%
Property ward	301,557	1.7%
Incorporated Administrative Agencies	692,360	3.9%

Note 1: Total figures may not be equal to the sum of each item due to round off.

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

Source: MAFF "2015 Census of Agriculture and Forestry"

## 9. Number of Forestry Management Bodies 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

Source: MAFF "2015 Census of Agriculture and Forestry"

## 10. Roundwood Production

(Unit: 1,000m<sup>3</sup>, %)

		2000	2005	2010	2011	2012	2013	2014	2015	Relative change from previous year (%)
Total		17,034	16,166	17,193	18,290	18,479	19,646	19,916	20,049	0.7
By tree species	Subtotal	13,707 (80)	13,695 (85)	14,789 (86)	15,986 (87)	16,062 (87)	17,246 (88)	17,743 (89)	17,815 (89)	0.4
	Japanese cedar (sugi)	7,671	7,756	9,049	9,649	9,956	10,902	11,194	11,226	0.3
	for sawnwood	7,258 <57>	6,737 <58>	6,695 <63>	7,089 <62>	7,295 <64>	7,825 <65>	7,872 <64>	7,869 <66>	▲ 0.0
	Japanese cypress (hinoki)	2,273	2,014	2,029	2,169	2,165	2,300	2,395	2,364	▲ 1.3
	Red pine (akamatsu), Black pine (kuromatsu)	1,034	783	689	580	661	624	674	779	15.6
	Japanese larch (karamatsu), Yezo spruce (ezomatsu), Todomatsu ( <i>Abies sachalinensis</i> )	2,410	2,910	2,821	3,373	3,098	3,275	3,327	3,268	▲ 1.8
	Others	319	232	201	215	182	145	153	170	11.1
	Hardwood	3,327 (20)	2,471 (15)	2,404 (14)	2,304 (13)	2,417 (13)	2,400 (12)	2,173 (11)	2,236 (11)	2,236 (11)
By use	Sawnwood	12,798 (75)	11,571 (72)	10,582 (62)	11,492 (63)	11,321 (61)	12,058 (61)	12,211 (61)	12,004 (60)	▲ 1.7
	Plywood	138 (1)	863 (5)	2,490 (14)	2,524 (14)	2,602 (14)	3,016 (15)	3,191 (16)	3,356 (17)	5.2
	Chips	4,098 (24)	3,732 (23)	4,121 (24)	4,274 (23)	4,556 (25)	4,572 (23)	4,514 (23)	4,689 (23)	3.9

Note 1: Figures in parentheses refer to the percentage to total volume.

2: Figures in < > are the percentage of sugi for sawnwood to the total volume for sawnwood of all species.

3: Total figures may not be equal to the sum of each item due to round off.

Source: MAFF "Wood Demand and Supply Report", "Timber Statistics", 2000-2015

## 11. Wood Supply/Demand Chart (roundwood equivalent)

(Unit: 1,000m<sup>3</sup>)

Demand	Supply	Demand								Domestic consumption								Export															
		Total	Industrial use							Total	Industrial use							Fuel wood			Total	Industrial use							Fuel wood				
		Subtotal	Sawwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Fuel wood	Subtotal	Sawwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Subtotal	Charcoal	Firewood	Wood chips for fuel	Subtotal	Sawwood	Pulp and chips	Plywood	Others	Subtotal	Charcoal	Firewood	Wood chips for fuel						
	Total	(19,140)	(6,667)		(6,667)			(12,473)	(19,140)	(6,667)		(6,667)		(12,473)	(19,140)	(6,667)		(6,667)	(12,473)			(12,473)	2,288	2,281	96	1,362	115	709	7	6	1	1	
	Roundwood	(6,667)	(6,667)		(6,667)				(6,667)	(6,667)		(6,667)																					
	Forest residue	26,404	26,404	15,886	4,988	4,451	1,080		24,123	24,123	15,790	3,626	4,336	371									2,281	2,281	96	1,362	115	709					
	Import	44,262	44,262	9,472	26,578	5,463	2,749		44,262	44,262	9,472	26,578	5,463	2,749																			
	Mushroom cultivation	315						315						315																			
	Fuel wood	(12,473)						(12,473)	(12,473)						(12,473)			(12,473)					7							7	6	1	1
	Total	24,918	21,797	12,004	5,202	3,530	1,061	315	2,806	22,633	19,520	11,909	3,840	3,419	353	315	2,799	70	45	2,684	2,285	2,277	95	1,362	111	709	7	6	1	1	1		
	Roundwood	21,580	21,580	12,004	4,985	3,530	1,061		19,303	19,303	11,909	3,623	3,419	353							2,277	2,277	95	1,362	111	709				7	6	1	1
	Forest residue	217	217		217				217	217		217																					
	Mushroom cultivation	315						315						315																			
	Fuel wood	2,806						2,806	2,799						2,799	70	45	2,684	7									7	6	1	1	1	
	Total	50,242	49,086	13,354	26,581	6,384	2,767		1,156	50,238	49,082	13,353	26,581	6,381	2,767		1,156	858	0	298	4	4	0		3								
	Roundwood	4,824	4,824	3,882	3	921	18			4,820	4,820	3,882	3	918	18																		
	Subtotal	44,262	44,262	9,472	26,578	5,463	2,749		44,262	44,262	9,472	26,578	5,463	2,749																			
	Sawwood	9,472	9,472	9,472					9,472	9,472	9,472																						
	Pulp	5,555	5,555		5,555				5,555	5,555	5,555																						
	Chips	21,023	21,023		21,023				21,023	21,023	21,023																						
	Plywood	5,463	5,463			5,463			5,463	5,463		5,463																					
	Others	2,749	2,749				2,749		2,749	2,749			2,749																				
	Fuel wood	1,156						1,156	1,156						1,156	858	0	298															

Note 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.  
 These figures are excluded from "total" and "subtotal".  
 2: "Others" refers to items such as glulam, worked wood, sleeper, utility pole, pile wood, and scaffolding wood.  
 3: "Forest residue" refers to branches or roots carried into mills for use.  
 4: Total figures may not be equal to the sum of each item due to round off.  
 Source: Forestry Agency "Wood Demand and Supply Chart", 2015

## 12. Wood Supply/Demand (roundwood equivalent)

(Unit: 1,000m<sup>3</sup>)

	Total wood supply/demand	Wood for industrial use	Fuel wood	Wood for mushroom production	Wood demand for industrial use by sector				Wood supply for industrial use by source		Self-sufficiency rate (%)
					Saw wood	Pulp and chips	Plywood	Others	Domestic wood	Imported wood	
1955	65,206	45,278	19,928	-	30,295	8,285	2,297	4,401	42,794	2,484	96.1
1960	71,467	56,547	14,920	-	37,789	10,189	3,178	5,391	49,006	7,541	89.2
1965	76,798	70,530	6,268	-	47,084	14,335	5,187	3,924	50,375	20,155	73.7
1970	106,601	102,679	2,348	1,574	62,009	24,887	13,059	2,724	46,241	56,438	46.7
1975	99,303	96,369	1,132	1,802	55,341	27,298	11,173	2,557	34,577	61,792	37.4
1980	112,211	108,964	1,200	2,047	56,713	35,868	12,840	3,543	34,557	74,407	32.9
1985	95,447	92,901	572	1,974	44,539	32,915	11,217	4,230	33,074	59,827	37.1
1990	113,242	111,162	517	1,563	53,887	41,344	14,546	1,385	29,369	81,793	27.6
1995	113,698	111,922	721	1,055	50,384	44,922	14,314	2,302	22,916	89,006	21.4
2000	101,006	99,263	940	803	40,946	42,186	13,825	2,306	18,022	81,241	18.9
2005	87,423	85,857	1,001	565	32,901	37,608	12,586	2,763	17,176	68,681	20.5
2010	71,884	70,253	1,099	532	25,379	32,350	9,556	2,968	18,236	52,018	26.3
2011	74,403	72,725	1,157	520	26,634	32,064	10,563	3,464	19,367	53,358	27.0
2012	72,189	70,633	1,119	437	26,053	31,010	10,294	3,275	19,686	50,947	28.1
2013	75,459	73,867	1,204	388	28,592	30,353	11,232	3,690	21,117	52,750	28.8
2014	75,799	72,547	2,940	313	26,139	31,433	11,144	3,830	21,492	51,054	31.2
2015	75,160	70,883	3,962	315	25,358	31,783	9,914	3,829	21,797	49,086	33.2

Note 1: "Wood supply/demand" refers to the sum of roundwood volume and imported products volume (sawwood, plywood, and pulp and chips) converted into roundwood equivalent.  
 2: "Others" refers to items such as glulam, worked wood, sleeper, utility pole, pile wood, and scaffolding wood.  
 3: "Self-sufficiency rate" = "Wood supply (Domestic Wood)" / "Total wood supply" × 100  
 4: Total figures may not be equal to the sum of each item due to round off.  
 5: "Fuel wood" includes wood chips for fuel, utilized by woody biomass power plants.  
 Source: Forestry Agency "Wood Demand and Supply Chart"

### 13. Domestic/Imported Wood Supply/Demand (roundwood equivalent)

(Unit: 1,000m<sup>3</sup>)

			2000	2005	2010	2011	2012	2013	2014	2015	Relative change to previous year (%)
Total wood supply/demand			101,006	87,423	71,884	74,403	72,189	75,459	75,799	75,160	▲ 0.8
Wood for industrial use			99,263	85,857	70,253	72,725	70,633	73,867	72,547	70,883	▲ 2.3
Fuel wood			940	1,001	1,099	1,157	1,119	1,204	2,940	3,962	34.8
Wood for mushroom production			803	565	532	520	437	388	313	315	0.6
Wood for industrial use	Total	Total	99,263	85,857	70,253	72,725	70,633	73,867	72,547	70,883	▲ 2.3
		Domestic Wood	18,022	17,176	18,236	19,367	19,686	21,117	21,492	21,797	▲ 1.4
		Imported Wood	81,241	68,681	52,018	53,358	50,947	52,750	51,054	49,086	▲ 3.9
		Self-sufficiency rate (%)	18.2	20.0	26.0	26.6	27.9	28.6	29.6	30.8	1.2
	Sawnwood	Subtotal	40,946	32,901	25,379	26,634	26,053	28,592	26,139	25,358	▲ 3.0
		Domestic Wood	12,798	11,571	10,582	11,492	11,321	12,058	12,211	12,004	▲ 1.7
		Imported Wood	28,148	21,330	14,797	15,142	14,732	16,534	13,928	13,354	▲ 4.1
		Self-sufficiency rate (%)	31.3	35.2	41.7	43.1	43.5	42.2	46.7	47.3	0.6
	Pulp and chips	(6,537)	(7,974)	(6,192)	(6,725)	(6,708)	(7,972)	(6,922)	(6,667)	▲ 3.7	
		Subtotal	42,186	37,608	32,350	32,064	31,010	30,353	31,433	31,783	1.1
		Domestic Wood	4,749	4,426	4,785	4,914	5,309	5,177	5,047	5,202	3.1
		Imported Wood	37,437	33,181	27,565	27,150	25,702	25,176	26,386	26,581	0.7
	Plywood	Self-sufficiency rate (%)	11.3	11.8	14.8	15.3	17.1	17.1	16.1	16.4	0.3
		Subtotal	13,825	12,586	9,556	10,563	10,294	11,232	11,144	9,914	▲ 11.0
		Domestic Wood	138	863	2,490	2,524	2,602	3,255	3,346	3,530	5.5
		Imported Wood	13,687	11,723	7,066	8,039	7,692	7,977	7,798	6,384	▲ 18.1
	Others	Self-sufficiency rate (%)	1.0	6.9	26.1	23.9	25.3	29.0	30.0	35.6	5.6
		Subtotal	2,306	2,763	2,968	3,464	3,275	3,690	3,830	3,829	▲ 0.0
Domestic Wood		337	316	379	438	454	627	889	1,061	19.3	
Imported Wood		1,969	2,447	2,589	3,026	2,821	3,063	2,942	2,767	▲ 5.9	
Others	Self-sufficiency rate (%)	14.6	11.4	12.8	12.6	13.9	17.0	23.2	27.7	4.5	

Note 1: "Wood supply/demand" refers to the sum of roundwood volume and imported products volume (sawnwood, plywood, and pulp and chips) converted into roundwood equivalent.

2: "Others" refers to items such as glulam, worked wood, sleeper, utility pole, pile wood and scaffolding wood.

3: "Self-sufficiency rate" = "Domestic wood supply" for each category / "total" or "subtotal" for each category × 100

4: 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 sawnwood, plywood, or others. Therefore, these figures are excluded from "total" and "subtotal".

5: Total figures may not be equal to the sum of each item due to round off.

6: "Fuel wood" includes wood chips for fuel, utilized by woody biomass power plants.

7: Among "relative change to the previous fiscal year", "self-sufficiency rate" field is the difference from the previous year.

Source: Forestry Agency "Wood Demand and Supply Chart"



## 14. Wood Supply by Country (roundwood equivalent)

(Unit: 1,000m<sup>3</sup>, %)

		2000	2005	2010	2011	2012	2013	2014	2015	
Imported wood	North America	Subtotal	(28.9)	(18.8)	(19.2)	(19.1)	(18.6)	(18.9)	(17.9)	(17.5)
			28,700	16,129	13,506	13,871	13,108	13,942	13,013	12,415
		U.S.	14,460	6,844	5,838	5,877	5,560	6,225	6,153	6,057
		Canada	14,240	9,285	7,668	7,993	7,548	7,717	6,860	6,359
	Southeast Asia	Subtotal	(13.7)	(12.2)	(8.9)	(9.1)	(8.8)	(8.7)	(9.2)	(8.3)
			13,569	10,511	6,287	6,586	6,235	6,439	6,718	5,848
		Malaysia	6,690	5,888	3,773	3,701	3,543	3,518	3,293	2,917
		Indonesia	5,858	4,137	2,304	2,622	2,506	2,787	3,328	2,804
		Others	1,021	486	209	263	186	134	97	127
	Russia	(7.5)	(8.6)	(3.3)	(3.3)	(3.1)	(3.2)	(3.1)	(2.9)	
		7,429	7,411	2,343	2,410	2,196	2,380	2,221	2,081	
	Europe	(4.7)	(6.9)	(7.1)	(7.6)	(7.8)	(9.1)	(7.6)	(7.6)	
		4,675	5,937	4,967	5,553	5,509	6,754	5,554	5,374	
	Others	New Zealand	(4.4)	(3.4)	(3.9)	(3.8)	(3.6)	(3.0)	(2.6)	(2.3)
			4,374	2,878	2,720	2,772	2,570	2,217	1,858	1,638
		Chile	(3.8)	(4.6)	(6.7)	(7.2)	(7.3)	(6.3)	(6.2)	(5.6)
			3,795	3,952	4,726	5,210	5,189	4,617	4,468	3,987
		Australia	(8.7)	(10.2)	(11.0)	(7.7)	(7.5)	(5.6)	(5.8)	(6.6)
			8,604	8,729	7,722	5,629	5,323	4,106	4,203	4,662
China		(2.5)	(3.0)	(3.0)	(3.6)	(3.4)	(3.4)	(3.4)	(2.8)	
	2,445	2,544	2,084	2,633	2,396	2,483	2,434	1,967		
	Viet Nam	/	/	/	/	/	/	/	(7.6)	
									5,418	
	Others	(7.7)	(12.3)	(10.9)	(12.0)	(11.9)	(13.3)	(14.7)	(8.0)	
		7,651	10,591	7,663	8,695	8,421	9,810	10,585	5,696	
Subtotal	(81.8)	(80.0)	(74.0)	(73.4)	(72.1)	(71.4)	(70.4)	(69.2)		
	81,241	68,681	52,018	53,358	50,947	52,750	51,054	49,086		
Domestic wood	(18.2)	(20.0)	(26.0)	(26.6)	(27.9)	(28.6)	(29.6)	(30.8)		
	18,022	17,176	18,236	19,367	19,686	21,117	21,492	21,797		
Total	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)		
	99,263	85,857	70,253	72,725	70,633	73,867	72,547	70,883		

Note 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: Total figures may not be equal to the sum of each item due to round off.

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

## 15. Number of Mills/Factories and Production Volumes

		Unit	2000	2005	2010	2011	2012	2013	2014	2015
Sawnwood	Number of sawmills	plants	11,692	9,011	6,569	6,242	5,927	5,690	5,468	5,205
	Sawnwood shipments	1,000m <sup>3</sup>	17,231	12,825	9,415	9,434	9,302	10,100	9,595	9,231
Plywood	Number of plywood mills	plants	354	271	192	203	197	195	186	185
	Inputs for plywood production	1,000m <sup>3</sup>	5,401	4,636	3,811	3,858	3,837	4,181	4,405	4,218
	General plywood production	1,000m <sup>3</sup>	3,218	3,212	2,645	2,486	2,549	2,811	2,813	2,756
	Special plywood production	1,000m <sup>3</sup>	1,534	1,037	647	703	640	654	584	524
Laminated wood	Number of laminated wood factories	plants	281	259	182	181	174	166	165	157
	Laminated wood production	1,000m <sup>3</sup>	892	1,512	1,455	1,455	1,524	1,647	1,555	1,485
Wood chips	Number of wood chip mills	plants	2,657	2,040	1,577	1,545	1,536	1,510	1,477	1,424
	Wood chip production	1,000tons (1,000m <sup>3</sup> )	10,851	6,005	5,407	5,633	5,861	6,452	5,850	5,745

Note: "Number of sawmills" excludes sawmills with output power less than 7.5kW.

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

## 16. Number of Sawmills and Sawmill Employees

	2000	2005	2010	2011	2012	2013	2014	2015
Number of sawmills	11,692	9,011	6,569	6,242	5,927	5,690	5,468	5,205
7.5-22.5kW	1,137	899	784	757	716	716	692	635
22.5-37.5	2,635	1,919	1,333	1,286	1,195	1,140	1,079	1,033
37.5-75.0	4,406	3,371	2,165	2,015	1,891	1,759	1,684	1,571
75.0-150.0	1,991	1,552	1,196	1,124	1,082	1,039	990	959
150.0-300.0	980	782	641	619	601	604	607	592
300.0kW-	543	488	450	441	442	432	416	415

Note: Figures exclude sawmills with output power less than 7.5kW.

Source: MAFF "Wood Demand and Supply Report", "Timber Statistics"

Full text (in Japanese) of the “Annual Report on Forest and Forestry for FY2016” is available on the website of the Forestry Agency:

<http://www.rinya.maff.go.jp/j/kikaku/hakusyo/28hakusyo/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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