

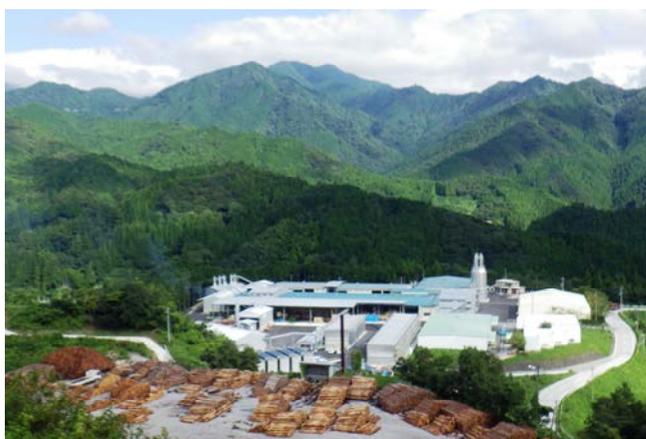
Annual Report on Forest and Forestry in Japan

Fiscal Year 2014

(Summary)

Forestry Agency

Ministry of Agriculture, Forestry and Fisheries, Japan



The “Annual Report on Forest and Forestry” is a report which the Japanese Government 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 FY2014.

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

Forest and Forestry Topics in FY2014

TOPIC 1. Forestry Attracted People's Attention Thanks to the Film "WOOD JOB!"

In 2014, a film featuring a young man who got into forest and forestry was released, and forestry attracted people's attention in the field of entertainment.

This film is modeled on the "Green Employment Program," which the Forestry Agency has been implementing since FY2003.

There are various types of forestry jobs, including *shiitake* mushroom cultivation, charcoal production, and hunting of wild animals, as well as "Forest Management Planners" or "Foresters."

The government intends to create new wood demand and to transform forestry and wood products industry into a growth industry, thereby revitalizing rural mountain communities with increased employment opportunities.

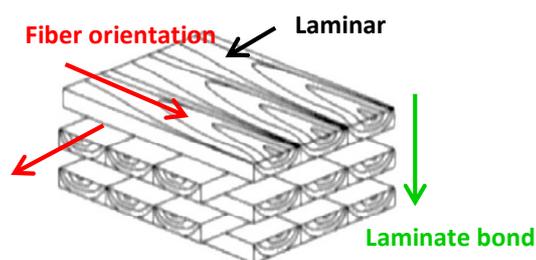


TOPIC 2. "Roadmap for Disseminating CLT" was Publicized

In November 2014, the Forestry Agency and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) publicized the Roadmap for Disseminating Cross Laminated Timber (CLT).

The Roadmap cites the following as the three major measures:

1. To collect data on the strength, etc. of CLT and develop CLT-related building standards at the early FY2016;
2. To increase construction of case examples; In FY2014, eight buildings (apartment buildings, offices, training facilities, etc.) were constructed using CLT; and
3. To establish a CLT production system, aiming to achieve annual production capacity of 500,000 m³ of CLT by FY2024.



TOPIC 3. A New National Holiday “Mountain Day” was Established

In May 2014, the Act on National Holidays was revised and August 11 was established as Mountain Day. The day was set up with the hope to provide more opportunities for the nation to get familiar with mountains and appreciate blessings from mountains. Mountain Day will be a national holiday from 2016 onward.

In Japan, most mountainous areas are covered with forests. The Forestry Agency has been promoting forest management and forest conservation so that its multiple functions, which can be taken as blessings of mountains, are sustainably fulfilled.

The Forestry Agency has also provided the nation with opportunities to get familiar with mountains through supporting forest environmental education and designating specific National Forests with spectacular landscape suitable for recreational activities as “Recreational Forests.”

TOPIC 4. Many Sediment Disasters in Mountainous Areas Occurred

In 2014, torrential rains caused a number of sediment disasters, such as slope failures, landslides and debris flows in mountainous areas in Japan. Lives are lost in several prefectures including Nagano and Hiroshima.

In September, Mt. Ontake erupted, and risks of secondary disasters due to a mass of blown volcanic rocks increased. The Forestry Agency dispatched technical officials to the damaged areas immediately, conducted aerial surveys by helicopter, implemented emergency disaster counter measures such as placing large sandbags, as well as installing wire sensors for debris flow detection, and initiated “forest conservation projects” for restoration.

It has become more and more important to promote the installation of disaster control facilities and proper forest management for the purpose of disaster prevention and mitigation.



Aerial survey by helicopter



Large sandbags as emergency measures

Chapter I Wood Products Industry Leading Circular Utilization of Forest Resources

1. Circular Utilization of Forest Resources and Wood Products Industry

1.1 Wood Products Industry Linking Forest Resources to Wood Use

In Japan, forests that were planted after World War II have begun to reach maturity and are ready for harvest. For circular utilization of such forest resources (Fig.I-1), the role of wood products industry is indispensable, which processes roundwood into wood products and distributes them, as well as the roles of forestry that produces roundwood and consumers of wood products.

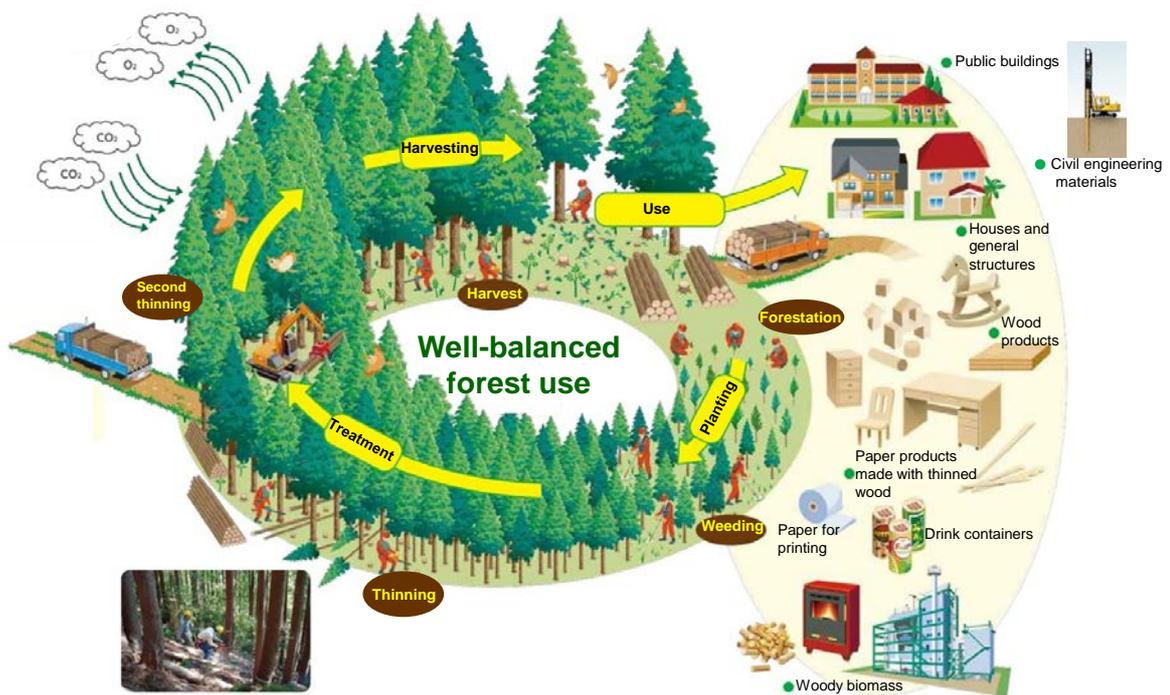


Fig. I-1: Circular utilization of forests resources (image)

The wood products industry plays the following roles:

- (i) To supply processed wood products in response to consumers' needs, and to promote wood use in the society, in connection to the downstream sector;
- (ii) To support forestry through purchasing roundwood, in connection to the upstream sector (forestry sectors);
- (iii) To contribute to creating job opportunities and boosting the economy of the region, in connection to local communities

1.2. Outline of Wood Products Industry in Japan

The wood processing industry produces various wood products, including lumber, laminated lumber, plywood and wood chips (Fig.I-2).

The wood distribution industry engaging in the sale of roundwood and wood products includes wood markets (log auction market and wood products market) and wood wholesalers (Fig.I-3).

These industries play a role to connect upstream sector with downstream sectors (Fig.I-4).

Circumstances, such as wood supply and demand of the moment, strongly influence to state of wood processing and distribution industries.

	Lumber	Laminated lumber	Plywood	Wood chip
Appearance				
Production method	Saw roundwood into lumber using saw mills	Glue laminar (board sawn into certain sizes sorted and ranked depending on the strength) with parallel fiber orientation	Bond layers of veneers peeled from roundwood (with fiber orientation of each veneer orthogonally-crossed; with parallel fiber orientation in the case of Laminated Veneer Lumber (LVL))	• Chip produced from mainly roundwood and mill residue wood with a chipper • Shred mainly construction refuse wood with a shredder or hammer
Major usage	Housing materials, laminar for laminated lumber, furniture and fixtures materials, etc.	Housing materials, etc.	Housing materials, concrete formworks, furniture and fixtures materials, packing materials for transportation, etc.	Raw materials for paper, wooden board and fuel, etc.
Share of domestic roundwood used in domestic wood products industry(2013)	72%	23%	72%	Almost 100%
Share of domestic production (2013)	59%	65%	40%	20%
Self-sufficiency rate (2013)	42%	15%	29%	20%

Fig. I-2: Major wood products

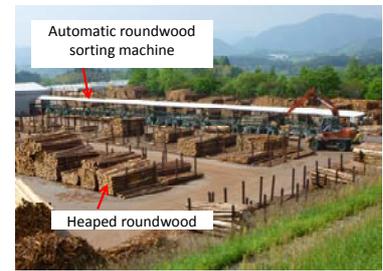


Fig. I-3: Pictures of markets (Up: Log auction market; Down: Wood products market)

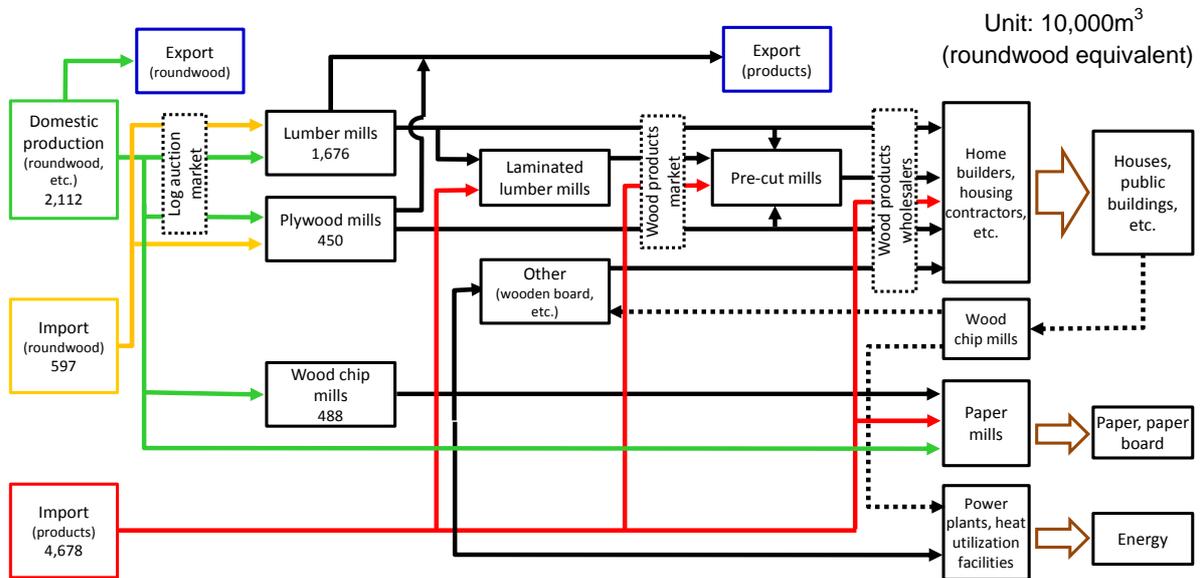


Fig. I-4: Overview of wood processing and distribution

2. Changes in Wood Demand/Supply and Responses by Wood Products Industry

2.1. Demand Expansion Period (After World War II to Around 1973)

During the recovery period after World War II and the subsequent rapid economic growth period, wood demand expanded due to increases in new housing starts and paper and paperboard production (Fig.I-5). In response to the demand, domestic wood supply increased in the beginning. However, its upward trend peaked out in 1967 due to the constraint of forest resources that were available at that time.

Accordingly, roundwood importation was liberalized. As a result, the volume of imported roundwood increased by eight times from 1960 to 1973. The volume of wood import exceeded that of domestic wood supply since 1969.

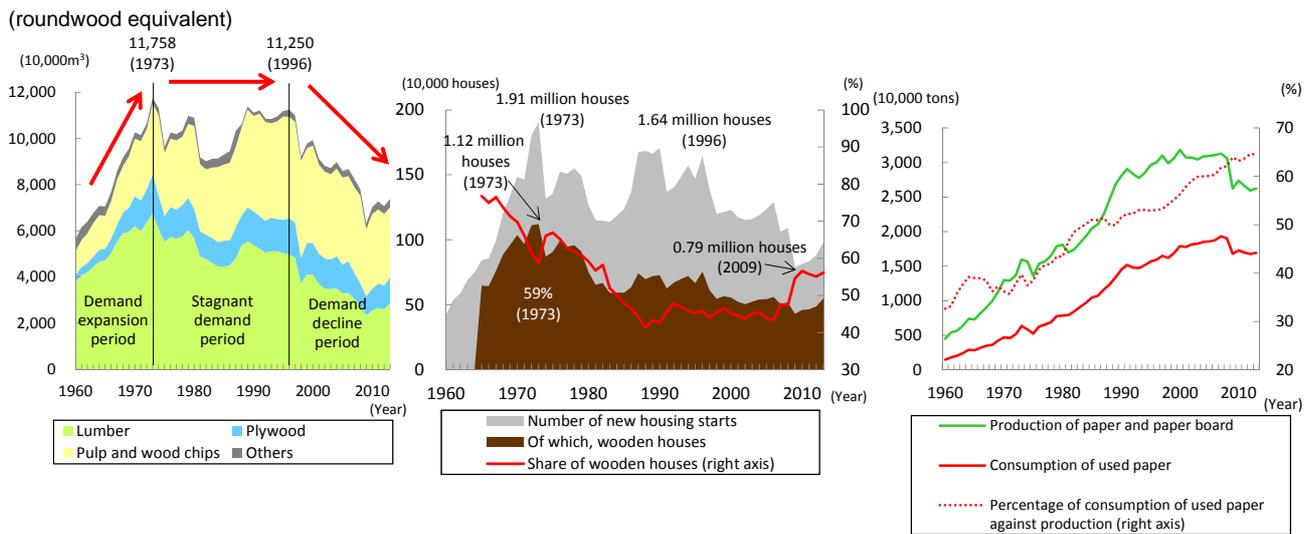


Fig. I-5: Wood demand, number of new housing starts, and production of paper and paperboard

Under such circumstances, small-sized lumber mills increased mainly in mountainous forestry areas, and large mills that processed imported roundwood were constructed in the coastal areas since 1955.

The plywood industry, that imported south-sea roundwood as raw material, achieved rapid growth through export in the beginning and domestic sales thereafter. The wood chip industry expanded its production by mainly consuming mill residue wood and hardwood.

Auction markets for transaction of domestic roundwood and lumber had developed as they were suitable for small-sized entities while trading companies played leading roles in transaction of imported wood.

2.2. Stagnant Demand Period (From Around 1973 to Around 1996)

After peaking out in 1973, wood demand fluctuated and then stayed at around 100 million m³. Wood demand for lumber and plywood began to decline due to decrease in the number of new housing starts. On the other hand, wood demand for chip and pulp production increased due to an increase of paper and paperboard production and reached a record high in 1995.

Continued decline of wood prices and increase of forest management costs, made profitability of forestry to be deteriorated and made log harvesting activities stagnant. In this situation, domestic wood supply declined until 2002.

On the other hand, the volume of imported wood increased and reached a record high in 1996. The volume of imported wood products continued to increase and exceeded that of imported roundwood in 1987 while the volume of imported roundwood peaked out in 1973 (Fig.I-6).

(roundwood equivalent)

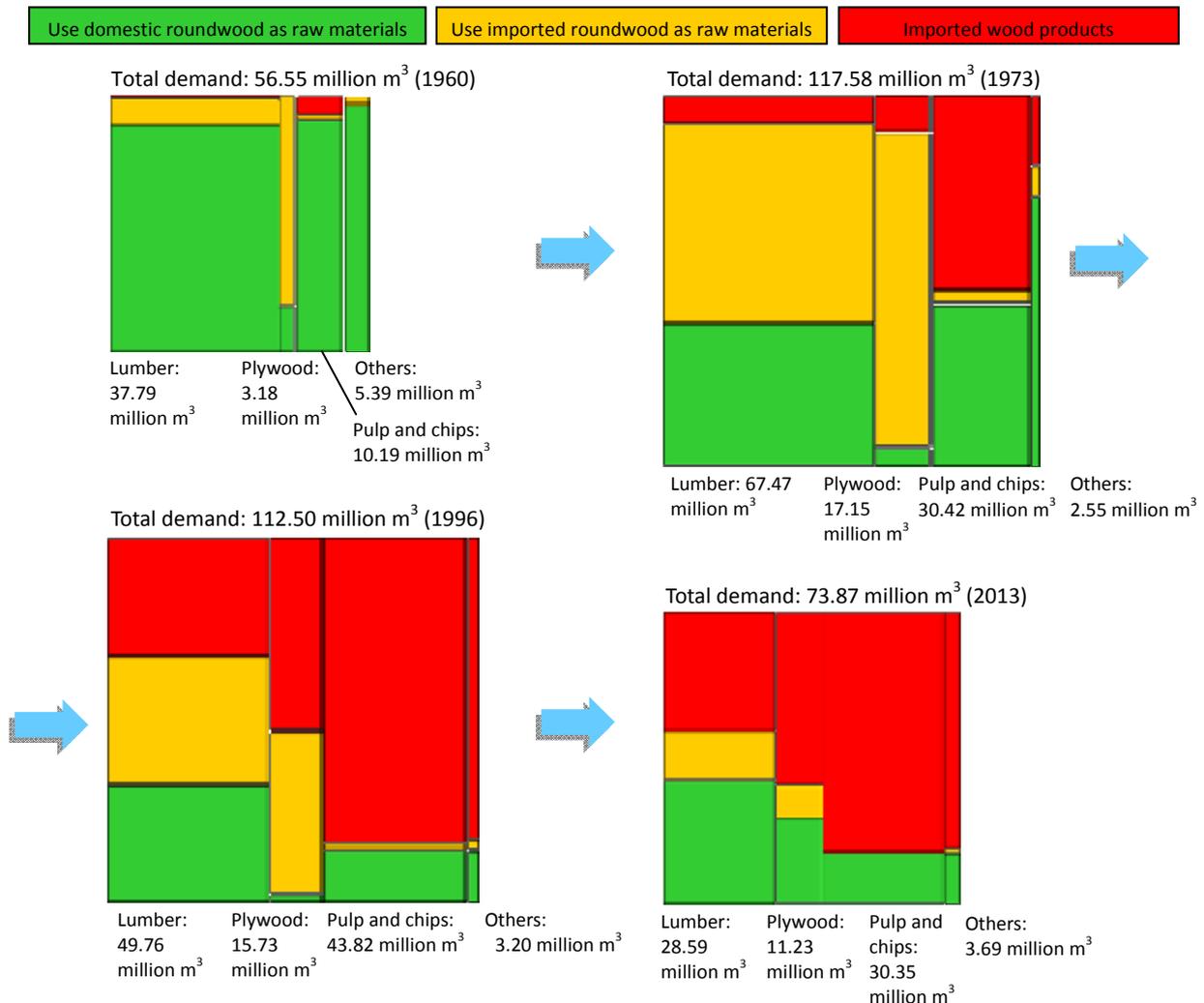


Fig. I-6: Changes in the composition of wood demand

During this period, the number of mills sawing imported roundwood decreased and some mills started to regroup.

Plywood production decreased sharply due to a decline in the import of south-sea roundwood especially after the latter half of the 1980s, and the use of softwood, such as north-sea roundwood, started to expand.

Use of pre-cut lumber expanded in the construction sites of wooden houses. With increasing number of pre-cut mills, use of kiln-dried lumber and laminated lumber increased.

Domestic wood chip production decreased since 1991 due to increase in import of wood chips.

Although transaction volume in the log auction market increased, that in the wood products market continued to decrease.

2.3. Demand Decline Period (Around 1996 –)

Wood demand was on a declining trend and dropped below 70 million m³ in 2009 for the first time in 46 years. Since around 1996, decline in wood demand for lumber and plywood was accelerated due

to a decrease in number of new housing starts, and wood demand for chip and pulp production decreased.

The volume of domestic wood production bottomed out in 2002 and turned to upward trend. Increasing use of thinned wood for plywood production contributed to this trend (Fig. I-7).

Import of roundwood has been decreasing. Import of wood products decreased after hitting a peak in 1997.

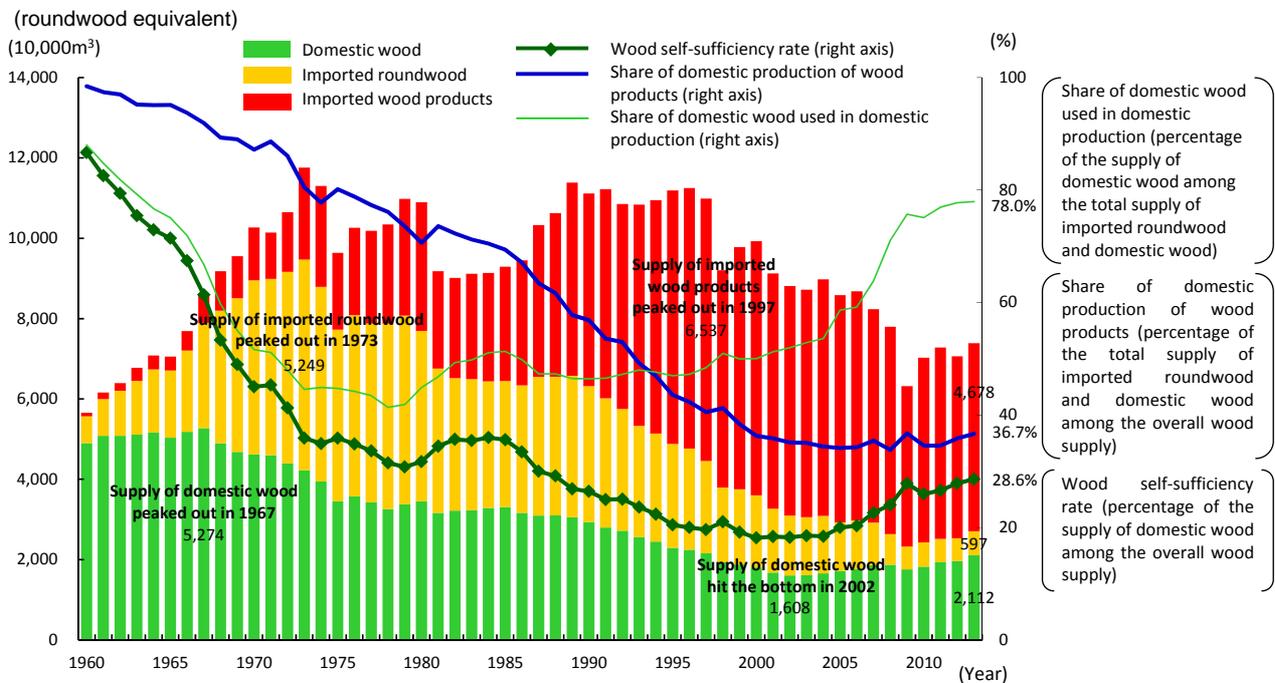


Fig. I-7: Changes in wood supply (by domestic wood, imported roundwood, and imported wood products)

In 2003, more domestic roundwood supplied than imported roundwood while the number of lumber mills in Japan continued to decrease. Supply of domestic roundwood has been on an increasing trend thereafter.

In the context with increasing use of pre-cut lumber in wooden houses and review of building legislation after the Great Hanshin-Awaji Earthquake, the demand for kiln-dried lumber and laminated lumber whose quality and performance are stable, increased.

Supported by technical improvement of rotary lathes and use of thick plywood for houses, production of plywood made from domestic roundwood, such as thinned wood, increased.

The use of thinned softwood, as well as construction refuse wood, for wood chips has increased while that of hardwood and mill residue wood has decreased.

Pre-cut mills have become bases for wood processing and distribution as they procure lumber and laminated lumber process them to structural members and supplying them.

3. Recent Trend in the Wood Products Industry and Future Challenges

3.1. Recent Trend in the Wood Products Industry

Wood demand in Japan is showing signs of recovery after hitting the bottom in 2009 but still remains below the level of 2008 and before. To expand overall wood demand, wood use in the non-residential sector such as public buildings, the civil engineering sector and the woody biomass sector, in addition to housing sector and paper and paperboard sector, is expected.

Planted forest resources, in particular, are now ready for harvest in Japan. To utilize such resources, building an efficient and stable wood supply system, in response to changing demands, is one of challenges for forestry and the wood products industry.

Wood import has been on a declining trend, but imported wood still accounts for more than 70% of the total wood demand of which approximately 90%, is imported in the form of wood products. It represents that only around 40% of all the wood products in Japan is produced domestically.

In the meantime, the share of domestic roundwood consumed by the wood processing industry in Japan has risen to nearly 80%. In 2014, the forestry sector and wood products industry sector released the first-ever joint action declaration on the further promotion of wood use.

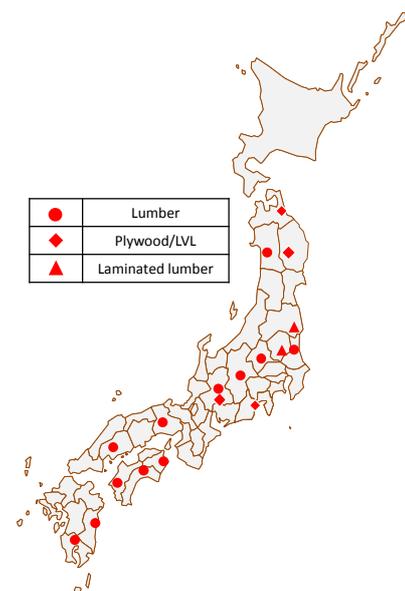
3.2. Challenges to be tackled by the Wood Products Industry

In order to strengthen the competitiveness of the wood products industry, it needs to supply wood products in a way that it meets consumers' and demanders' requirements in terms of quality, quantity and time of delivery, while securing stable procurement of roundwood. In recent years, large scale lumber mills have been newly constructed in inland areas with easy access to domestic forest resources (Fig.I-8). Research and development is also important in products areas where imported wood products have dominant shares such as housing beams and plywood for concrete forming.

With the aim of creating new wood demand, it is necessary to develop and commercialize new products and technologies, including Cross Laminated Timber (CLT), wooden fireproof materials and cellulose nanofiber, and to increase exports of wooden products.

It is also necessary that those concerned with the forestry sector collaborate and cooperate with each other to build an efficient and stable roundwood supply system to better respond to the demand of the wood products industry. To this end, additional measures need to be taken to expedite consolidation of forestry practices, development of forestry road systems, promotion of mechanization, and reduction of costs required for replanting after regeneration cutting and treatment of the planted sites. Expansion of forest certification is another challenge.

Support by the national and local governments to create an enabling environment for those activities as well as understanding of consumers need to be enhanced.



Lumber mills, plywood/LVL mills, and laminated lumber mills newly constructed in 2010 onward whose annual consumption of domestic wood as of the end of March 2015 was 30,000m³ or more (roundwood equivalent)

Fig. I-8: Major large mills newly constructed in recent years

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, with a total forested area of 25 million hectares. Approximately 40% of these forests are artificially planted forests. The total growing stock is increasing by around 100 million m³ annually, and has now reached approximately 4.9 billion m³ (Fig.II-1).

Forests now provide a variety of goods and services indispensable for people's lives and national economy in Japan through the fulfilment of multiple functions such as land conservation, watershed conservation, and mitigation of global warming, among others.

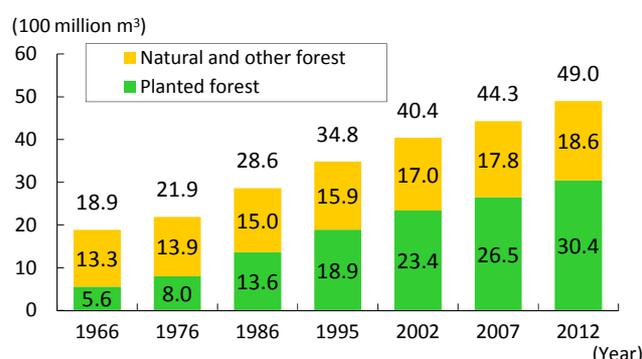


Fig. II-1: Growing stock in forest

1.2. Fundamental Policy on Forest and Forestry

Forest management and conservation activities are being implemented based on the “Forest and Forestry Basic Plan” (July 2011) which was formulated in accordance with the “Forest and Forestry Basic Act” as well as the “National Forest Plan” (October 2013), formulated in accordance with the “Forest Act.”

National strategies, the “Japan Revitalization Strategy” and the “Plan for Creating Dynamism through Agriculture, Forestry and Fishery Industries and Local Communities” state such objectives as transforming forestry into a growth industry through the creation of new wood demand and promoting forest sink activities through forest management and conservation in view of enhancing contribution of the forest sectors to the mitigation of global warming.

2. Forest Management

2.1. Promotion of Forest Management

Thinning practices and replanting after regeneration cutting, which are crucial for the maintenance of forest conditions, have been carried out while promoting proper use of forest resources. In some forests, depending on the respective locational conditions, management practices for developing multi-storied forests and long-rotation management have been conducted. It is necessary to carry out thinning as extensively as a total of 520 thousand hectares annually in order to ensure the carbon sequestration required for achieving Japan's greenhouse gas (GHG) emission reduction target. In FY2013, the total area of thinned forests was 520,000 hectares as the same as the target.

The urgent challenge is how to secure stable financial resources for forest management to back up thinning practices required for meeting the GHG emission reduction target, while currently such forest management is implemented by national programs.

The revised “Forest Act” in 2011 introduced the administrative order system to halt logging which has been practiced without giving notification to the authority and oblige those loggers to replant on the site as well as the assurance system of proper management of forests even in cases where the forest owners are unidentified. The Forestry Agency is conducting a survey on forest acquisition by foreigners and 14 cases (totaling 194 hectares) were reported in 2013.

Stable supply of seedlings, which are prerequisite for replanting after regeneration cutting, is also important. The Forestry Agency has been promoting expansion of the production of seedlings raised in the container (Fig.II-2) as well as the development of second-generation elite trees. Countermeasures against pollen dust through, *inter alia*, supplying seedlings of low-pollen Japanese cedar variations is posing a pressing need (Fig.II-3).

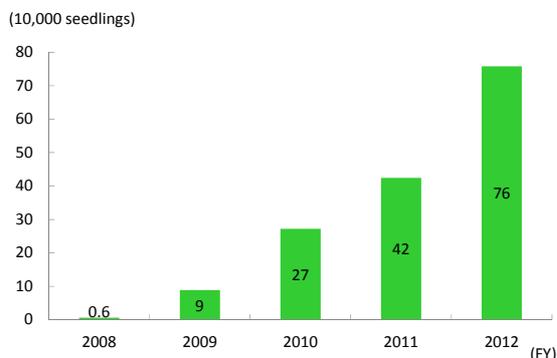


Fig. II-2: The production volume of seedlings raised in the container

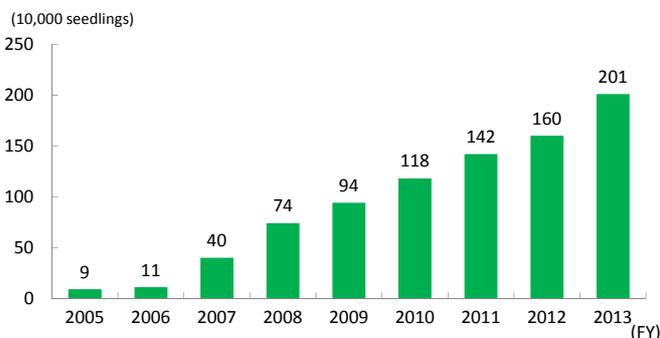


Fig. II-3: The production volume of seedlings of low-pollen Japanese cedar

2.2. People's Participation in Forest Management

In May 2014, the 65th National Tree Planting Ceremony was held in Niigata Prefecture, followed by the 38th National Tree Tending Ceremony held in Yamagata 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 Fundraising Campaign" (approximately 2.3 billion yen was collected in 2013).

35 of 47 prefectures have introduced their own local taxation systems with the objective of supporting forest management activities (total revenue collected through the taxation system was estimated to amount to 28.3 billion yen in FY2014).

2.3. Research & Development and Dissemination

Based on the "National Research and Development Strategy in the Forest, Forestry, and Wood Products Industry" established in September 2012, the national government in cooperation with the Forestry and Forest Products Research Institute and prefectural governments is conducting research and development to provide solutions for current policy challenges.

The Forestry Agency has been developing technical experts with considerable knowledge and expertise in forest and forestry ("Foresters"). Since FY2014, those who passed an examination have come to be registered as certified Foresters, whose information is made public.

3. Forest Conservation

3.1. Protection Forests

Forests providing particularly important public benefits, including watershed conservation and soil loss prevention, are designated as "protection forests," which have reached 12.12 million hectares as of FY2013. Even in other forests than protection forests, the land development control system is applied in accordance with the "Forest Act" to regulate the development of forests into other land uses.

3.2. Disaster Control

In response to natural disasters which occurred in mountainous areas, the Forestry Agency dispatched technical officials to the damaged areas to conduct surveys of the extent of the damage as well as to elaborate recovery work.

The Forestry Agency and prefectural governments conduct “forest conservation projects.” The projects include installation of disaster control facilities, replanting trees for the stabilization of mountain slopes, restoration of devastated mountain streams and development of coastal disaster-prevention forests.

3.3. Conservation of Forest Biodiversity

The Forestry Agency is promoting appropriate thinning, the development of ecologically diversified forests and the conservation of wilderness forest ecosystems, based on the “National Biodiversity Strategy of Japan 2012-2020,” which was adopted by the Government of Japan (GOJ) in September 2012.

The Forestry Agency is also promoting the conservation of forests including those identified as World Heritage sites. In 2014, “Tadami” and “Minami-Alps” were newly added to the World Network of Biosphere Reserves while the area of the “Shiga Highlands Biosphere Reserve” was expanded.

3.4. Wildlife and Pest Control

In FY2013, approximately 9,000 hectares of forests were damaged by wild animals grazing trees and undergrowth, 80% of which was caused by deer (Fig.II-4). This serious situation has been caused by increased population of deer and the expansion of their habitat.

Installation and maintenance of protective fences as well as control of wildlife population through capturing have been promoted. New methods to capture wildlife in an effective manner are being experimented with and developed.

In FY2013, the volume of pine trees damaged by the pinewood nematode (*Bursaphelenchus xylophilus*) stood at 630 thousand m³, approximately one-fourth of its peak, but such damage is still the worst among all forest pests and diseases in Japan. The volume of damage to *Quercus* spp. and *Castanopsis* spp. trees caused by the oak platypodid beetle (*Platypus quercivorus*) was 50 thousand m³, approximately one-sixth of its recently peak year, FY2010. The Forestry Agency is implementing preventive measures through the application of chemicals as well as logging and fumigation of affected trees.

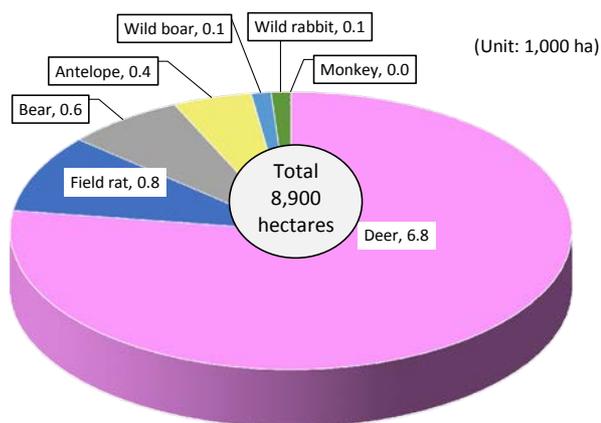


Fig. II-4: Area of forests damaged by major wild animals in FY2013

4. International Cooperation

4.1. Promotion of Sustainable Forest Management

As of 2010, the worldwide forest area was 4.03 billion hectares, or 31% of the total land area. During the decade between 2000 and 2010, the world’s forest area decreased by 5.21 million hectares annually. In Africa and South America, more than 3.00 million hectares of forests were lost respectively on an annual basis, while in Asia, the forest area increased by 2.24 million hectares annually mainly due to large-scale afforestation in China (Fig.II-5).

The development of international criteria and indicators (C&I) for sustainable forest management is underway. Japan is a member of the Montreal Process for the conservation and sustainable management of temperate and boreal forests consisting of Pan-Pacific 12 countries.

Illegal logging hinders the efforts toward sustainable management of forests. The GOJ is promoting international efforts to combat illegal logging in this regard.

Forest certification is a private-sector instrument aiming to advocate consumers' purchase of legally produced wood products for the promotion of sustainable forest management. In Japan, two forest certification schemes, namely the Forest Stewardship Council (FSC), an international

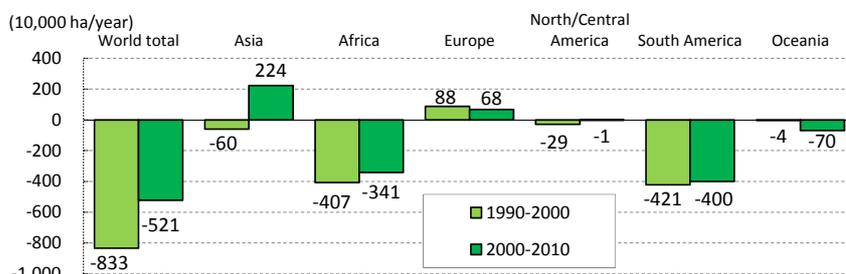


Fig. II-5: Changes in worldwide forest area (by region)

organ, and the Sustainable Green Ecosystem Council (SGEC), an independent organization operating in Japan, have been carrying out such initiatives. The percentage of certificated forests in Japan is relatively low compared to those in European and North American countries.

4.2. Global Warming and Forests

Measures against global warming are being promoted under international frameworks, in particular the United Nations Framework Convention on Climate Change (UNFCCC).

For the “First Commitment Period” (2008 to 2012) of the Kyoto Protocol, Japan aimed to remove 3.8% of its 1990 level greenhouse gas (GHG) emissions, where its national emission reduction commitment was 6%, through the promotion of forest sink activities, including by thinning on the planted forests of an average of 550,000 hectares per year (Japan achieved an 8.4% reduction from the 1990 level against the target of a 6% reduction).

For its FY2020 emission reduction goal (i.e. 3.8% reduction compared to the FY2005 level), Japan is to achieve at least 2.8% through promotion of forest sink activities (thinning of the planted forests must be carried out as extensively as 520,000 hectares per year) (Fig.II-6).

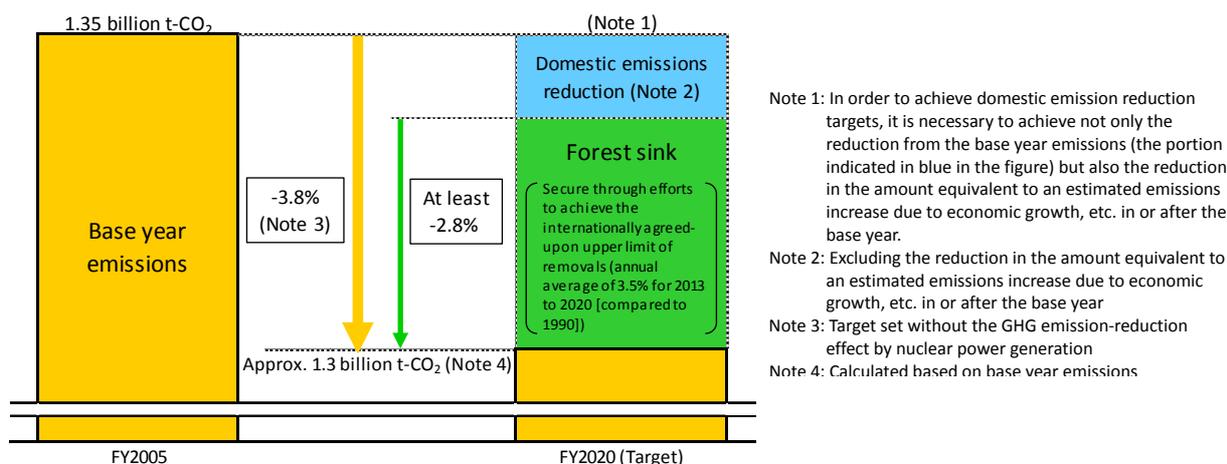


Fig. II-6: Forest sink activities in GHG reduction target

In addition, the GOJ has been promoting the REDD+ initiative, the Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. Programs on adaptation to climate change are also under consideration.

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 December 2014, the Convention on Biological Diversity has been signed by 193 countries and the European Union (EU).

4.4. Japan's Cooperation

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

Chapter III Forestry and Rural Mountain Communities

1. Forestry

1.1. Forestry Production

In 2013, the value of gross forestry production was 432.2 billion yen, a 10% increase from the previous year, but it has a declining trend in a long term since the peak in 1980. Among the values of gross forestry production, wood production and mushroom production each account for half of the total (Fig.III-1).

The volume of domestic roundwood production bottomed out at 15.09 million m³ in 2002 and it stood at 19.65 million m³ in 2013 (Fig.III-2). By tree species, the volume of *sugi* (Japanese cedar) production was the largest 10.90 million m³ (56%), followed by *hinoki* (Japanese cypress) at 2.30 million m³ (12%), and *karamatsu* (larch) at 2.26 million m³ (12%). By region, that with the largest production was Tohoku (24%), followed by Kyushu (24%), and Hokkaido (17%).

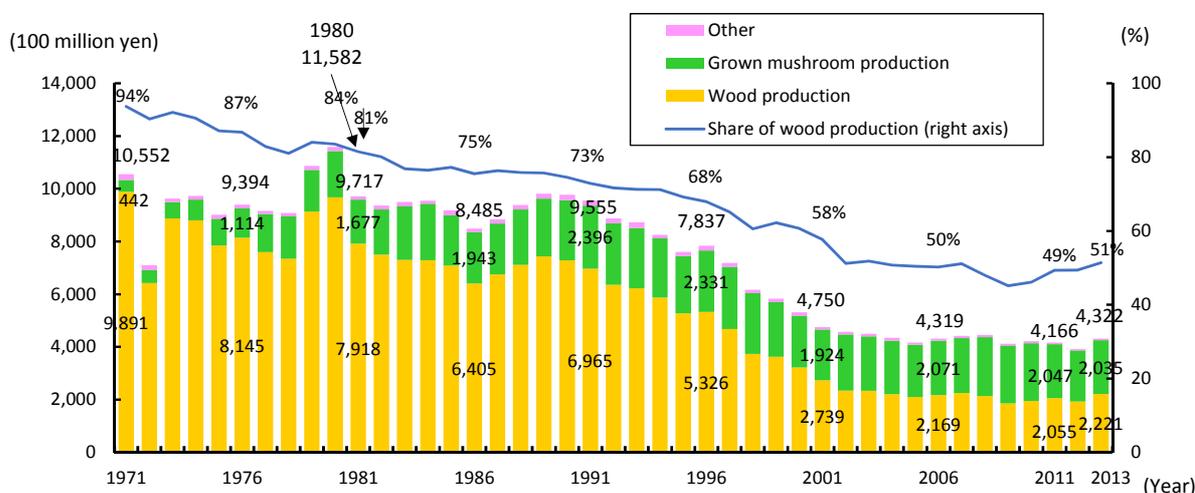


Fig. III-1: The value of gross forestry production

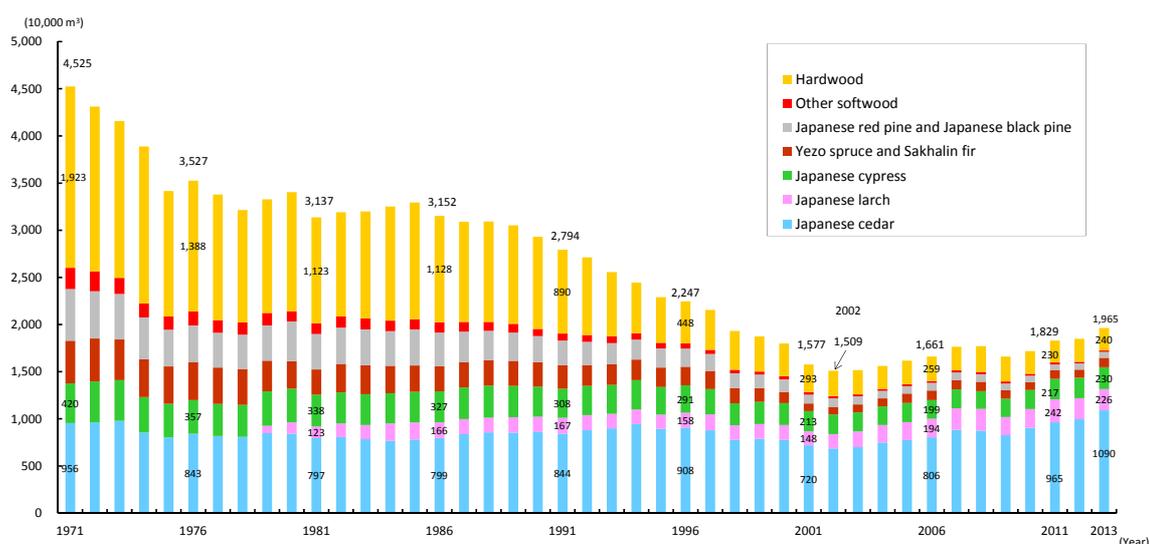


Fig. III-2: The volume of domestic wood production

1.2. Forestry Management

In Japan, most of the private forests are owned by a large number of small scale forest owners.

Aging of forest owners and increasing number of forest owners who live away from their forests make it more onerous to identify forest owners and forest boundaries. The revised “Forest Act” in 2011 introduced a mandatory notification system that requires new forest owners to register with the local municipality and also promotes the sharing of forest owners’ information within relevant departments of local governments. Cadastral surveys are being conducted in forests.

Small portion of forest owners depends for their livelihood on the income derived from forestry activities. Generally, small-scale forest owners entrust the management of their forests with others such as the Forest Owners’ Cooperatives, but some of them conduct thinning operations by themselves and transport the thinned wood to sell to chip mills, firewood consumers or woody biomass energy plants.

The Forest Owners’ Cooperatives are major forest management bodies, accounting for more than half of forestry activities, including planting, weeding and thinning. Approximately 70% of regeneration cutting is conducted by private forestry contractors.

1.3. Improvement of Forestry Productivity

To improve forestry productivity, the “coordination and consolidation of forestry practices” among groups of small-scale forest owners is necessary. To this end, the Forestry Agency is implementing the training program for “Forest Management Planners” who should lead proposal-based coordination with forest owners and consolidation of forestry practices, taking major responsibility in operating 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.

It is a matter of importance 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. Fostering technical experts who can implement the planning and construction of forestry road systems is also needed.

Furthermore, it is significant to expand the efficient log production system utilizing forestry machines (Fig.III-3) and to develop and improve the performance of those machines that is suitable for the forest conditions in Japan.

To improve the working efficiency of planting of seedlings and treatment of saplings, new technologies such as growing seedlings in containers and planting large seedlings with fewer numbers per unit area, are being developed.

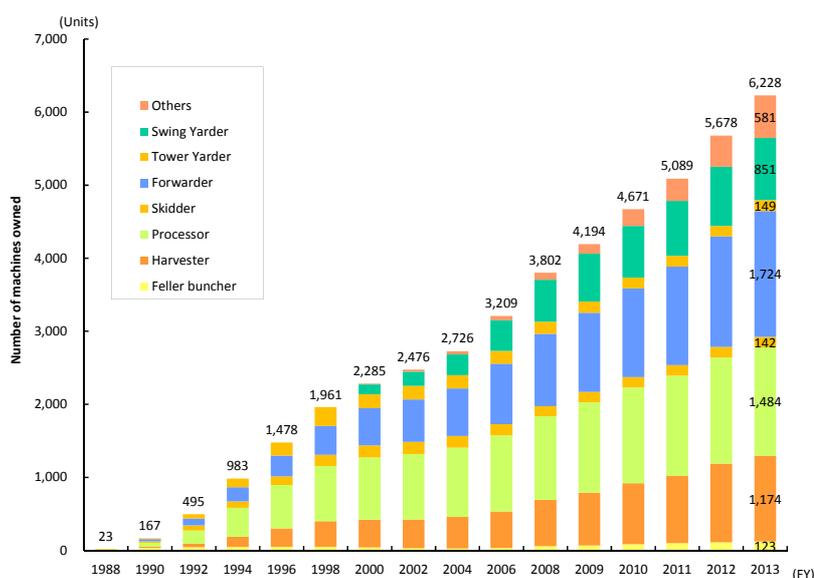


Fig. III-3: Number of advanced forestry machines

1.4. Forestry Workforce

In recent years, there have been signs that the decrease in the size of the forestry workforce is bottoming out (approximately 51,000 in 2010). The share of aged workforce (aged 65 or older) still remains high at 21%, however, the ratio of the young workforce (aged 35 or younger) has risen up to 18% (Fig.III-4).

Since FY2003, the Forestry Agency has been implementing the “Green Employment Program” to teach introductory skills and basic forestry knowledge to new workers. The outcome of the Program has led to a significant increase in the number of new forestry workers (Fig.III-5).

The Forestry Agency is also promoting to educate forestry workers who own advanced knowledge and skills in stages and systematically.

The forestry industry’s occupational accident rate remains high, and therefore the development of safe working environments is crucial.

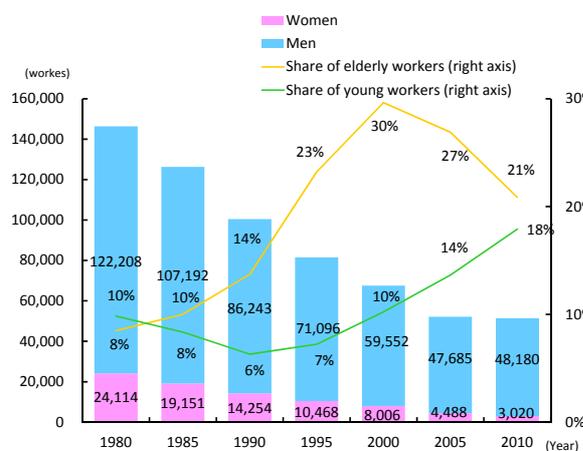


Fig. III-4: Number of forestry workers

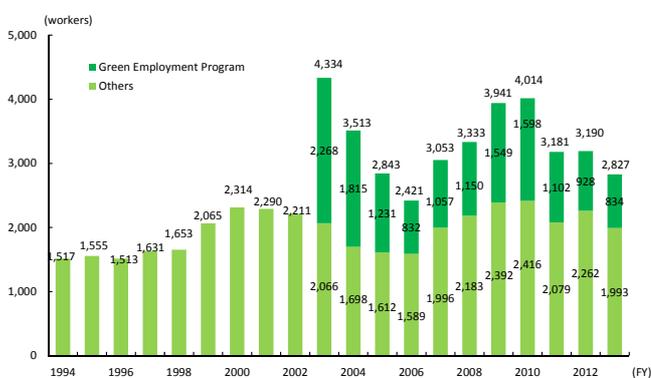


Fig. III-5: Number of new entrants to forestry workforce

2. Non-Wood Forest Products

In 2013, the total value of non-wood forest products production was 261.5 billion yen, of which nearly 90% was derived from mushroom production. Mushroom production has been decreasing since 2011 and was 458,000 tons in 2013, a 1% decrease from the previous year. The number of households producing mushrooms has also been decreasing, particularly in *shiitake* mushrooms.

In 2013, the price of fresh *shiitake* mushrooms rose, while that of dried *shiitake* mushrooms declined. The Forestry Agency is supporting initiatives to expand consumption and stabilize supply of mushrooms.



New initiative concerning firewood: Produce and sell firewood made of larch that is superior in combustibility and can be stored for periods

Production of firewood has been on an increasing trend since 2007 and was 53,000 m³ in 2013. Production of charcoal has been declining in a long term and was 30,000 tons in 2013. Production of bamboo to be used for products such as paper has been increasing since 2010. In addition, wild vegetables, medicinal herbs and lacquer are also produced as non-wood forest products.

3. Rural Mountain Communities

3.1. Current state of Rural Mountain Communities

Rural mountain communities, where people engaging 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 of rural mountain communities as they are equipped with rich forest and water resources, beautiful landscapes, traditions and cultures.

3.2. Revitalization of Rural Mountain Communities

The comprehensive strategy for regional revitalization, which was established in December 2014 by the GOJ, states that it is necessary to transform forestry into a growth industry, while ensuring circular utilization of forest resources.

The Forestry Agency promotes the development of forestry and wood products industries, which are backbone of industries in rural areas as well as the creation of new businesses that utilize forest resources, including energy generation from woody biomass. In March 2015, the “Mountain Villages Development Act” was revised and extended with the aim of enhancing measures for developing rural mountain communities.

The Forestry Agency supports initiatives by self-harvesting forest owners and other local residents to conserve and revitalize *satoyama* forests and increase utilization of forest resources. The GOJ further promotes effective communication between rural mountain communities and urban societies through hands-on activities in agriculture, forestry and fishery; use of forests for therapeutic activities; and forest environmental education.



Revitalization of a local community through effective utilization of bamboo forest resources: Use chipped bamboo for soil improvement for agriculture

Chapter IV Wood Demand/Supply and Wood Use

1. Demand and Supply

1.1. World Wood Demand and Supply

The total volume of industrial roundwood consumption in the global level had decreased since the autumn of 2008 but turned to increase again in 2010. Sawn softwood consumption is recovering in North America but continues to remain stagnant in Europe, where export of sawn softwood increased.

In Russia, exports of industrial roundwood are decreasing, while exports of sawn softwood are increasing. China is increasing both imports of industrial roundwood and exports of plywood.

1.2. Wood Demand and Supply in Japan

Japan's wood demand is showing signs of recovery after hitting the bottom in 2009 and increased by 4.6% from the previous year in 2013, reaching 73.87 million m³ (roundwood equivalent), with increase in the number of new housing starts.

Domestic wood supply has been increasing since bottoming out in 2002. In 2013, it increased by 7.3% from the previous year, reaching 21.12 million m³ (roundwood equivalent).

The volume of imported wood increased to 52.75 million m³ (roundwood equivalent), up by 3.5% from the previous year, due to the increase in the total demand, in 2013.

The self-sufficiency rate for wood has been recovering since bottoming out in 2002, and was 28.6% in 2013, up by 0.7 points from the previous year.

1.3. Wood Prices

Price for domestic log increased in 2013, especially toward the yearend, due to favorable demand from the housing sector. The price was on a decline in the beginning of 2014 but the annual average price exceeded the level of the previous year (Fig.IV-1).

The prices of wood products (lumber, plywood and wood chips) also increased in 2014.

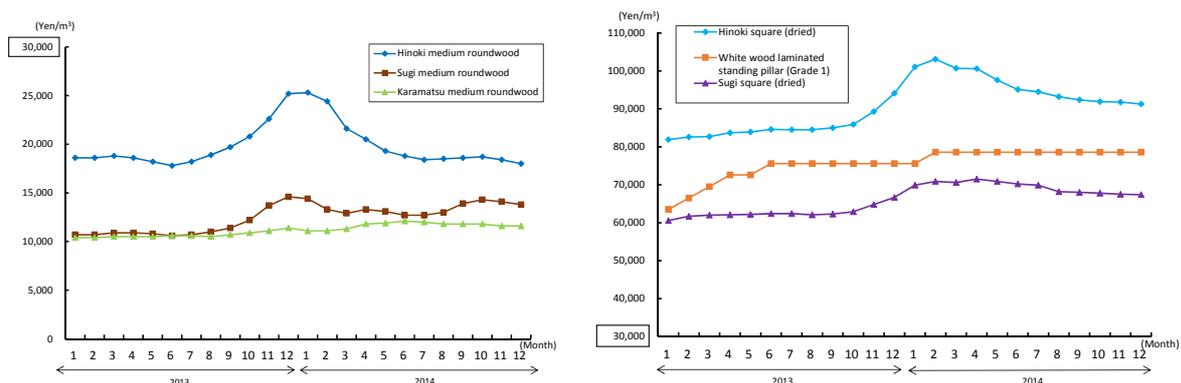


Fig. IV-1: Wood prices in Japan (2013-2014)

1.4. Combating Illegal Logging

The GOJ promotes the use of legally and sustainably produced wood products based on a basic philosophy of “not using wood products from illegal logging.”

Based on the “Basic Guidelines for Green Purchasing,” the GOJ uses wood products with certified

legality and sustainability in government procurements. It is also engaging in dissemination activities that encourage private companies and general consumers to use legally-harvested wood products.

1.5. Wood Exports

In 2014, the value of wood exports reached 17.8 billion yen, a 45% increase from the previous year. Roundwood exports showed particular growth.

The Ministry of Agriculture, Forestry and Fisheries (MAFF) sets a target of increasing forest products exports from 12.3 billion yen in 2012 (of which wood products accounted for 9.3 billion yen) to 25.0 billion yen by 2020.

Export of domestic wood has been promoted including through exhibiting domestic wood at housing exhibits abroad and participating in the revision work of Chinese wooden building standards.

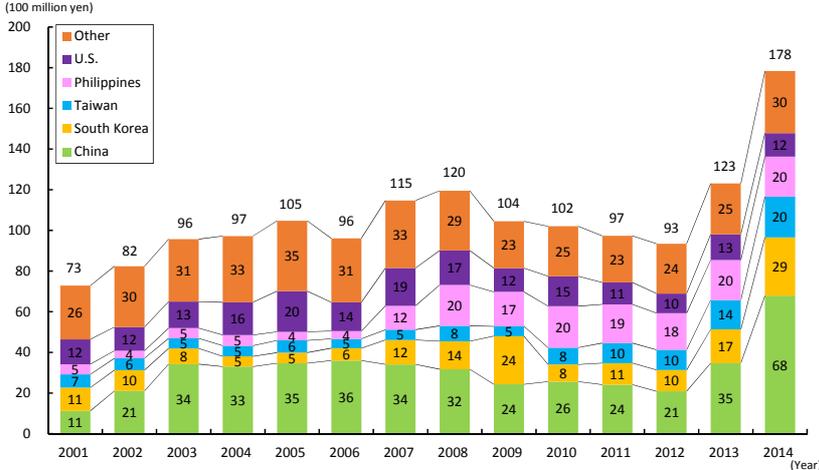


Fig. IV-2: Japan's wood exports

2. Wood Use

2.1. Significance and Dissemination of Wood Use

The use of wood materials contributes to mitigation of global warming, sustainable demonstration of forests' multiple functions and vitalization of local communities, as well as to help create comfortable and healthy living circumstances.

The Forestry Agency is promoting the "Kizukai" (attention to wood use) initiative to educate ordinary consumers on the significance of wood use as well as the "Mokuiku" (wood use education) initiative to give children and adults an opportunity to gain familiarity with wood and learn about wood culture.

2.2. Wood Use in Housing Sector

In Japan, approximately 40% of wood demand and more than half of demand for domestic wood are for building construction. Approximately half of new housing starts in Japan are wooden constructions. Use of pre-cut lumber is expanding at construction sites.

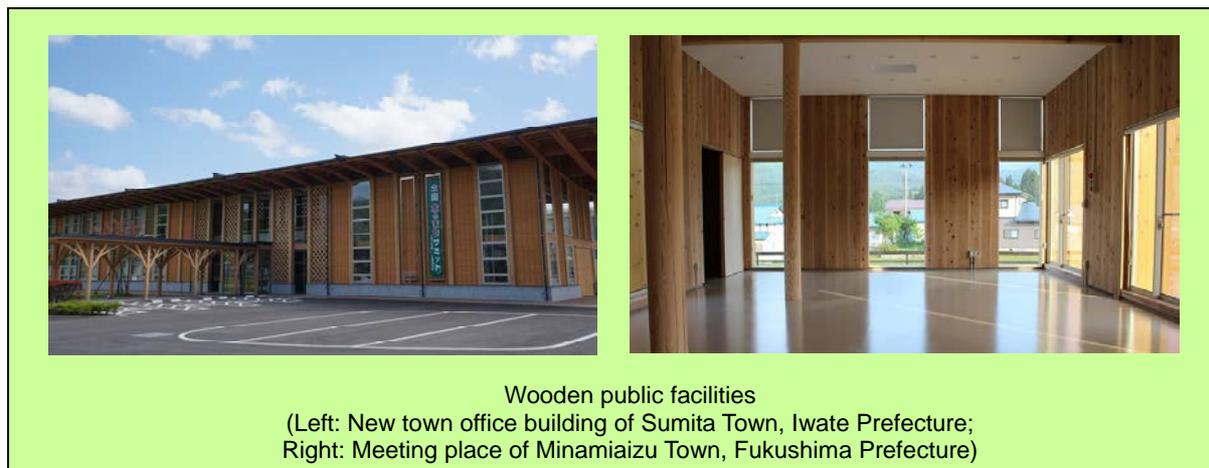
Efforts are being made for developing systems for processing and distributing wood that can respond to the needs of housing manufacturers. Local housing projects are also promoted, which support cooperation among forest owners, log producers, lumber producers, and local home builders.



2.3. Wooden Public Buildings

The “Public Buildings Wood Use Promotion Act” was enacted in 2010 with the aim of promoting wood use mainly in public buildings, many of which are not made of wood. In FY2013, the national government constructed 484 low-rise public buildings, out of which 24 were made with a wooden structure and 161 public buildings were renovated with wooden exterior/interiors.

Construction of wooden school buildings and other public buildings has been promoted and building standards for three-story wooden school buildings were revised in June 2014.



2.4. Energy Use of Woody Biomass

The “Forest and Forestry Basic Plan,” revised in July 2011, set a target of wood use for pulp/chip production including fuel use at six million m³ by 2020. Utilization of unused thinned wood (estimated at 20 million m³ annually) is crucial for achieving the target.

In recent years, boilers and stoves fueled with woody biomass are being introduced and used in public facilities and ordinary homes as well as for horticulture facilities, and production of wood pellet is increasing.

Woody biomass power plants are being developed in various areas utilizing the “Feed-in Tariff (FIT) Scheme for Renewable Energy” (introduced in July 2012). While woody biomass is expected to contribute to local economies, it is necessary to ensure stable supply.

Chapter V National Forest Management

1. Roles of National Forests

1.1. Distribution of National Forests and Their Roles Expected

National Forests 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, 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 National Forests.

1.2. National Forest Management

National forests, an important asset of the country, are managed 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

The Forestry Agency manages national forests in accordance with the five forest types categorized based on the functions they are primarily expected to play, namely “landslide prevention,” “natural conservation,” “recreational use,” “comfortable environment development” and “watershed conservation.” It implements the forest conservation projects aiming at the restoration of devastated areas to maintain protection forests. The restoration project is carried out by the Forestry Agency in private forests where their damage is severe.

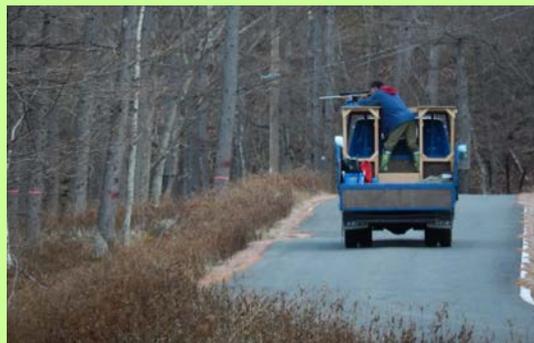
In managing national forests, some key thematic activities such as thinning as a forest sink activity and wood use in forest conservation projects are also pursued.

Furthermore, in order to conserve biodiversity, the Forestry Agency designates and manages “Protected Forests” which have seven classifications, including Forest Ecosystem Reserves as well as “Green Corridors.” It is also executing measures to deal with damage by deer and other wild animals.

Based on “Agreements for Maintenance and Development of the Public Benefits of Forests” with private forest owners, the Forestry Agency manages private forests located in close proximity to national forests in an integrated manner. It has concluded five agreements for forests of 143 hectares as of the end of FY2013.



Promotion of wood use in construction of conservation facilities



Countermeasures against deer damage

2.2. Contribution to Forest and Forestry Revitalization

In accordance with the National Forest Management Program, the Forest Agency is (i) developing and disseminating technologies for low-cost forest practices, such as utilization of seedlings raised in containers and consistent operation of harvesting and planting, (ii) developing human resources including forestry contractors and technical experts (“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 major wood processing companies, such as large-scale lumber mills or plywood factories. It is notable that in FY2013, roundwood supply by “System Sales” contracts accounted for 50% of the whole roundwood supply by the national forests.

2.3. National Forests as “Forests for People”

In accordance with the National Forest Management Program, the Forestry Agency provides various organizations with access to field activities such as forest environmental education and forest management and conservation, by designating such fields as “Forests for Students,” “Forests for Voluntary Groups,” “Forests for Wood Culture,” and “Forests for Corporations.” It further implements model projects in collaboration with local parties and nature conservation groups.

Some of the fields in the national forest can be lent to local governments and local residents. “Recreational Forests” are managed and administered in partnership with those concerned in local communities.

For the recovery and reconstruction following the Great East Japan Earthquake, the Forestry Agency is implementing the restoration of coastal disaster-prevention forests within the national forests devastated by the great tsunami as well as the decontamination of national forests contaminated by the nuclear accident of the Fukushima Nuclear Power Stations of Tokyo Electric Power Company (TEPCO). 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

Following the Great East Japan Earthquake, there were reports of damaged forest conservation facilities and forest roads as well as collapsed hillslopes in 15 prefectures. Recovery works have been implemented in more than 90% of the damaged areas, the majority of which have already been completed.

As many as 115 wood processing/distribution facilities also suffered major damage by the earthquake throughout Japan. The Forestry Agency is helping those damaged firms to abolish, restore or reconstruct, while 98 of them have resumed operation to date.

1.2. Restoration of Coastal Forests

The tsunami caused by the Great East Japan Earthquake damaged a total of around 140km of coastal disaster-prevention forests in six prefectures.

The recovery works in the damaged coastal disaster-prevention forests are underway, with a timeline target of completing the recovery works within ten years. The recovery works have been commenced in a total of around 107km of coastal disaster-prevention forests, except for areas requiring adjustments with local reconstruction plans, while the works have been completed in 28km. Verification tests for various tree types and planting methods are also being conducted.

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



Planting ceremony

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

Local governments have provided approximately 54,000 “emergency temporary houses” with a quarter of those houses (approximately 15,000 houses) being built with a wooden structure. They also constructed or plan to construct approximately 7,000 public houses (reconstruction houses) with a wooden structure.

Also seen are moves to rebuild houses of victims affected by the disaster with wood constructions, along with initiatives to utilize wood in recovery and reconstruction works taking place in the civil engineering sector.



Public housing utilizing wood

A large amount of woody debris that occurred due to the earthquake and tsunami was used to produce wood-based panels and as a 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, power plants which burn wood as fuel input have already started operation.

2. Reconstruction from Nuclear Accident

2.1. Measures for Radioactive Materials in Forests

The GOJ and municipalities concerned are conducting decontamination work such as through removing fallen leaves and placing higher priority on forests in the neighborhood of communities.

Decontamination work in forests is carried out by the Ministry of the Environment (MoE) in the “Special Decontamination Areas,” by the local municipalities in the “Intensive Contamination Survey Areas” within private forests and by the Forestry Agency within national forests.

The Forestry Agency has been conducting a survey on the distribution of radioactive materials in forests on an ongoing basis as well as monitoring and verification tests on the performance of decontamination work in forests.

In implementing decontamination work which handles contaminated soils, as well as forest management activities in forests where spatial doses exceed 2.5 $\mu\text{Sv/h}$, dose measurement and other measures for the safety of the workers are ensured.

2.2. Supply of Safe Forest Products

As of December 2014, shipment restriction orders were effective with 22 non-wood forest products including mushrooms and wild plant shoots, in which radioactive cesium was found to exceed the standard values (100 Bq/kg for general food).

Shipment restrictions are lifted when it is determined that cultivation management is being practiced based on the “Guidelines Concerning Management of Mushroom Cultivation from Roundwood to Decrease Radioactive Cesium” (established in October 2013) and that no mushrooms exceeding the standard values are produced. The Forestry Agency is providing support for continuation or resumption of mushroom production.

In response to a decreasing supply of roundwood for cultivating mushrooms from Fukushima prefecture, the Forestry Agency is also providing matching assistance to help coordinate the supply and demand of roundwood used for mushroom production.

2.3. Disposal of Contaminated Bark and Roundwood for Mushroom Production

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

2.4. Damage Compensation

Forestry organizations and mushroom growers in Fukushima and other prefectures are requesting compensation for inconvenience in their business caused by evacuation orders as well as for damages and/or losses concerning roundwood for *shiitake* mushroom production. In September 2014, the acceptance of applications for the compensation for the loss of value in real estate pertaining to the forests in evacuation order areas started.

Appendix

1. Forestry-related Fundamental Figures

Item	Unit	1980	1995	2000	2005	2009	2010	2011	2012	2013
i Gross domestic product (GDP)	billion yen	242,838.7	495,165.5	502,989.9	503,903.0	471,138.7	482,384.4	471,310.8	475,110.4	480,128.0
Forestry (A)	billion yen	826.0	695.8	886.5	446.4	387.4	...	...	...	...
Forestry / GDP	%	0.34	0.14	0.17	0.09	0.08	...	...	...	...
Forestry (B)	billion yen	...	...	...	142.7	146.7	151.9	155.9	142.1	152.9
Forestry / GDP	%	...	...	...	0.03	0.03	0.03	0.03	0.03	0.03
ii Total number of workers	million	55.36	64.57	64.46	63.56	62.82	62.57	59.77	62.70	63.11
Forestry	million	0.19	0.09	0.07	0.06	0.06	0.08	0.07	0.08	0.08
Forestry / Total # of workers	%	0.34	0.14	0.11	0.09	0.10	0.13	0.12	0.13	0.13
iii Land area of Japan	million ha	37.77	37.78	37.79	37.79	37.79	37.79	37.79	37.79	37.79
iv Forest	million ha	25.28	25.15	25.15	25.12	25.10	25.10	25.10	25.08	25.08
Forest / Land area	%	67.8	67.5	67.5	67.4	67.3	67.3	67.3	67.3	67.3
v Conservation Forest	million ha	7.32	8.57	8.93	11.65	11.96	12.02	12.05	12.09	12.12
Conservation Forest / Forest	%	29.0	34.1	35.5	46.4	47.7	47.9	48.0	48.2	48.3
vi Growing stock of forest	billion m ³	2.5	3.5	3.5	4.0	4.4	4.4	4.4	4.9	4.9
vii Industrial wood supply/consumption	million m ³	108.96	111.92	99.26	85.86	63.21	70.25	72.73	70.63	73.87
Domestic production	million m ³	34.56	22.92	18.02	17.18	17.59	18.24	19.37	19.69	21.12
Import	million m ³	74.41	89.01	81.24	68.68	45.62	52.02	53.36	50.95	52.75
Self-sufficiency rate	%	31.7	20.5	18.2	20.0	27.8	26.0	26.6	27.9	28.6
viii New housing starts	million units	1.27	1.47	1.23	1.24	0.79	0.81	0.83	0.88	0.98
Ratio of wooden structure	%	59.2	45.3	45.2	43.9	54.6	56.6	55.7	55.1	56.1

Notes 1: Figures in "Forestry (B)" are equal to the Figures in "Forestry (A)" minus the production value of National Forest Management Special

2: "Conservation forest area" in "v" refers to the area excluding duplication.

3: "Industrial wood supply/consumption," "Domestic production" and "Import" in "vii" refer to the volume in log 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," viii: MLIT "Statistics on Building Construction Starts"

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

(Unit: billion yen)

Item	1995	2000	2005	2009	2010	2011	2012	2013
Gross domestic product	495,166	502,990	503,903	471,139	482,384	471,311	475,110	480,128
Industries	463,956	468,062	445,662	412,615	424,842	414,224	418,052	422,209
Agriculture, forestry and fisheries	9,346	8,896	6,108	5,440	5,656	5,426	5,740	5,753
Forestry (A)	696	887	446	387	...	...	...	...
Forestry (B)	...	...	143	147	152	156	142	159
Mining	861	627	400	283	301	304	290	311
Manufacturing	114,669	111,439	99,699	83,351	94,333	87,284	87,948	88,284
Pulp, paper and paper products	3,399	3,237	2,728	2,314	2,376	2,360	2,200	2,095
Wood and wooden products	1,469	1,240	946	686	714	773	766	767
Construction	40,850	37,130	29,018	26,948	26,198	26,461	26,797	27,914
Electricity, gas and water supply	13,329	13,576	11,712	11,132	11,008	8,551	8,005	8,382
Wholesale and retail trade	75,788	70,661	74,814	64,136	65,981	67,131	67,964	69,099
Finance and insurance	31,964	30,445	30,789	23,742	23,766	22,430	21,865	21,514
Real estate	53,757	57,864	54,042	56,879	56,890	56,726	56,505	56,181
Transport and communications	35,264	34,821	...	...	...	...	...	...
Transport	...	...	24,379	22,974	23,465	22,858	23,686	23,255
Communications	...	...	26,269	26,189	25,978	25,871	25,999	26,645
Service activities	88,129	102,604	88,433	91,541	91,266	91,183	93,254	94,872
Others	31,209	34,928	58,241	58,524	57,542	57,087	57,059	57,919

Note 1: Figures in "Forestry (B)" are equal to the Figures in "Forestry (A)" minus the production value of National Forest Management Special Account.

2: "Transport and communications" is divided into "Transport" and "Communications".

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

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

3. Gross Forestry Output

(Unit: billion yen)

Item	1995	2000	2005	2009	2010	2011	2012	2013
Gross output of forestry	760.55	531.10	416.77	412.20	421.69	416.59	391.69	432.24
Roundwood production	526.61	322.13	210.23	186.07	194.55	205.52	193.33	222.10
Softwood	436.76	265.33	177.41	156.09	170.16	185.05	171.40	201.42
Japanese Cedar (<i>sugi</i>)	187.39	123.78	87.53	81.60	93.50	101.77	97.31	112.02
Hardwood	86.02	54.72	31.71	29.22	23.76	19.81	21.29	20.06
Wood fuel production	7.93	6.16	6.09	4.91	5.08	5.06	4.39	5.53
Mushroom production	218.32	196.89	198.50	220.01	218.91	204.72	193.15	203.50
Forestry by-product	7.70	5.92	1.96	1.22	3.15	1.29	0.83	1.10
Value-added of Forestry	532.91	351.87	245.60	219.30	225.50	223.78	208.99	232.73

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 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			Area	
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	Subtotal	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	Subtotal	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 the Forest Law Article 2.1.

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 the Forest Law Article 5 and for National Forest under the Forest Law Article 7.2.

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

4: Figures are as of March 31, 2012.

Source: Forestry Agency

5. Planted Area by Tree Species

(unit: ha)

	Total	Softwood					Hardwood
		Japanese Cedar (<i>sugi</i>)	Japanese Cypress (<i>hinoki</i>)	Pine (<i>matsu</i>)	Japanese Larch (<i>karamatsu</i>)	Others	
1995	(48,650)	(13,660)	(22,332)	(219)	(2,739)	(5,544)	(4,156)
	45,241	13,196	20,908	199	2,677	4,577	3,684
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
2009	(23,032)	(4,787)	(5,241)	(166)	(4,638)	(5,282)	(2,917)
	20,006	4,522	4,113	150	4,435	4,490	2,296
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

Note 1: Figures do not include National Forest.

2: Figures in parentheses refer to the total area which includes area planted as the 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.

Note 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 Thinned Wood

(FY)	Thinned area (1,000ha)			Used volume of thinned wood (million m ³)					
	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

Note 1: Used 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
Used volume of thinned wood (million m ³)	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	1.96	2.14
	Roundwood	0.37	0.34	0.41	0.50	0.45	0.48	0.47
	Others	0.26	0.24	0.38	0.48	0.55	0.62	0.83

Note 1: Used 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

	2010	
	Forest area (ha)	Ratio to total area (%)
Total	17,627,335	100.0
Private	13,584,004	77.1
Public	3,395,800	19.3
Prefecture	1,248,262	7.1
Public corporation	436,296	2.5
Municipality	1,404,452	8.0
Property ward	306,790	1.7
Incorporated Administrative Agencies	647,531	3.7

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 "2010 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	140,186	5,177,452	2,642	1,650	41,049	149,366	69,250	638,990	17,871	509,510	4,892	320,798	4,482	3,557,138
Corporation	6,789	1,512,674	925	176	595	2,254	1,824	19,486	1,216	38,580	797	55,469	1,432	1,396,709
Private Company	2,534	831,262	602	100	194	714	623	6,380	382	11,601	201	13,396	532	799,071
Cooperative	3,016	483,989	301	76	169	650	711	8,228	646	21,091	478	33,720	711	420,224
Agricultural cooperative	119	45,319	1	2	5	18	17	212	28	935	16	1,185	52	42,967
Forestry cooperative	2,261	296,112	277	70	82	316	451	5,415	476	15,625	402	28,253	573	246,432
Other cooperatives	636	142,558	23	4	82	316	243	2,601	142	4,531	60	4,281	86	130,825
Other corporations	1,239	197,423	22	0	232	890	490	4,878	188	5,887	118	8,354	189	177,414
Individual	131,724	2,051,347	1,715	1,472	40,400	146,904	67,194	616,812	16,430	463,576	3,873	249,485	2,112	573,098
Public	125,136	1,759,002	1,507	1,422	39,012	141,685	64,269	588,125	15,328	429,640	3,392	216,460	1,628	381,670
Public	1,673	1,613,431	2	2	54	208	232	2,691	225	7,355	222	15,843	938	1,587,331

Source: MAFF "2010 Census of Agriculture and Forestry"

10. Roundwood Production

(Unit: 1,000m³, %)

		1995	2000	2005	2009	2010	2011	2012	2013	Relative change from previous year (%)
Total		21,242	17,034	16,166	16,619	17,193	18,290	18,479	19,646	6.3
By tree species	Subtotal	16,575 (78)	13,707 (80)	13,695 (85)	13,976 (84)	14,789 (86)	15,986 (87)	16,062 (87)	17,246 (88)	7.4
	Japanese Cedar (Sugi)	8,852	7,671	7,756	8,263	9,049	9,649	9,956	10,902	9.5
	for sawnwood	8,642 <53>	7,258 <57>	6,737 <58>	6,352 <62>	6,695 <63>	7,089 <62>	7,295 <64>	7,825 <65>	7.3
	Japanese Cypress (Hinoki)	2,882	2,273	2,014	1,957	2,029	2,169	2,165	2,300	6.2
	Red pine (Akamatsu), Black pine (Kuromatsu)	1,551	1,034	783	704	689	580	661	624	▲ 5.6
	Japanese Larch (Karamatsu), Yezo spruce (Ezomatsu), Todomatsu (<i>Abies sachalinensis</i>)	2,779	2,410	2,910	2,821	2,821	3,373	3,098	3,275	5.7
	Others	375	319	232	231	201	215	182	145	▲ 20.3
	Hardwood	4,667 (22)	3,327 (20)	2,471 (15)	2,643 (16)	2,404 (14)	2,304 (13)	2,417 (13)	2,400 (12)	▲ 0.7
By use	Sawnwood	16,252 (77)	12,798 (75)	11,571 (72)	10,243 (62)	10,582 (62)	11,492 (63)	11,321 (61)	12,058 (61)	6.5
	Plywood	228 (1)	138 (1)	863 (5)	1,979 (12)	2,490 (14)	2,524 (14)	2,602 (14)	3,016 (15)	15.9
	Chips	4,762 (22)	4,098 (24)	3,732 (23)	4,397 (26)	4,121 (24)	4,274 (23)	4,556 (25)	4,572 (23)	0.4

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"

11. Wood Supply/Demand Chart (roundwood equivalent)

(1,000m³)

Supply	Demand	Demand								Domestic consumption								Export							
		Total	Industrial use							Total	Industrial use							Total	Industrial use						
		Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Fuel	Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Subtotal	Charcoal	Firewood	Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Fuel		
Supply	Total	(7,972)	(7,972)	(7,972)					(7,972)	(7,972)	(7,972)														
	Roundwood	(7,972)	(7,972)	(7,972)					(7,972)	(7,972)	(7,972)														
	Forest residue	299	299						299	299															
	Import	46,780	46,780	11,835	25,171	6,734	3,040		46,780	46,780	11,835	25,171	6,734	3,040											
	Mushroom cultivation	388						388							388										
	Fuel	1,211							1,211	1,197						1,197	936	261						13	
Domestic production	Total	21,741	21,117	12,058	5,177	3,255	627	388	237	19,831	19,219	11,964	3,684	3,217	355	388	224	79	144	1,911	1,897	94	1,493	38	
	Roundwood	20,818	20,818	12,058	4,878	3,255	627			18,920	18,920	11,964	3,385	3,217	355					1,897	1,897	94	1,493	38	
	Forest residue	299	299		299					299	299														
	Mushroom cultivation	388						388		388					388										
	Fuel	237							237	224						224	79	144						13	
Import	Total	53,724	52,750	16,534	25,176	7,977	3,063		974	53,720	52,746	16,533	25,176	7,974	3,063			974	857	117	4	4	0	3	
	Roundwood	5,970	5,970	4,699	5	1,243	23			5,966	5,966	4,699	5	1,240	23						4	4	0	3	
	Subtotal	46,780	46,780	11,835	25,171	6,734	3,040			46,780	46,780	11,835	25,171	6,734	3,040										
	Sawnwood	11,835	11,835	11,835						11,835	11,835	11,835													
	Pulp	5,771	5,771		5,771					5,771	5,771		5,771												
	Chips	19,400	19,400		19,400					19,400	19,400		19,400												
	Plywood	6,734	6,734		6,734					6,734	6,734		6,734												
	Others	3,040	3,040				3,040			3,040	3,040														
Fuel	974							974	974									974	857	117					

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 sawnwood, plywood, or others.

These figures are excluded from "total" and "subtotal".

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

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

Source: Forestry Agency "Wood Demand and Supply Chart"

12. Wood Supply/Demand (roundwood equivalent)

(Unit: 1,000m³)

	Total wood supply/demand	Wood for industrial use	Wood for fuel	Wood for mushroom production	Wood demand for industrial use by sector				Wood supply for industrial use by source		Self-sufficiency rate(%)
					Sawnwood	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	94.5
1960	71,467	56,547	14,920	-	37,789	10,189	3,178	5,391	49,006	7,541	86.7
1965	76,798	70,530	6,268	-	47,084	14,335	5,187	3,924	50,375	20,155	71.4
1970	106,601	102,679	2,348	1,574	62,009	24,887	13,059	2,724	46,241	56,438	45.0
1975	99,303	96,369	1,132	1,802	55,341	27,298	11,173	2,557	34,577	61,792	35.9
1980	112,211	108,964	1,200	2,047	56,713	35,868	12,840	3,543	34,557	74,407	31.7
1985	95,447	92,901	572	1,974	44,539	32,915	11,217	4,230	33,074	59,827	35.6
1990	113,242	111,162	517	1,563	53,887	41,344	14,546	1,385	29,369	81,793	26.4
1995	113,698	111,922	721	1,055	50,384	44,922	14,314	2,302	22,916	89,006	20.5
2000	101,006	99,263	940	803	40,946	42,186	13,825	2,306	18,022	81,241	18.2
2005	87,423	85,857	1,001	565	32,901	37,608	12,586	2,763	17,176	68,681	20.0
2009	64,799	63,210	1,047	543	23,513	29,006	8,163	2,528	17,587	45,622	27.8
2010	71,884	70,253	1,099	532	25,379	32,350	9,556	2,968	18,236	52,018	26.0
2011	74,403	72,725	1,157	520	26,634	32,064	10,563	3,464	19,367	53,358	26.6
2012	72,189	70,633	1,119	437	26,053	31,010	10,294	3,275	19,686	50,947	27.9
2013	75,465	73,867	1,211	388	28,592	30,353	11,232	3,690	21,117	52,750	28.6

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" = "Wood supply (Domestic Wood)" / "Wood for industrial use" ×100

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"

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

(Unit: 1,000m³)

		1995	2000	2005	2009	2010	2011	2012	2013	Relative change to previous year (%)	
Total wood supply/demand		113,698	101,006	87,423	64,799	71,884	74,403	72,189	75,465	4.5	
Wood for industrial use		111,922	99,263	85,857	63,210	70,253	72,725	70,633	73,867	4.6	
Wood for fuel		721	940	1,001	1,047	1,099	1,157	1,119	1,211	8.2	
Wood for mushroom production		1,055	803	565	543	532	520	437	388	▲ 11.2	
Wood for industrial use	Total	Total	111,922	99,263	85,857	63,210	70,253	72,725	70,633	73,867	4.6
		Domestic Wood	22,916	18,022	17,176	17,587	18,236	19,367	19,686	21,117	7.3
		Imported Wood	89,006	81,241	68,681	45,622	52,018	53,358	50,947	52,750	3.5
		Self-sufficiency rate (%)	20.5	18.2	20.0	27.8	26.0	26.6	27.9	28.6	0.7
	Sawnwood	Subtotal	50,384	40,946	32,901	23,513	25,379	26,634	26,053	28,592	9.7
		Domestic Wood	16,252	12,798	11,571	10,243	10,582	11,492	11,321	12,058	6.5
		Imported Wood	34,132	28,148	21,330	13,270	14,797	15,142	14,732	16,534	12.2
		Self-sufficiency rate (%)	32.3	31.3	35.2	43.6	41.7	43.1	43.5	42.2	▲ 1.3
	Pulp and chips	Subtotal	(6,280)	(6,537)	(7,974)	(5,662)	(6,192)	(6,725)	(6,708)	(7,972)	18.8
		Domestic Wood	44,922	42,186	37,608	29,006	32,350	32,064	31,010	30,353	▲ 2.1
		Imported Wood	5,989	4,749	4,426	5,025	4,785	4,914	5,309	5,177	▲ 2.5
		Self-sufficiency rate (%)	13.3	11.3	11.8	17.3	14.8	15.3	17.1	17.1	0.0
	Plywood	Subtotal	14,314	13,825	12,586	8,163	9,556	10,563	10,294	11,232	9.1
		Domestic Wood	228	138	863	1,979	2,490	2,524	2,602	3,255	25.1
		Imported Wood	14,086	13,687	11,723	6,184	7,066	8,039	7,692	7,977	3.7
Self-sufficiency rate (%)		1.6	1.0	6.9	24.2	26.1	23.9	25.3	29.0	3.7	
Others	Subtotal	2,302	2,306	2,763	2,528	2,968	3,464	3,275	3,690	12.7	
	Domestic Wood	447	337	316	340	379	438	454	627	38.1	
	Imported Wood	1,855	1,969	2,447	2,188	2,589	3,026	2,821	3,063	8.6	
	Self-sufficiency rate (%)	19.4	14.6	11.4	13.4	12.8	12.6	13.9	17.0	3.1	

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

Source: Forestry Agency "Wood Demand and Supply Chart"

14. Wood Supply by Country (roundwood equivalent)

(Unit: 1,000m³, %)

		1995	2000	2005	2009	2010	2011	2012	2013	
Imported wood	North America	Subtotal	(34.2)	(28.9)	(18.8)	(18.2)	(19.2)	(19.1)	(18.6)	(18.9)
		U.S.	38,261	28,700	16,129	11,493	13,506	13,871	13,108	13,942
		Canada	23,273	14,460	6,844	5,163	5,838	5,877	5,560	6,225
	Southeast Asia	Subtotal	(14.7)	(13.7)	(12.2)	(9.6)	(8.9)	(9.1)	(8.8)	(8.7)
		Malaysia	16,418	13,569	10,511	6,041	6,287	6,586	6,235	6,439
		Indonesia	7,601	6,690	5,888	3,755	3,773	3,701	3,543	3,518
		Others	6,334	5,858	4,137	2,079	2,304	2,622	2,506	2,787
	Russia	2,482	1,021	486	207	209	263	186	134	
	Europe	(6.4)	(7.5)	(8.6)	(3.9)	(3.3)	(3.3)	(3.1)	(3.2)	
		7,131	7,429	7,411	2,449	2,343	2,410	2,196	2,380	
	Others	New Zealand	(2.2)	(4.7)	(6.9)	(6.9)	(7.1)	(7.6)	(7.8)	(9.1)
		Chile	2,411	4,675	5,937	4,391	4,967	5,553	5,509	6,754
		Australia	(3.8)	(4.4)	(3.4)	(3.3)	(3.9)	(3.8)	(3.6)	(3.0)
		China	4,263	4,374	2,878	2,086	2,720	2,772	2,570	2,217
		Others	(4.7)	(3.8)	(4.6)	(6.9)	(6.7)	(7.2)	(7.3)	(6.3)
		5,311	3,795	3,952	4,389	4,726	5,210	5,189	4,617	
Subtotal	Australia	(6.6)	(8.7)	(10.2)	(10.6)	(11.0)	(7.7)	(7.5)	(5.6)	
	China	7,428	8,604	8,729	6,674	7,722	5,629	5,323	4,106	
	Others	(1.8)	(2.5)	(3.0)	(2.6)	(3.0)	(3.6)	(3.4)	(3.4)	
		2,061	2,445	2,544	1,647	2,084	2,633	2,396	2,483	
		(5.1)	(7.7)	(12.3)	(10.2)	(10.9)	(12.0)	(11.9)	(13.3)	
	5,721	7,651	10,591	6,451	7,663	8,695	8,421	9,810		
Subtotal	(79.5)	(81.8)	(80.0)	(72.2)	(74.0)	(73.4)	(72.1)	(71.4)		
	89,006	81,241	68,681	45,622	52,018	53,358	50,947	52,750		
Domestic wood	(20.5)	(18.2)	(20.0)	(27.8)	(26.0)	(26.6)	(27.9)	(28.6)		
	22,916	18,022	17,176	17,587	18,236	19,367	19,686	21,117		
Total	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)		
	111,922	99,263	85,857	63,210	70,253	72,725	70,633	73,867		

Note 1: Figures refer to the sum of domestic/imported roundwood volume and imported products volume (sawnwood, plywood, and pulp and ch 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: Figures in parentheses refer to the percentage of each volume to the "total" volume of each year.

5: 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	1995	2000	2005	2009	2010	2011	2012	2013
Sawnwood	Number of sawmills	plants	14,565	11,692	9,011	6,865	6,569	6,242	5,927	5,690
	Sawnwood shipments	1,000m ³	24,766	17,231	12,825	9,291	9,415	9,434	9,302	10,100
Plywood	Number of plywood mills	plants	455	354	271	208	192	203	197	195
	Inputs for plywood production	1,000m ³	7,321	5,401	4,636	3,107	3,811	3,858	3,837	4,181
	General plywood production	1,000m ³		3,218	3,212	2,287	2,645	2,486	2,549	2,811
	Special plywood production	(1,000m ³)	655,799							
		1,000m ³		1,534	1,037	636	647	703	640	654
	(1,000m ³)	340,687								
Laminated wood	Number of laminated wood factories	plants	293	281	259	187	182	181	174	166
	Laminated wood production	1,000m ³	582	892	1,512	1,249	1,455	1,455	1,524	1,647
Wood chips	Number of wood chip mills	plants	3,535	2,657	2,040	1,663	1,578	1,545	1,536	1,510
	Wood chip production	1,000tons		11,226	10,851	6,005	5,129	5,407	5,633	6,452
	(1,000m ³)									

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

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

16. Number of Sawmills and Sawmill Employees

	1995	2000	2005	2009	2010	2011	2012	2013
Number of sawmills	14,565	11,692	9,011	6,865	6,569	6,242	5,927	5,690
-22.5kW	1,394	1,137	899	799	784	757	716	716
22.5-37.5	3,317	2,635	1,919	1,413	1,333	1,286	1,195	1,140
37.5-75.0	5,472	4,406	3,371	2,309	2,165	2,015	1,891	1,759
75.0-150.0	2,596	1,991	1,552	1,241	1,196	1,124	1,082	1,039
150.0-300.0	1,233	980	782	649	641	619	601	604
300.0kW-	553	543	488	454	450	441	442	432

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 FY2014" is available on the website of the Forestry Agency:

<http://www.rinya.maff.go.jp/j/kikaku/hakusyo/26hakusyo/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:

Annual Report Group
Policy Planning Division, Forestry Agency
Ministry of Agriculture, Forestry, and Fisheries (MAFF)
1-2-1 Kasumigaseki, Chiyoda-ku, TOKYO 100-8952
JAPAN
e-mail: mori_hakusho@nm.maff.go.jp