Annual Report on Forest and Forestry in Japan

Fiscal Year 2012

(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 FY2012.

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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 FY2012

TOPIC 1. New Policy Measures for Forest and Forestry Revitalization Started

Even as Japan's forest resources are reaching maturity mainly in planted forests, domestic forestry is facing severe management conditions, including the decline of gross forestry production and forestry income, a decline in forest owners' motivation for active forest management, and the underdevelopment of the processing and distribution systems for domestic woods.

Given these conditions, the Ministry of Agriculture, Forestry and Fisheries (MAFF) is promoting efficient and stable forest management, focusing on the coordination and consolidation of forestry practices among groups of small forest owners, the development of forest road system, human resource development, development of the processing and distribution systems for domestic wood and the expansion of wood use through a variety of new policy measures.

In 2012, the "Forest Law" was revised to introduce: 1) the assurance system of proper forest management in forests whose owners are unknown, 2) the administrative order system to halt logging without permission and oblige those loggers to replant, 3) the mandatory notification system for new forest owners, and 4) the "Collective Forest Management Plan System" to promote coordination and consolidation of forestry practices among small private forest owners.

MAFF has been recruiting and training forestry workers through the "Green Employment Program" since FY2003. In 2011, MAFF began to train technical experts with professional knowledge and skills in sustainable forest management, coordination and consolidation of forestry practices, and the construction of forest roads.

The Government of Japan (GOJ) has been promoting the construction of wooden public buildings, under the legislation entitled the "Public Buildings Wood Use Promotion Law" which was introduced in 2010. In July 2012, the GOJ introduced the "Feed-in Tariff (FIT) Program for Renewable Energy Use" which obliges electric power companies to procure electricity generated from renewable energy sources for a fixed price over a fixed period for each renewable energy source. Currently, quite a few woody biomass power plants are under construction in various regions to take advantage of the FIT program.

In April 2013, the National Forest Management was transferred from the Special Account Budget to the General Account Budget by the legislation adopted in June 2012, to further contribute to the revitalization of the forest and forestry sector while promoting sustainable management for the fulfillment of the multiple functional roles of forests.

MAFF will continue to promote the revitalization of the forest and forestry sector through these new policy measures, in cooperation with various stakeholders.

TOPIC 2. Restoration of Coastal Forests Started

In the Great East Japan Earthquake in March 2011, coastal forests on the Pacific Ocean from Aomori to Chiba prefectures were heavily damaged by the great tsunami. The total extent of the damaged coastal forests extends as far as 140km. In the damaged forest areas, standing trees were uprooted, broken off, or washed away, while conservation facilities (including breakwaters) were destroyed, and the forest ground was covered with water as a result of land subsidence.

However, it has been found out that the coastal forests helped to reduce the damage from the tsunami to some extent by “mitigating the tsunami energy,” “preventing the inflow of drifting materials,” and “postponing the arrival of the tsunami.” The Forestry Agency held the “Ad-hoc Committee on the Restoration of Damaged Coastal Forests” to review the damage to the coastal forests and the effectiveness of those forests in protecting against the tsunami, and developed a restoration strategy for the damaged coastal forests.

The Forestry Agency is promoting the restoration of the damaged coastal forests with approximately 50km of the 140km long damaged area being under preparation/construction as of FY2012. The Forestry Agency and prefectural governments in the damaged areas are building berms along the coast that make use of recycled materials from disaster debris where, as appropriate, seedlings of domestic tree species will be planted.

In Sendai-wan and Kesen-numa area, Miyagi prefecture, the GOJ (Tohoku Regional National Forest Office) is conducting the recovery works of the private coastal forests on behalf of the prefectural government upon the request from the governor, as well as the recovery works of damaged National Forests in neighboring regions. A part of the coastal National Forests will be used as activity fields for planting programs conducted by private organizations which include non-profit organizations (NPOs) and business enterprises.

In November 2012, the coastal forest planting ceremony was held in the National Forest in Wakabayashi-ku, Sendai city. In the ceremony, more than 200 people from the Tohoku Regional National Forest Office, local communities, local governments, and NPOs participated in planting approximately 2,200 seedlings of nematode-resistant pine variants and non-coniferous species. In the same month, the Tohoku Regional National Forest Office invited the first applications for the restoration activities of coastal forests. 14 organizations have started their restoration activities including planting since March 2013, in accordance with the agreements with the Sendai District National Forest Office.

The Forestry Agency will further promote the restoration of coastal forests in cooperation with local governments and related organizations.

Planting ceremonies of coastal forests
(Left: Iwaki city, Fukushima pref. (March 2013), right: Sendai city, Miyagi pref. (Nov. 2012))

TOPIC 3. Woody Biomass Use Promoted under the FIT Program

Japan is dependent on the imports of oil, coal, and natural gas for the majority of its energy supply. The energy self-sufficiency rate in 2010 was just 5%. In order to secure a stable supply of energy, alternatives to fossil fuel will need to be developed. Recently, people have become interested in increasing the use of “renewable energy,” which includes solar, wind, rivers, geothermal heat, and biomass. Woody biomass is also expected to be used as an alternative energy source.

Electric power companies are already required to procure a certain amount of electricity generated from renewable energy sources based upon the “Renewable Portfolio Standard (RPS) Law” of 2002. A number of power companies are already using woody biomass as a fuel input.

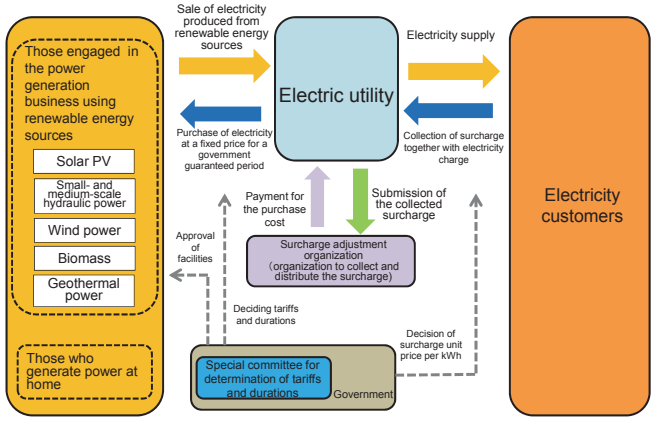
In July 2011, the “Feed-in Tariff (FIT) Scheme for Renewable Energy Use” was introduced in accordance with new legislation entitled the “Act on Purchase of Renewable Energy Sourced Electricity by Electric Utilities.” The FIT program obliges electric power companies to procure electricity generated from renewable energy sources for a fixed price over a fixed period of time for each type of alternative energy source.

Under the FIT program, electricity generated from woody biomass is to be procured for 20 years at a fixed price for “woody biomass derived from thinned wood,” “woody biomass in general”, and “construction waste.” The Forestry Agency developed the “Certification Guideline of Woody Biomass for Electric Use” for the identification and certification of “woody biomass derived from thinned wood” and “woody biomass in general.”

In August 2012, the electric power plant in Aizu-wakamatsu city, Fukushima prefecture, began to provide electricity to an electric power company under the FIT program, marking the first time that a power plant used woody biomass derived from thinned wood. In October 2012, the woody biomass electric power plant in Iwakuni city, Yamaguchi prefecture, was also recognized under the FIT program as the first time that an existing power plant was converted to use woody biomass.

The Forestry Agency will further promote the use of woody biomass including thinned wood, through the FIT scheme.

Wood biomass power plant in Iwakuni city, Yamaguchi pref.



Overview of FIT scheme

TOPIC 4. Broad-leaved Evergreen Forest in *Aya* Added to UNESCO's Biosphere Reserves

The *Aya* district in Miyazaki prefecture is located in the northern end of the broad-leaved evergreen forest band in East Asia, and is the largest domestic broad-leaved evergreen forest remaining. In July 2012, the International Co-ordinating Council of the Man and the Biosphere (MAB) Programme in UNESCO decided to register the *Aya* district as a "Biosphere Reserves." The district was highly appreciated for its conservation activities including the "*Aya* Broad-leaved Evergreen Forest Project" as well as such remaining forests in the district.

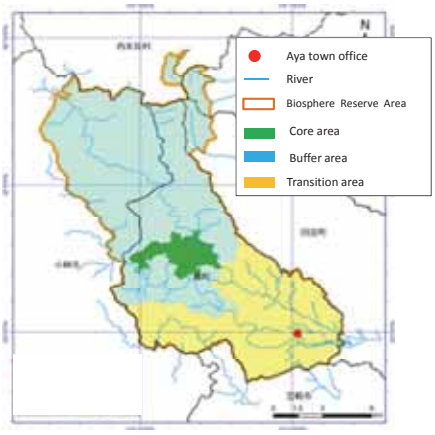
The Biosphere Reserves, domestically called the "UNESCO Eco-park," register districts that achieve three functions, including a conservation function (to protect cultural diversity and biodiversity), a development function (to foster economic and human development), and a logistic support function (to facilitate demonstration projects, environmental education and sustainable development education and training, research and monitoring), with the objective of promoting solutions that reconcile the conservation of biodiversity with its sustainable use. As of July 2012, 610 districts in 117 countries are registered as Biosphere Reserves. In Japan, four districts including *Shiga-kogen* (Nagano, Gunma prefs.), *Hakusan* (Gifu, Ishikawa, Toyama, Fukui prefs.), *Oodaigahara-Oominesan* (Nara, Mie prefs.), and *Yakushima* (Kagoshima pref.) were registered in 1980. The *Aya* district is the fifth Biosphere Reserve in Japan.

The total area of the *Aya* district is 14,580 hectares, divided into three regions: a "core area" for biodiversity conservation, a "buffer zone" surrounding the core area, and a "transition area" for the sustainable use of biodiversity.

In the "core area" and the "buffer zone," the Kyushu Regional National Forest Office has been implementing the "*Aya* Broad-leaved Evergreen Forest Project" in cooperation with Miyazaki prefecture, *Aya* municipality, the Nature Conservation Society of Japan (NACS-J), and the *Teruha-no-mori-no-kai* (local council) since 2004, with the objective of protecting the largest domestic broad-leaved evergreen forest, restoring more such forests from second-growth natural forest or planted forest, and promoting the importance of such forests to the local communities. The "transition area" is used for a variety of activities such as organic farming and ecotourism through forest environmental education or agricultural experience study, taking into consideration of the sustainable use of natural resources.

In response to the registration of the *Aya* district as Biosphere Reserve, the Forestry Agency will expand its efforts to promote the protection and restoration of broad-leaved evergreen forests in the district in cooperation with related organizations.

Broad-leaved evergreen forest in *Aya,* Miyazaki pref.



Location and areas of *Aya* Biosphere Reserve

Chapter I Forest and Forestry Revitalization and National Forest Management

1. Forest and Forestry Revitalization

1.1. Background of Forest and Forestry Revitalization

Japan's forestry has been facing severe management conditions. Due to the decline of wood prices and increasing management costs, the profitability of forestry has been on the decline since 1980s. In response to this situation, the "Forest and Forestry Basic Law" was put into force in 2001, followed by a variety of policy measures, including the promotion of thinning, coordination and consolidation of forestry practices among groups of small forest owners, recruiting and training of forestry workers, and developing the processing and distribution system for domestic wood products. As a result, the supply of domestic wood began to increase, reaching 18.7 million m^3 by 2008 (Fig.1-1).

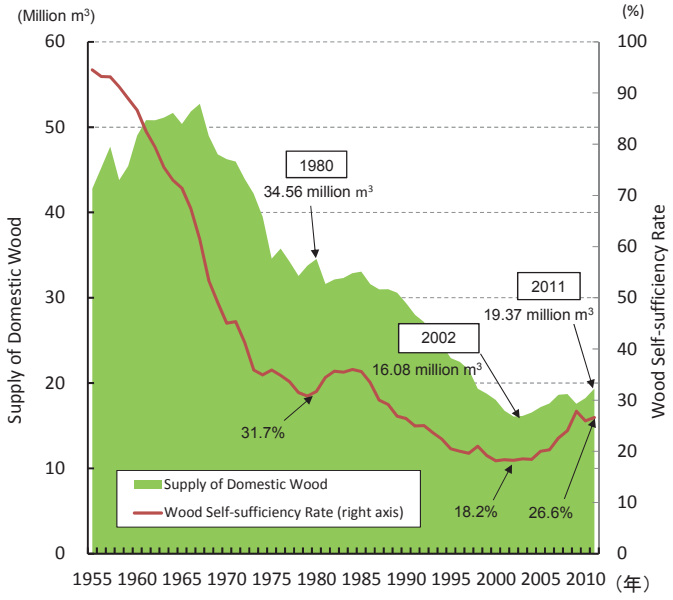


Fig.1-1: Domestic wood supply and wood self-sufficiency rate in Japan

Recently, Japan's planted forests have begun to reach maturity and are ready for harvest. However, the productivity of domestic forestry is still very low because of the small-scale forest ownership and because new forest owners are reluctant to invest in active forest management after inheriting forest property from their parents. As a result, domestic forest resources are not fully utilized, and some forests are at risk of losing their ability to provide multiple environmental functions because of the lack of proper forest management.

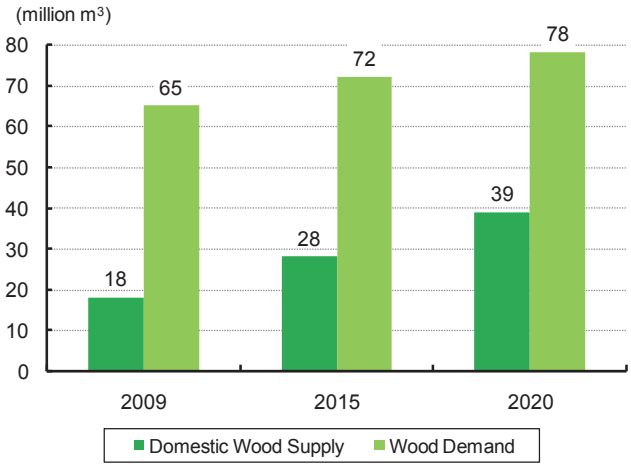


Fig.1-2: Goal of domestic wood supply and outlook of wood demand in the "Forest and Forestry Basic Plan"

Given this situation, the GOJ decided to further strengthen and accelerate policy measures under the Basic Law for the revitalization of forest and forestry, focusing on the coordination and consolidation of forestry practices, construction of a forest road system, and human resource development.

Accordingly, the "Public Buildings Wood Use Promotion Law" was introduced in 2010, the "Forest Law" was amended in 2011, and the "National Forest Management Law" was amended in 2012. Finally, the "Forest and Forestry Basic Plan" based upon the Basic Law was amended in July 2011 (Fig.1-2).

1.2. Major Programs for Forest and Forestry Revitalization

1.2.1. Revision of Forest Planning System

The “National Forest Plan,” a nation-wide plan of forest management and conservation, was revised in July 2011, as was the “Forest and Forestry Basic Plan.” The role of the national plan was redefined as national rules and guidelines for forest management and conservation. While the former plan defined three functional types of forests according to their expected functions, the new plan abolished these functional types and allowed each municipality to define its own functional types of forests based on regional conditions.

The role of the “Municipality Forest Plan” was also redefined as a “master plan” of forests in each municipality, which provides the long-term goals of forests as well as establishing guidelines for the realization of these goals. The municipality plan also identifies the functional type of each forest area as well as establishing a forest road development plan in forest planning maps.

1.2.2. Assurance of Proper Forest Management

In Japan, some forests are logged haphazardly without planting, which threatens their ability to fulfill the multiple functions of forests. In addition, forests whose owners are unknown are increasing, due to inheritance and the subsequent increase in the number of non-resident forest owners.

The revised “Forest Law” introduced an assurance system for the proper management of forests whose owners are unknown as well as an administrative order system designed to halt logging without permission and oblige those loggers to replant harvested areas. The revised Law also 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 local governments.

1.2.3. Efficient and Stable Forestry Management

Given the small scale forest ownership that exists in Japan, the Forestry Agency is promoting the coordination and consolidation of forestry practices among groups of small forest owners. In 2012, the revised “Forest Law” introduced the new “Collective Forest Management Plan System” developed by forest owners or their entrusted forest managers to ensure sustainable forest management and the protection of collective forests (Fig.1-3).

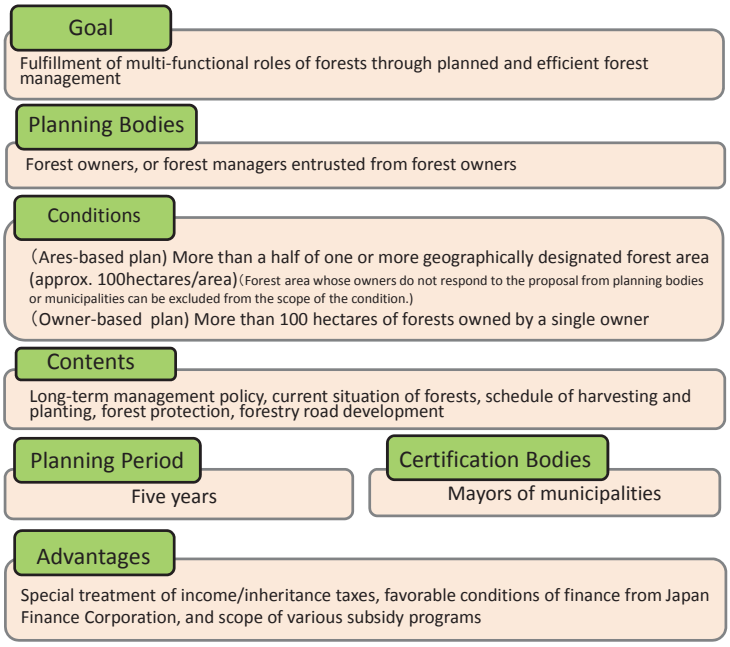


Fig.1-3: Overview of Collective Forest Management Plan System

The Forestry Agency is investing in the expansion of the forest road system to support efficient forestry practices. In 2010, the Forestry Agency redefined the durable and simple forest road system as the combination of three types of road, that is, the “forest road”

for general vehicles, the “forestry exclusive road” for trucks with ten ton loads, and the “forestry operation road” for forestry machines. The Forestry Agency is also promoting the development and improvement of advanced forestry machineries, including processors, harvesters, and forwarders.

The “Forest Owners Cooperatives”, cooperative organizations of forest owners, play a vital role in local forest management, sometimes as contractors of forestry practices. In order to secure a “level playing field” between the Cooperatives and private contractors, the Forestry Agency encourages the Cooperatives to concentrate on providing services to their members and improving the transparency of their management information. The Forestry Agency is also requesting each prefecture to provide forest owners’ information to contractors and to develop an information sharing system that tracks the performance of each contractor.

1.2.4. Human Resource Development

In order to secure young forestry workers, the Forestry Agency has been implementing the “Green Employment Program” since FY2003, to teach introductory skills and knowledge of forestry to new forestry workers. In 2011, the Forestry Agency introduced a step-by-step promotion system to help new forest workers progress from “forest workers” (members of workers group) to “forest managers” (leaders of a workers group) or “forest leaders” (leaders of more than two groups)

Since FY2007, the Forestry Agency has been training “Forest Management Planners” who promote the coordination and consolidation of forest management activities among groups of small forest owners. The Planners are expected to play a central role in the development of the new “Collective Forest Management Plan.”

As the role of municipalities in forest and forestry policy becomes more important, the Forestry Agency intends to train technical experts who can support local governments and local forest management by working as “Foresters.” The certification of the Foresters will start in FY 2013. Before being certified, the “Apprentice Foresters” who have completed the required training courses will be allowed to temporarily support local governments in the development of the Municipality Forest Plans. The Forestry Agency is also training technical experts in the planning and construction of forest roads.

1.2.5. Development of Wood Processing/Distribution System and Wood Use Expansion

Japan’s forestry and wood products industry has been slow to develop a reliable distribution system for low cost wood products with assured quality and performance, due to the small-scale, dispersed, and multi-layered system of log harvesting, distribution, and wood processing.

The Forestry Agency has supported model projects for the reform of the forestry and wood products industry: the “New Wood Products Distribution and Processing Projects” for the laminated lumber and plywood sectors since FY2004, and the “New Wood Production Projects” for the lumber production sector since FY2006. The Forestry Agency has also been supporting local projects for the stable supply and efficient processing/distribution of domestic wood through the “Fund for the Acceleration of Forest Management and Forestry Revitalization” since FY2009

The Forestry Agency is also promoting increased wood use in wooden public buildings, energy produced from woody biomass, wood exports, and promotional activities to the general public.

2. National Forest Management for Forest and Forestry Revitalization

2.1. National Forest Management and its Reform

National Forests represent approximately 30% of the total forest area, or almost 20% of the total land area in Japan (Fig.1-4). National Forests perform vital roles in the fulfillment of the multiple functional roles of forests, including land conservation, water resource development, and conservation of the natural environment.

The Forestry Agency had been managing National Forests for the maintenance and development of the multiple functional roles of forests as the "National Forest Management" under the Special Account budget. In 1998, the objective of the National Forest Management was converted from wood production to fulfillment of multiple functional roles of forests by the "Drastic Reform" of the National Forest Management. The principle of the Special Account was also converted from being "independent," covering all expenses with its own income derived from wood production, to being "dependent" on transfers from the General Account budget.

Ratio of National Forest to Land Area

RNFO	Ratio
Hokkaido	39%
Tohoku	31%
Kanto	17%
Chubu	19%
Kinki-Chugoku	4%
Shikoku	10%
Kyushu	12%

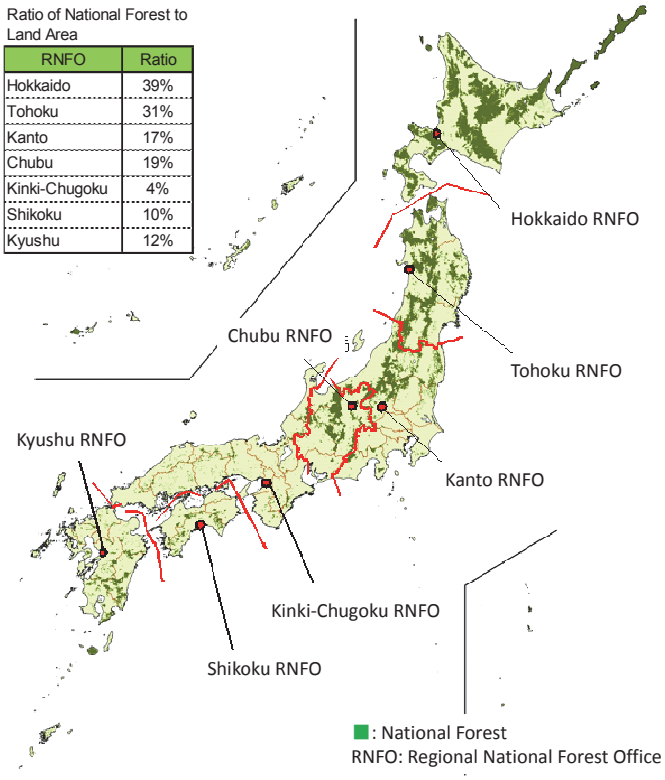


Fig.1-4: Location of National Forests

In 2011, the Forest Policy Council of MAFF proposed conducting the National Forest Management for the fulfillment of the multiple functional roles of forests and contribution to the revitalization of nationwide forest and forestry, within the General Account budget rather than the Special Account budget with its restriction on income. In response to this proposal, the Diet amended the "National Forest Management Law" and other related legislation in 2012, so that the National Forest Management will be conducted within the General Account budget beginning in FY2013 under the revised "National Forest Management Fundamental Plan."

2.2. Management of National Forests

2.2.1. Fulfillment of Multiple Functional Roles of Forests

The Forestry Agency has been managing National Forests for the maintenance and development of the multiple functional roles of forests, with the categorization of each National Forest into one of three functional types based on to its primary function: "land and water conservation forests," "forest-human co-existence forests," and "sustainable resource use forests." Under this categorization plan, the Forestry Agency has been promoting thinning as a way to meet the removal target under the Kyoto Protocol, the "forest conservation projects" for the restoration of devastated forests, and the development of the forest road system to promote efficient forestry practices.

The Forestry Agency is conducting forest management activities for the conservation of biodiversity, designating National Forests with diverse forest ecosystems as "Protected Forests," or "Green

Corridors" which connect several "Protected Forests." The Forestry Agency is also strengthening its conservation works in the World Natural Heritage areas including *Shirakami*, *Yakushima*, *Shiretoko*, and the *Ogasawara* Islands.

In December 2012, the three functional types of National Forest were redefined into five new types: "landslide prevention," "nature conservation," "recreational use," "comfortable environment development," and "water resource conservation." Further, the amended "National Forest Management Law" introduced a new system in FY2013 that allows the Forestry Agency to manage private forests located in close proximity to National Forests.

Under the new Fundamental Plan, the Forestry Agency will manage National Forests according to the new categorization, as well as proximate private forests, for the fulfillment of the multiple functional roles of forests.

2.2.2. Contribution to Forest and Forestry Revitalization

The National Forest Management has been contributing to the revitalization of forest and forestry nationwide, through the diffusion of efficient forestry practices through contract works in National Forests, and ensuring the stable supply of wood from National Forests, under the idea of the "Basin-based Forest Management System," which means cooperative management of private and national forests within each river basin.

Recently, the Forestry Agency has been promoting active forest management and the development of the forest road system in cooperation with the private forest sector through the designation of "cooperative forest management areas."

National Forests play an important role in providing a stable supply of domestic wood, representing approximately 20% of the total domestic wood supply. The Forestry Agency is promoting a stable wood supply through "system sales" contracts with major wood processing companies, such as large-scale lumber mills or plywood factories (Fig.1-5).

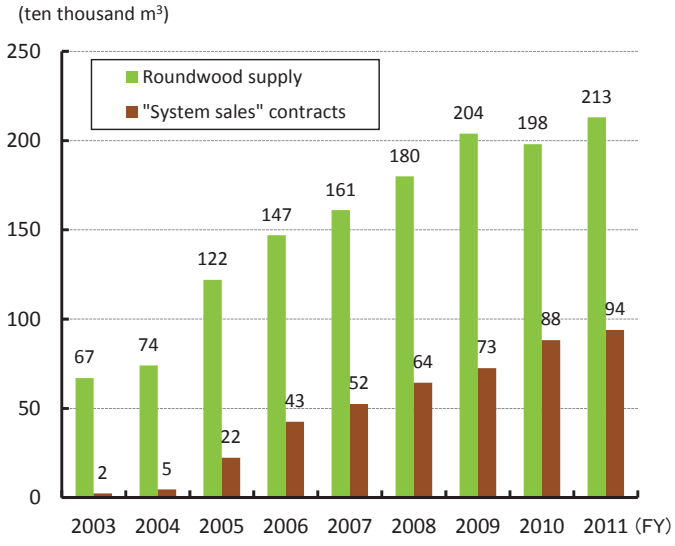


Fig.1-5: Roundwood supply from National Forests

Under the new Fundamental Plan, the Forestry Agency will further strengthen the contributions of the National Forest Management to the revitalization of forest and forestry in the private sector, through the promotion of low-cost forest practice systems, support for the development of private contractors, cooperative management of private and national forests in designated areas, and the development of technical experts to support private forest management.

2.2.3. National Forests as "Forests for People"

The Forestry Agency is managing and conserving the National Forests under the fundamental principle of "Forests for People," for the satisfaction of the various expectations of people in society. To this end, the Forestry Agency provides access to the National Forests for the activities of various organizations, such as "Forests for Students," "Forests for Voluntary Groups," "Forests for Corporations," and "Forests

for Wood Culture." The Forestry Agency is also implementing "Model Projects" in which a wide range of organizations cooperatively participate in the management of National Forests.

Under the new Fundamental Plan, the Forestry Agency will continue to promote these activities for the realization of "Forests for People."

2.2.4. Contribution to Regional Development

National Forests are regional natural resources which could be used for the development of regional industries and the welfare of rural communities, as well as being "national" resources. The Forestry Agency has been leasing or selling National Forests to local governments for their regional development projects. The Forestry Agency is also designating National Forests with spectacular landscape suitable for recreational activities as "Recreational Forests."

Under the new Fundamental Plan, the Forestry Agency will promote the use of National Forests which will help supply renewable energy generated from solar, wind, rivers, geothermal heat, and biomass, as well as ongoing programs.

The Forestry Agency will also contribute to the recovery and reconstruction following the Great East Japan Earthquake, which occurred in March 2011, through the regeneration of coastal forests devastated by the great tsunami and the decontamination of forests contaminated with radioactive cesium by the nuclear accident of the Fukushima Nuclear Power Stations of the Tokyo Electric Power Company (TEPCO).

2.2.5. Organizational Structure of National Forest Management

The Forestry Agency has been managing National Forests with an organizational structure that includes the Headquarters, seven Regional National Forest Offices, and 98 District National Forest Offices.

Under the new Fundamental Plan, the Forestry Agency will expand its divisions to conduct cooperative activities with local governments and support/assistance for forest management in private forests, while maintaining its current organizational structure.

3. Challenges

For the promotion of further forest and forestry revitalization, improvement of domestic wood production capacity and the expansion of wood demand while considering the domestic and international wood demand/supply conditions is important, as well as the development of a wood processing/distribution system which can respond to the market needs in a flexible manner.

People in the forestry and wood products industry need to share their knowledge of management conditions and strengthen their cooperation with each other. Further, expanding the understanding of the current conditions of forests and forestry among people in society needs to be continued.

MAFF will continue to listen to the views from forest and forestry people, reexamine its policies and measures in light of those views, and revise/improve them as necessary.

Chapter II Recovery and Reconstruction from the Great East Japan Earthquake

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

Following the Great East Japan Earthquake, there were nearly 4,000 reports of forest-related damage in the 15 prefectures stretching from Aomori to Kochi. The Forestry Agency is implementing recovery works of damaged forest conservation facilities, forest roads, and collapsed hillslopes.

The Earthquake and resulting tsunami damaged a number of plywood mills and paper mills, suspending the distribution of roundwood for plywood production and wood chips for paper production. In response, the Forestry Agency is promoting the redirection of roundwood distribution from damaged mills to undamaged mills in remote areas while subsidizing the additional distribution costs.

The Earthquake and resulting tsunami damaged 115 wood processing mills, including six plywood mills and 71 lumber mills. The Forestry Agency is assisting in the rationalization/recovery of wood processing/distribution facilities. As of July 2012, 96 wood processing mills have resumed production, with the lumber production volume in the Tohoku region reaching its pre-earthquake level.

2. Contribution of Forest, Forestry, and Wood Products Industry to Reconstruction

2.1. Restoration of Coastal Forests

Coastal forests in Japan have been developed and maintained to protect coastal communities from strong winds, sand storms, and salty breezes in coastal areas since the 17th century. In the Great East Japan Earthquake, 140km of coastal forests located between Aomori and Chiba prefectures were heavily damaged by the great tsunami.

The Forestry Agency is conducting recovery works in the damaged coastal forests, with a goal of building “berms” for replanting trees along the coasts within five years, and completing the recovery works within ten years. In the recovery works, the Forestry Agency is promoting the use of recycled materials derived from disaster debris which are properly handled in accordance with related legislations and safety guidelines. The Forestry Agency is encouraging private organizations including NPOs and private companies to participate in planting and maintaining seedlings.

For the success of the restoration of coastal forests, the supply of a large number of seedlings needs to be assured, as well as ensuring the continuous treatment of planted trees, including weeding and thinning.

2.2. Promotion of Wood Use for Reconstruction of Communities

Since more than 370,000 houses were destroyed in the Earthquake and resulting tsunami, the rapid provision of emergency shelters for refugees became an urgent issue. In response, local governments provided approximately 53,000 “emergency temporary houses,” with a quarter of those houses being built with a wooden structure. Wooden emergency temporary houses have received a good reputation, in that they are comfortable for living and are easy to renovate.

Currently, many local governments are planning to build wooden “reconstruction houses” for disaster victims, local organizations are proposing to rebuild damaged wooden houses, and wood products companies are assisting local governments to use wood in the reconstruction of communities.

In order to reestablish the distribution system to promote wood use for the reconstruction of communities, the following actions are important: reinforcement of the national wood supply capacity for reconstruction, promotion of earthquake-resistant performance of wooden houses, further promotion of wooden structure and wooden interior decoration in public buildings, and development of emergency temporary houses using locally produced wood.

2.3. Promotion of Woody Biomass Use for Energy

As a result of the Earthquake, approximately 20 million tons of disaster debris has been piled up in Iwate, Miyagi, and Fukushima prefectures. Woody disaster debris is currently being used to produce wood-based panels and as a fuel input for boilers and power plants.

The "Fukushima Reconstruction Fundamental Policy" of July 2012 proposed the reconstruction of the local economy through the use of renewable energy sources including woody biomass. In Aizu-wakamatsu city, Fukushima prefecture, a power plant which burns thinned wood as its fuel input has already started operation. Construction of woody biomass power plants are also planned in several other locations in Fukushima prefecture.

Since the volume of woody disaster debris is finite, a stable woody biomass supply system needs to be developed in preparation for the end of debris disposal.

"Reconstruction houses" built with wood
(Souma city, Fukushima pref.)

"Reconstruction furniture" made with plywood
produced from damaged wood in coastal forests

Photo: Reconstruction with wood

3. Reconstruction from Nuclear Accident

3.1. Nuclear Accident

MAFF has been investigating the concentration and accumulation of radioactive cesium within the forest stand, including the soil, fallen leaves, leaves, and trunk, at three points in Fukushima prefecture. MAFF is also investigating the concentration of radioactive cesium in the rivers that flow from the affected forests.

In December 2011, the Ministry of Environment (MoE) developed the "Guidelines for Decontamination," which provide guidance for decontamination activities in general. In April 2012, MAFF developed the "Technical Guidance for Forest Decontamination and Diffusion Control," providing decontamination methodologies for "forests for daily use" as well as "forests in the neighborhood of communities."

Currently, MoE is conducting decontamination work in forests in the neighborhood of communities in the “Special Decontamination Areas,” local municipalities in nearby-community private forests in the “Intensive Contamination Survey Areas,” and the Forestry Agency is also working in nearby-community National Forests in the same zones.

3.2. Supply of Safe Wood Products

In April 2012, the Ministry of Health, Labor and Welfare (MHLW) established the “standard values” for radioactive cesium in foods. The standard value of contamination in general food was set as 100Bq/kg. As of March 2012, “shipment restrictions” were ordered for 19 special forest products including mushrooms and wild plant shoots, for which the radioactive cesium was found to exceed the standard value.

The Forestry Agency established “temporary standard values” for radioactive cesium for roundwood and sawdust blocks for mushroom production as well as for firewood and charcoal used for cooking. As a result, the production of mushrooms and roundwood used for mushroom production has declined substantially in Fukushima prefecture, disrupting the supply of roundwood used for mushroom production. In response, the Forestry Agency is providing “matching” assistance to help coordinate the supply and demand of roundwood used for mushroom production.

The Forestry Agency also investigated the effects of radioactive cesium contained in standing wood and processed wood products in February to March 2012. The result shows that the effects of cesium to human bodies are negligible.

3.3. Safety Assurance of Forestry Workers

In July 2012, the rule to avoid human damage from radiation in decontamination activities was revised, and decontamination activities which handle contaminated soils and forestry activities in forests where spatial doses exceed 2.5 μ Sv/h were included in the scope of the revised rule. According to the new rule, those activities strictly limit exposure to radiation to ensure the safety of forestry workers.

3.4. Disposal of Contaminated Bark and Roundwood for Mushroom Production

Following the detection of radioactive cesium in ash left after burning tree bark, lumber mills in Fukushima and neighboring prefectures have been required to reduce their shipments of bark, due to the limitation of disposal sites for such ash. The use of bark as fertilizers and beddings for livestock also declined due to the possibility of contamination. Since the affected lumber mills have to store large volumes of potentially contaminated bark inside their mills, the disposal of contaminated bark has become an urgent issue.

The disposal of roundwood for mushroom production which exceeds the temporary standard value is also an urgent issue.

3.5. Damage Compensation

Forestry organizations in Fukushima and other prefectures are requesting compensation from TEPCO for income loss caused by the nuclear accident. As of March 2013, these organizations have asked for 1.5 billion yen in compensation, 0.8 billion yen of which has already been paid by TEPCO.

Compensation for the loss of value in business real estate including forests is still under consideration.

Chapter III Global Warming and Forest

1. Global Warming

According to the IPCC's Fourth Assessment Report (AR4), warming of the climate system is unequivocal and very likely due to the observed increase in anthropogenic greenhouse gas (GHG) concentrations. The Kyoto Protocol sets legally binding targets for GHG emissions and developed countries are bound to reduce their overall emissions of GHG by at least 5% below their 1990 levels in the first commitment period which covers 2008-2012. Japan's emission reduction commitment is 6%.

In 2011, the total volume of Japan's GHG emission was 1.31 billion CO_2-tons, a 4.0% increase from 2010. This volume is a 3.7% increase, or a 4.0% reduction if forest carbon sink and Kyoto mechanism are accounted, from the base year of 1990. On average, Japan's total GHG emissions between 2008 and 2011 have temporarily achieved the 6% national emission reduction commitment (Fig.3-1).

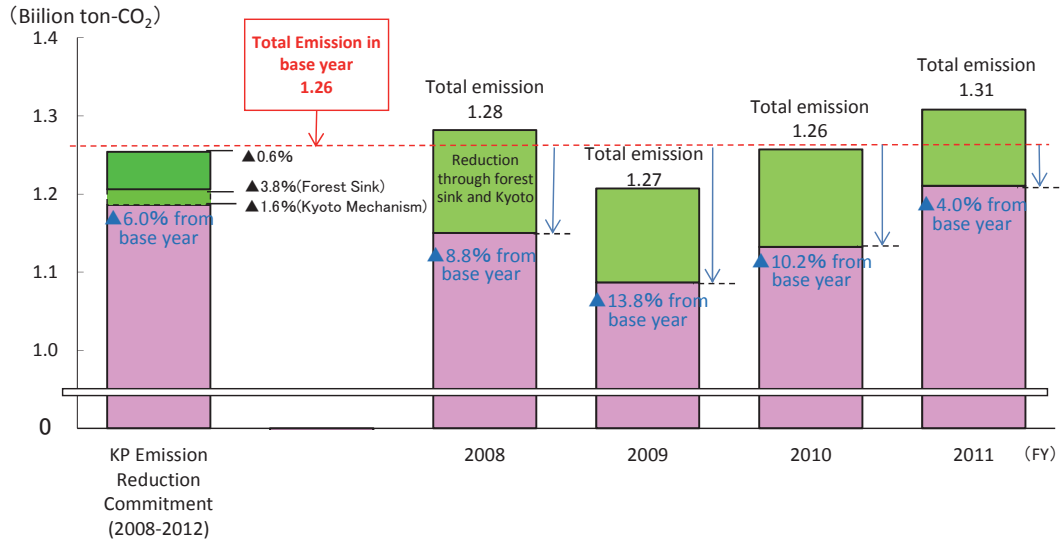


Fig.3-1: Japan's GHG emissions for first commitment period (2008-2012)

2. Actions toward the Achievement of the Kyoto Protocol Commitment

2.1. Promotion of Forest Sink Activities

Under the Kyoto Protocol, the net change in GHG emissions resulting from "afforestation," "reforestation," "deforestation," and "forest management" can be used to meet emission reduction commitments. Japan set a domestic target for GHG removal by "forest management" at 13 million C-tons/year (47.67 million CO_2-tons/year, or 3.8% of the volume of total emissions in the base year) in the "Kyoto Protocol Commitment Achievement Plan."

To meet the removal target of 13 million C-tons/year, Japan has been conducting comprehensive activities including the promotion of active forest management, a stable wood supply, and an aggressive increase in wood use. In particular, Japan is promoting "thinning" of forests with a target of 3.3 million hectares of planted forests to be thinned between 2007 and 2012. During the period 2007-2011, 2.76 million hectares of planted forests have been thinned. The volume of carbon sequestrated by forests in 2011 was 13.92 million C-tons, equivalent to 4.0% of overall GHG emission

in the base year of 1990.

2.2. Afforestation and Reforestation in Clean Development Mechanism (CDM)

The “Clean Development Mechanism” is a system defined in the Kyoto Protocol to allow developed countries (Annex I parties) to implement an emission-reduction project in developing countries to earn saleable certified emission reduction credits, which can be counted towards meeting the Kyoto Protocol targets.

The Forestry Agency is currently gathering and analyzing related information on possible sites of afforestation/reforestation CDM projects to help meet the Kyoto Protocol objectives.

2.3. Credit Systems in Forest Related Area

In Japan, several systems provide “credits” for emission reduction or carbon sequestration through the use of woody biomass or proper forest management.

Between FY2008 and FY2012, the “Domestic Credit System” and “Offset Credit (J-VER) System” were implemented to provide “credits” for emission reduction and carbon sequestration. In the forest related area, converting a boiler from fossil fuel to woody biomass and proper forest management through thinning were both covered by these systems.

In 2012, an Ad-hoc committee studied the possible integration of these two systems as the end of the projects approaches and proposed that the new system should be implemented during the period FY2013-2020 and the area of credit use should be maintained. In accordance with the proposal, the new “J-Credit System” will start in FY2013.

2.4. Wood Use for Mitigation of Global Warming

Wood use can contribute to the mitigation of global warming. Wood products store carbon as wood fiber, require less energy to produce than more energy-intensive materials (such as steel and concrete), and reduce carbon dioxide emissions by substituting for fossil fuels.

As tools to help quantify the contribution of wood use towards the reduction of environmental loads, systems such as the “Carbon Footprint” and “Comprehensive Assessment System for Built Environment Efficiency (CASBEE)” are becoming popular.

3. International Negotiations on Global Warming after 2013

3.1. Results of COP18

COP18 of UNFCCC, held in Doha, Qatar, in November-December 2012, reaffirmed that the “second commitment period” of the Kyoto Protocol will begin on 1 January 2013 and end on 31 December 2020.

Although Japan will not participate in the second commitment period, it will continue its efforts towards emission reduction in accordance with international rules for the achievement of its own emission reduction target

3.2. Forest-related Issues in the Second Commitment Period

As for forest-related issues, COP18 concluded that each party shall submit its annual GHG inventory

information on GHG emissions by sources and removals by sinks from land use, land-use change and forestry (LULUCF) activities including “forest management” under Article 3, paragraph 4, of the Kyoto Protocol.

In COP17, it was decided that additions to the assigned amount of a Party resulting from forest management shall not exceed 3.5% of the base year GHG emissions, that GHG removals through forest sequestration should be accounted under the “reference level system,” and that all changes in the carbon pools of harvested wood products (HWP) can be accounted for as emissions or emission reductions of GHG for the second commitment period (Fig.3-2, 3-3).

3.3. Global Warming Policy in Japan after 2013

In July 2012, the ad-hoc committee on global warming policy related to forest management adopted a decision which calls for global warming mitigation activities through proper forest management and domestic wood use. In the same month, the National Governors’ Association, a group of prefectural governors, also adopted a decision which calls for the promotion of forest sink activities for global warming mitigation and the assurance of the necessary budget allocations.

The volume of carbon sequestrated by forests declines as they age. As Japan’s forest resources continue maturing, the carbon sequestration of forests will inevitably decline. To increase the global warming mitigation function of forests, matured trees need to be harvested and replaced with young trees.

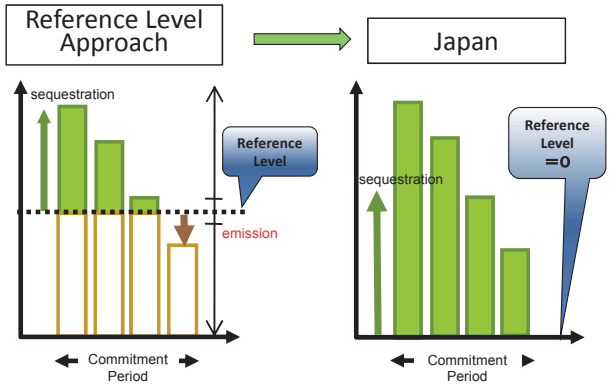


Fig.3-2: Accounting approach of forest sequestration for the Second Commitment Period

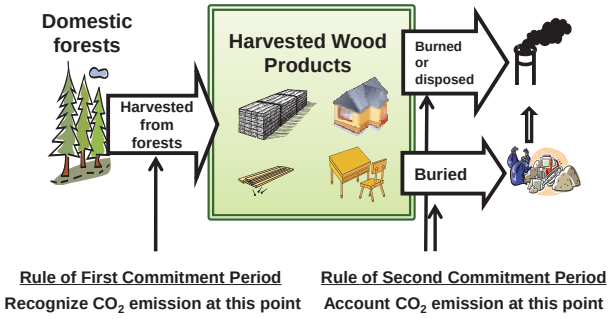


Fig.3-3: Accounting approach of Harvested Wood Products (HWP)

Chapter IV Forest Management and Conservation

1. Forest Management

1.1. Forest Resources

Forests have multiple functional roles, including landslide prevention, watershed conservation, carbon sequestration, biodiversity conservation, and wood production. In order to fulfill those functions, vigorous and diverse forests need to be maintained.

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 and the major planted species are *sugi* (cedar), *hinoki* (cypress), and *karamatsu* (larch). Forest ownership in Japan can be divided into approximately 70% for private owners including local governments, and 30% for the national government.

Japan's forest resources are mature enough for intensive harvesting. The total volume of the forest inventory reached 4.4 billion m^3 in 2007 and the share of the planted forest area exceeding 50 years in age will exceed 60% by 2017 (Fig.4-1).

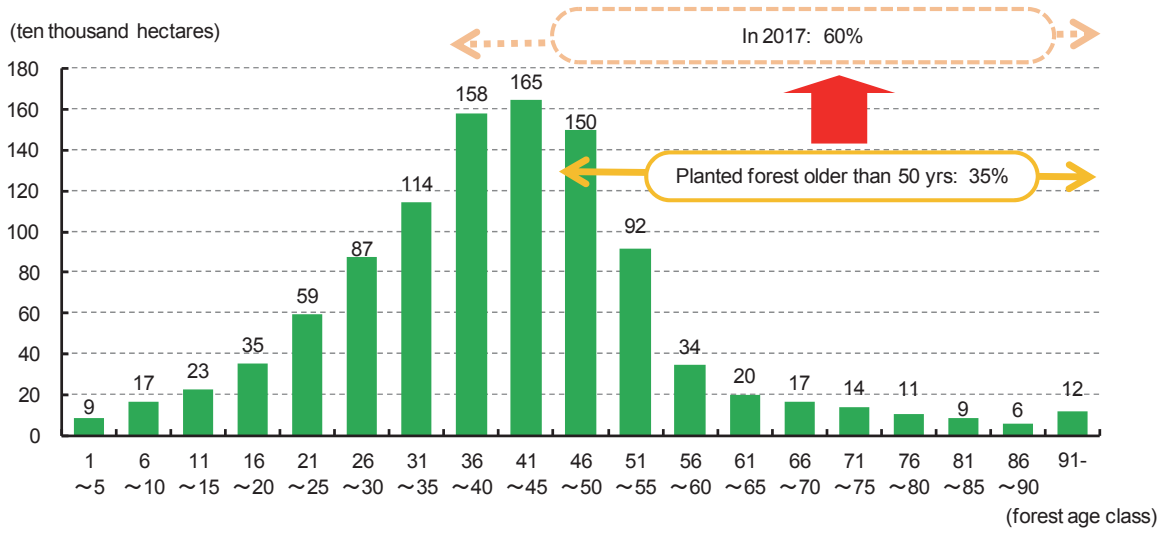


Fig.4-1: Distribution of planted forest area by forest age class in 2007

1.2. Fundamental Policy on Forest and Forestry

In July 2011, the "Forest and Forestry Basic Plan" was revised, setting the new goals of "fulfillment of multiple functional roles of forests" and "supply and use of forest products."

The "National Forest Plan" was also revised at the same time. The new plan abolished the three national functional types of forests and allowed each municipality to define its own functional types taking into consideration regional conditions. The "Prefectural Forest Plans" were then revised accordingly.

The "Municipality Forest Plan" was redefined as a "master plan" for the forests in each municipality, and the 1,614 municipality forest plans were also revised by the end of FY2012.

1.3. Forest Management

In order to maintain the multiple functional roles of forests, forests need to be properly managed and conserved through thinning and replanting.

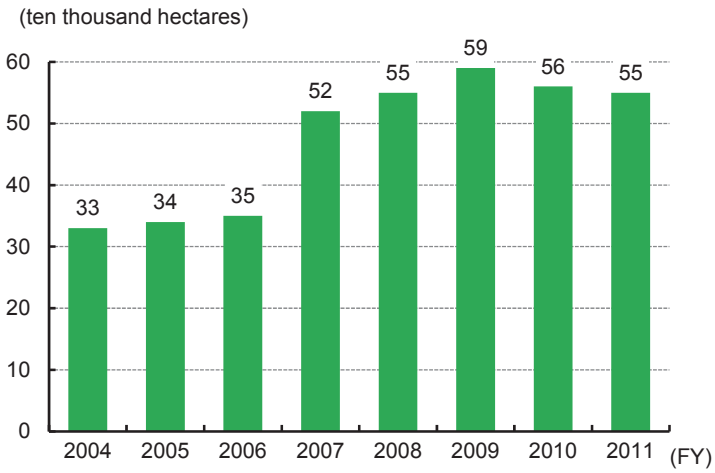


Fig.4-2: Annual area of thinned forests in Japan

The Forestry Agency is promoting "thinning" activities by providing financial support to local governments according to the "Thinning Promotion Special Law" and direct assistance to forest owners for forestry practices, including thinning for material use and development of the forest road network with the goal of achieving 3.3 million hectares of thinning between 2007 and 2012. In 2011, the total area of thinned forests was 550,000 hectares (Fig.4-2). In some private forests where proper management activity is urgently needed, forest management activities including planting and conservation works are conducted by public bodies on behalf of private forest owners to maintain the multiple functional roles of forests.

Obtaining information on forest owners is essential to assure proper forest management. However, the number of forests whose owners are unknown is increasing due to an increase in the number of forest owners living away from their forests as a result of inheriting from their parents. In response, the revised "Forest Law" introduced a mandatory notification system for new forest owners to local municipalities. The Forestry Agency is also conducting a survey on forest acquisition by foreigners and eight cases (totaling 16 hectares) were reported in FY2012.

In Japan, "Japanese cedar (*sugi*) pollinosis" is acknowledged to be a nationwide problem. The Forestry Agency is promoting the conversion of existing cedar forests to lower-pollen cedar forests, through the development and planting of low-pollen Japanese cedar varieties. The number of low-pollen seedlings grown in 2011 totalled1.42 million, 16 times more than in 2005.

1.4. People's Participation in Forest Management

In Japan, a wide range of people/companies/organizations have shown a willingness to support forest and forestry from economic, industrial, or cultural perspectives.

The number of organizations who are willing to participate in voluntary forestry activities reached 3,152 in 2011. Also, many private companies are participating in forest management and conservation as a part of their corporate social responsibility (CSR) activities.

Many prefectural governments have begun to impose their own taxes with the objective of supporting forest management activities. As of FY2012, 33 of 47 prefectures had introduced forest tax systems, with total income reaching 2.6 billion yen.

1.5. Research and Development

In September 2012, the new “National Research and Development Strategy in Forest, Forestry, and Wood Products Industry” was introduced. Under this strategy, the national government, the Forest and Forest Products Research Institute, and prefectural governments are cooperatively conducting research and development into new technologies to provide solutions for current policy challenges.

The Forestry Agency will develop technical experts, “Foresters,” with considerable knowledge and expertise in forest and forestry. These Foresters are expected to support the policy administration of local governments and on-the-ground forest management activities. The Forestry Agency is temporarily conducting a training course for “Apprentice Foresters,” before the “Forester” certification system is implemented in FY2013.

2. Forest Conservation

2.1. Conservation Forests

Under the Forest Law, forests providing particularly important public benefits, including securing water resources and preventing disasters, are designated as “conservation forests.” As of 2011, the total area of conservation forests was 12.05 million hectares, or 48% of the total forest area and 32% of the total land area in Japan. In the “conservation forests,” general forest management is allowed with specific limitations for each type of conservation forest

2.2. Disaster Control

In July 2011, a heavy rainstorm caused many natural disasters in the mountainous areas in the north Kyushu region. In response to these disasters, the Forestry Agency dispatched technical staff to the damaged areas soon after the disaster to conduct recovery work.

The Forestry Agency also conducts “forest conservation projects” to replant forests and install disaster control facilities to help fulfill the landslide prevention function of forests.

2.3. Conservation of Forest Biodiversity

In September 2012, GOJ adopted the “National Biodiversity Strategy of Japan 2012-2020” as a roadmap to achieve the “Aichi Biodiversity Targets” of the Convention on Biological Diversity (CBD). In implementing the Strategy, the Forestry Agency is promoting appropriate thinning and forest management to conserve diverse forest ecosystems.

The Forestry Agency is also promoting conservation of those forests identified as being “World Heritage” site, including *Shirakami*, *Yakushima*, *Shiretoko*, and the *Ogasawara* Islands. In January 2012, the GOJ submitted a recommendation to UNESCO to register Mt. Fuji in the World Heritage List.

2.4. Wildlife Control

In FY2011, approximately 9,000 hectares of forests were damaged by wild animals, 60% of which was caused by deer.

For the control of wild animals, comprehensive approaches through “control of wildlife population,”

“prevention of damages” with protective fences, and “proper management of habitats” to grow broad-leaved forests is important.

2.5. Pest Control

In FY2011, the volume of pine trees damaged by the pinewood nematode (*Bursaphelenchus xylophilus*) was 650 thousand m^3, approximately one-fourth of its peak year of 1979, but such damage is still the worst among all forest pests and diseases in Japan. The Forestry Agency is implementing “preventive measures” through the application of chemicals and “combating measures” through logging and fumigation of affected trees.

In FY2011, the volume of damage to *Quercus* spp. trees caused by the oak platypodid beetle (*Platypus quercivorus*) declined to 160,000 m^3, less than a half of the previous year. The Forestry Agency is combating the beetle through logging and fumigating of damaged trees and the development of preventive measures including the installation of adhesives to capture the beetles.

3. International Cooperation

3.1. Sates of World’s Forests

As of 2010, the world forest area was 4.03 billion hectares, or 31% of total land area. Between 2000 and 2010, the world’s forest area declined by 5.21 million hectares annually. In Africa and South America, 3.00 million hectares of forests were lost annually, while in Asia, the forest area increased by 2.24 million hectares annually.

3.2. Promotion of Sustainable Forest Management

In June 2010, the United Nations Conference on Sustainable Development (Rio+20) was held in Rio de Janeiro, Brazil. The outcome document entitled “The Future We Want” reemphasized the importance of sustainable forest management.

Illegal logging substantially hinders the efforts of sustainable forest management. The GOJ is promoting international efforts to combat illegal logging and is implementing a governmental procurement policy under the principle that “illegally harvested timber should not be used.” In 2010, the GOJ also developed a tracking system for wood products in cooperation with the Indonesian Government which is applicable to wood exporting countries.

3.3. Japan’s Cooperation

Japan is promoting international cooperation for the promotion of sustainable forest management in developing countries through bilateral and multilateral schemes that include the provision of technical and financial assistance.

Chapter V　Forestry and Rural Mountain Communities

1. Forestry

1.1. Value of Forestry Production

The value of gross forestry production has been declining since the peak year in 1980. In 2011, the value of gross forestry production was 416.6 billion yen, a 1% decline from the previous year. Among the value of gross forestry production, wood production accounts for 46%, while mushroom production represents 52%.

In 2011, the volume of *sugi* production was 9.65 million m^3, a 7% increase from the previous year, while that of *hinoki* was 2.17 million m^3, a 7% increase. The price of *sugi* roundwood was 11,400 yen/ m^3, a 7% decline from the previous year, while that of *hinoki* was 18,500 yen/ m^3, a 15% drop (Fig.5-1).

The stumpage price of timber has declined to the point where the income from harvesting logs is too low to cover the replanting costs.

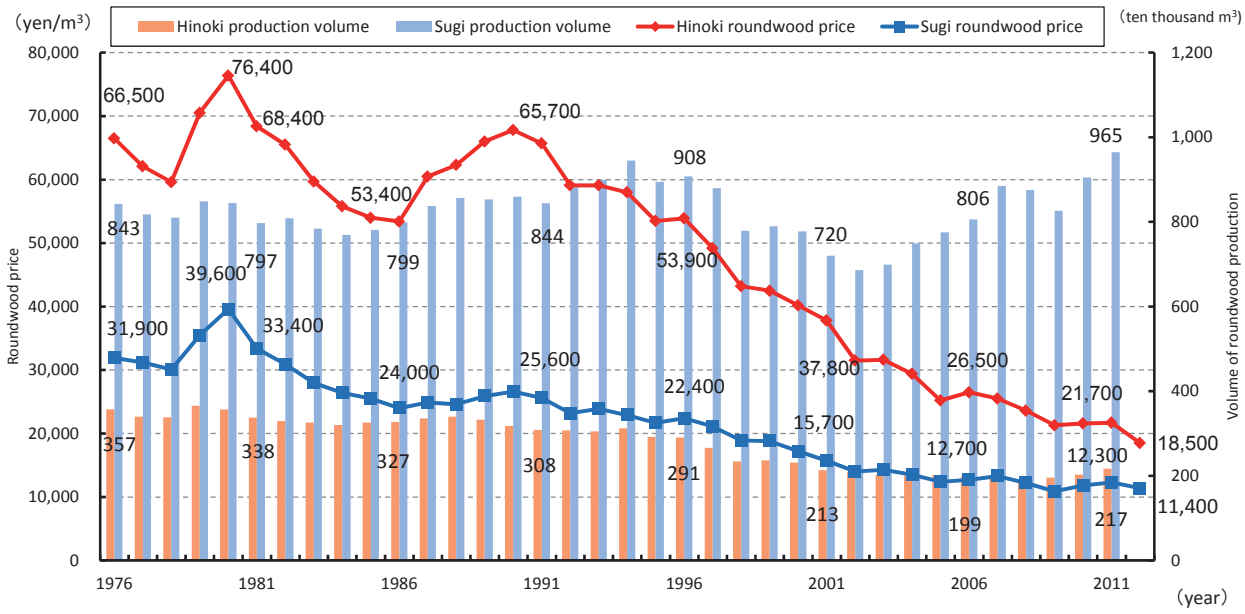


Fig.5-1: Production volume and roundwood prices of *Sugi* and *Hinoki*

1.2. Forest Ownership

In Japan, most private forests are owned by a large number of small scale forest owners. Approximately 90% of forest owners have less than 10 hectares of forest.

Recently, the area of forests whose owners live away from their forests has been increasing and the age of forest owners is also rising.

1.3. Forestry Management Bodies

In Japan, forestry management bodies consist of three categories: forest owners, the Forest Owners' Cooperatives, and private forestry contractors.

Most forest owners depend on income derived from activities other than forestry. Generally, small-scale forest owners are reluctant to engage in forestry practices due to its low profitability. In some regions, groups of small-scale forest owners cooperatively conduct thinning operations and transport the thinned wood to sell to chip mills or woody biomass energy plants.

The Forest Owners' Cooperatives are major forest management bodies, conducting more than half of forestry activities, including planting, weeding, and thinning. As of FY2010, the number of members (forest owners) in Forest Owners' Cooperatives was 1.57 million, which represents two-thirds of Japan's private forest area. However, the number of Forest Owners' Cooperatives has been decreasing because of mergers, falling to 679 in FY2010.

Private forestry contractors are major wood production bodies, conducting approximately 70% of harvesting.

Recently, the share of large-scale forestry management bodies in roundwood production is becoming high.

1.4. Forestry Workforce

The size of the forestry workforce has been declining in the long term, reaching approximately 69,000 in 2010. Although the share of the aged workforce (aged 65 or older) is 18%, the ratio of the young workforce (aged 35 or younger) has begun to rise.

The Forestry Agency has been implementing a "Green Employment Program," which teaches introductory skills and basic forestry knowledge to the new workers since FY2003. Thanks to the Program, the number of new workers has nearly doubled compared with the period before the Program started (Fig.5-2). In 2011, the Forestry Agency introduced step-by-step system to promote new workers from "forest workers" to "forest managers" or "forest leaders."

Recently, women have begun to increasingly engage in forestry activities.

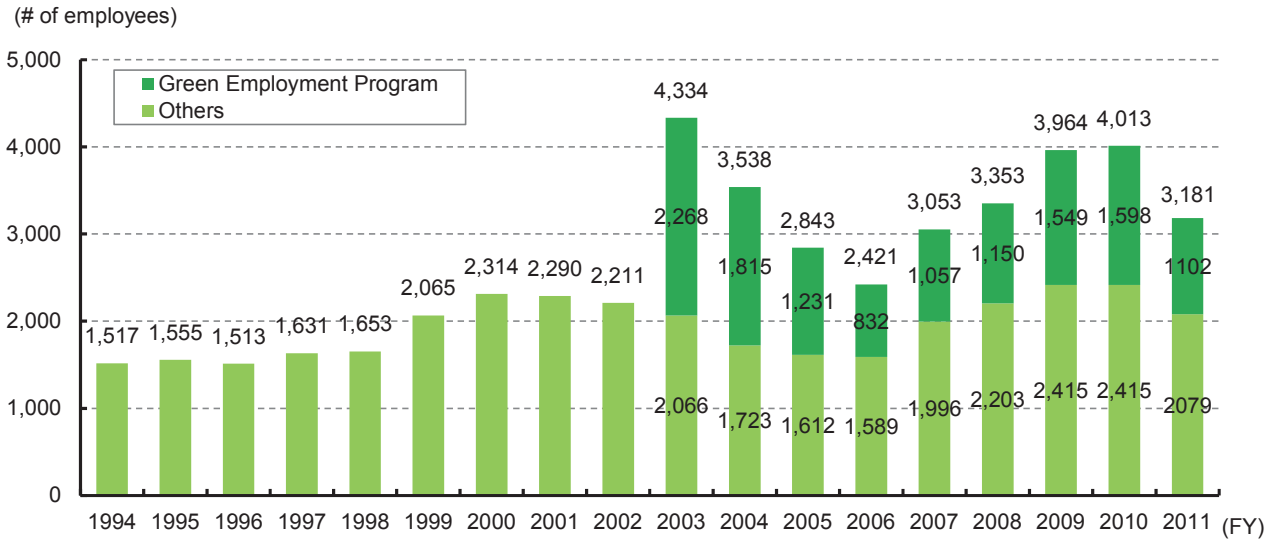


Fig.5-2: Number of new entrants to forestry workforce

1.5. Improvement of Forestry Productivity

To improve forestry productivity, the “coordination and consolidation of forestry practices” is very important. Such activities will help to coordinate multiple small forest owners and conduct forestry practices on a larger, more commercial, scale.

The Forestry Agency has been training “Forest Management Planners” since FY2007, to help promote the proposal-based coordination and consolidation of forestry practices. In 2012, the revised ”Forest Law” introduced the new “Collective Forest Management Plan System” developed by forest owners or their entrusted forest managers for the sustainable forest management/protection of the collective forest area. The Forestry Agency is implementing the new system with flexibility, listening to the opinions of the on-the-ground forest management.

In Japan, the network of forest roads is underdeveloped. The Forestry Agency is accelerating the development of the forestry road system based on a combination of three types of forest roads: the “forest road” for general vehicles, the “forestry exclusive road” for trucks with ten ton loads, and the “forestry operation road” for forestry machinery. The Forestry Agency is also training technical experts in the planning and construction of forestry road systems.

As of FY2011, there are 5,100 pieces of advanced forestry machinery in Japan, a 9% increase over the previous year. The Forestry Agency is promoting the development and improvement of advanced forestry machines.

To improve the efficiency of forest planting and treatment, new technologies such as growing seedlings in containers, simplification of weeding practices, and planting with fewer seedlings, are being evaluated on an experimental basis.

2. Rural Mountain Communities

2.1. Conditions surrounding Rural Mountain Communities

In Japan, rural mountain communities cover 50% of the total land area, or 60% of the total forest area. In these areas, the housing infrastructure is underdeveloped and the population continues to decline and become older. In such areas, the public benefits of forests might be adversely affected due to the lack of proper forest management. Former community forests (“*satoyama* forests”) are also under threat from invasive weeds and bamboo.

2.2. Revitalization of Rural Mountain Communities

In order to maintain the community function and the vitality of rural mountain communities, the Forestry Agency is promoting effective communication between rural mountain communities and urban areas and is supporting settlement initiatives through the creation of job opportunities in new businesses that utilize forest resources, such as energy generation from woody biomass.

The Forestry Agency is also promoting the “sixth industry” initiative, which seeks to bring together first (agriculture, forestry and fisheries), second (manufacturing), and third (service) industries, through the integration of primary production and its processing/distribution or through the invention of new industrial sectors which utilize local primary resources.

Chapter VI Wood Demand/Supply and the Wood Products Industry

1. Wood Demand and Supply

1.1. World wood demand and supply

The total volume of industrial roundwood consumption in the world is increasing. In 2011, the total volume consumed reached 1.56 billion m^3, a 1% increase from the previous year.

As for the global wood trade, China has increased its imports of industrial roundwood and exports of plywood, while Russia has decreased its exports of industrial roundwood. These two countries have a strong influence on the global trade of wood products.

1.2. Wood demand and supply in Japan

In 2011, the size of the domestic wood supply increased by 6.2%, reaching 19.37 million m^3 (roundwood equivalent), while that of imported wood increased by 2.6%, reaching 53.36 million m^3 (RW eq.). In 2011, Japan's wood demand increased by 4% from the previous year, reaching 72.73 million m^3 (RW eq.), due to the recent increase in new housing starts. As a result the self-sufficiency rate for wood in 2011 was 26.6%, up 0.6% from 2010.

The volume of demand for lumber dropped to one third of the peak year in 1973, due to the long-term decline in the number of domestic housing starts (Fig.6-1). The volume of domestic wood used for plywood production has increased sharply since 2000, although wood demand for plywood production as a whole is on the decline (Fig.6-2). Wood demand for chip and pulp production is also on the decline due to a decrease in paper production.

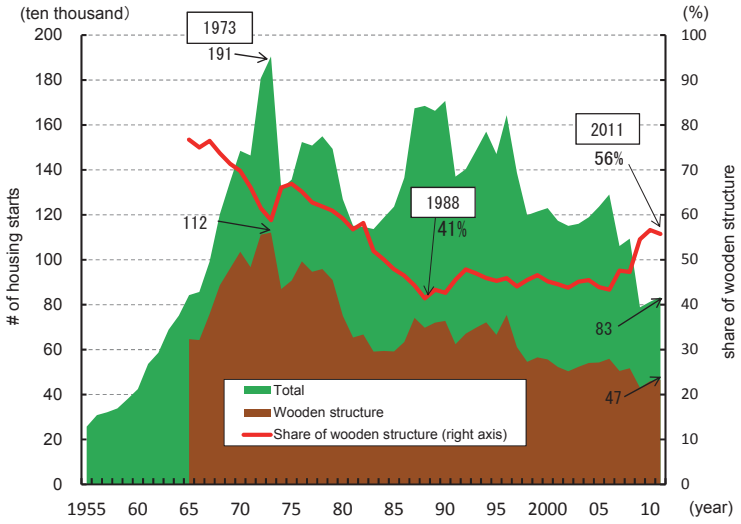


Fig.6-1: Housing Starts in Japan

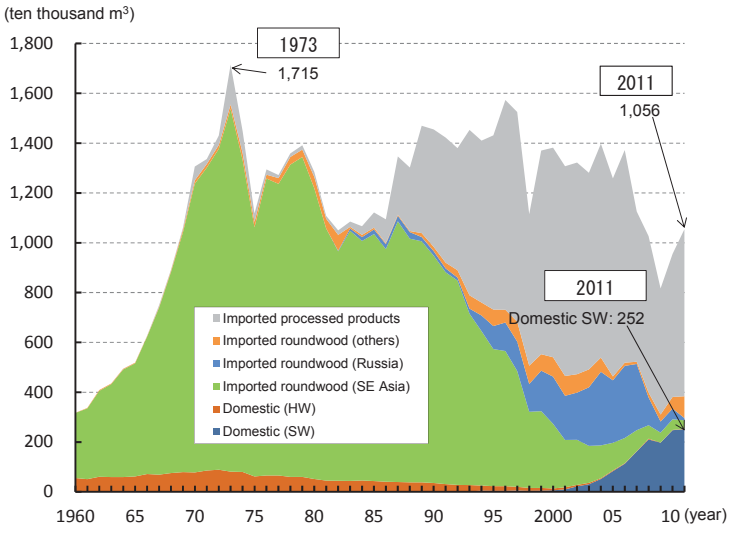


Fig.6-2: Supply of wood for plywood production

1.3. Wood prices

The price for domestic roundwood has been declining for a long period. In 2012, the roundwood price of *sugi* was 11,400 yen/m^3 (900 yen/m^3 less than 2011), that of hinoki was 18,500 yen/m^3 (3,200 yen/m^3 less), and that of karamatsu was

10,600 yen/m^3 (200 yen/m^3 less). The drop in the *hinoki* roundwood price was especially dramatic.

The cause of the price decline could be attributed to a "mismatch" in the supply and demand of domestic wood, which has been exacerbated by the lower cost of imported wood because of the strong yen and weak demand for domestic wood after the Great East Japan Earthquake. In response to the price drop, the Forestry Agency has been promoting coordination between demand and supply through a more efficient information exchange while stimulating the wood demand.

The prices of processed products in 2012 were also lower than in 2011 for both domestic and imported wood products.

1.4. Wood from responsible forest management

Illegal logging substantially hinders the efforts of sustainable forest management. The GOJ is encouraging the use of legally or sustainably produced wood based on the "Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act on Promoting Green Purchasing)".

1.5. Non-wood forest products

Non-wood forest products include mushrooms, wild vegetables, edible nuts, and charcoal. In 2011, the total value of non-wood forest products production was 26.48 billion yen, 90% of which was derived from mushroom production. A number of medicinal herbs for Chinese medicine are also produced as non-wood forest products.

Due to the accident at the TEPCO Fukushima Nuclear Power Stations in March 2011, "shipment restrictions" are imposed on non-wood forest products including mushrooms and wild plant shoots harvested in the affected regions. The roundwood used for mushroom production is also in short supply because of radiation exposure.

2. Wood Products Industry

2.1. Sectoral trend of the wood products industry

The gross value of wood products production has been on the decline for a long period, dropping to 1.9 trillion yen in 2010.

As for lumber production, large scale lumber mills are becoming dominant in terms of their share of total lumber production. The share of domestic wood in the raw material inputs for lumber mills is rising, reaching 70% in 2011 (Fig.6-3). The output of kiln-dried lumber is also

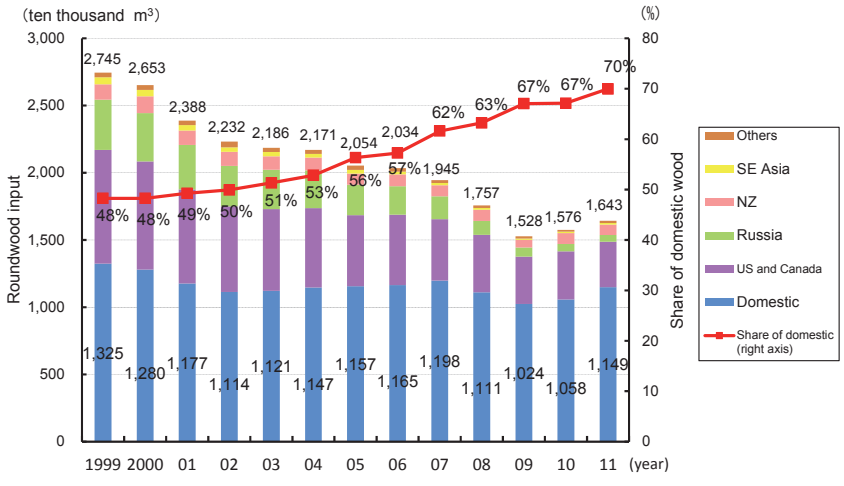


Fig.6-3: Material inputs for lumber production

increasing, although the share of KD lumber in total lumber production remains below 30%.

As for glulam production, the volume of production has been increasing since 2010. The share of domestic wood in the material input for domestic glulam mills was 23% in 2011.

As for plywood production, the supply of domestic wood used for plywood production is rapidly increasing, reaching 65% in 2011 (Fig.6-4). However, the share of domestic wood in the total wood demand for plywood production, including imported plywood, was approximately 24% in 2011.

As for wood chip production, the volume of production has been increasing since 2009. The share of domestic wood in the material input for domestic chip mills was 32% in 2011.

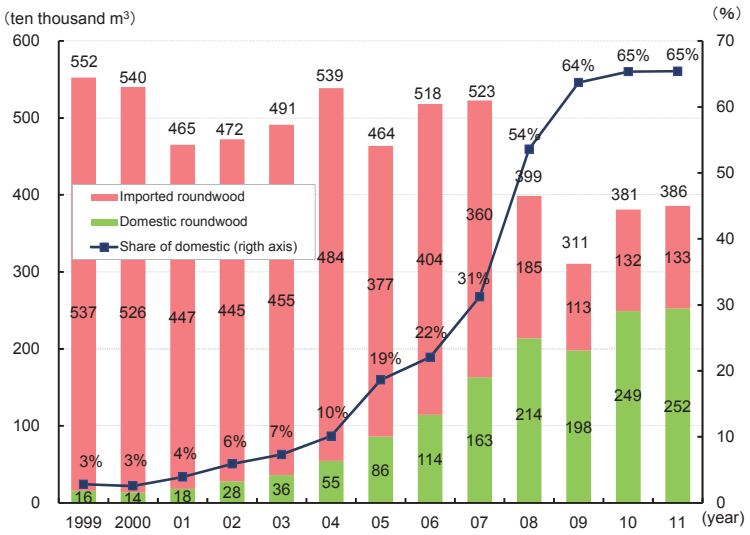


Fig.6-4: Material inputs for plywood production

3. Promotion of Wood Use

3.1. Housing sector

Approximately 40% of Japan's wood demand is used for building construction. In particular, the trend of new housing starts of wooden houses significantly influences wood demand as a whole. Recently, major housing companies have begun to use domestic wood more aggressively in their business activities.

The Forestry Agency is promoting local housing projects by supporting cooperation among forest owners, log producers, lumber producers, and local home builders who are willing to use local wood products.

3.2. Wooden public buildings

In October 2010, new legislation to promote wood use in public buildings was enacted. According to the legislation, the Government is promoting wooden structures and wooden interior decorations in public buildings whenever it is possible under the building codes. Further, the governmental ministries and local governments are developing their own policies to increase the use of wood in public buildings. As of March 2013, all 22 governmental ministries, all 47 prefectures, and 1,107 municipalities (out of 1,742) had already developed their wood use policies.

During FY2011, the GOJ constructed 31 low-rise public buildings with a wooden structure, and renovated 257 public buildings with wooden exterior/interiors.

The Forestry Agency and the Ministry of Education, Culture, Sports, Science and Technology (MEXT) are cooperatively promoting wooden school buildings. In 2009, they published a booklet on the points

for attention to implement the projects and presented case studies of wooden school buildings The Ministry of Land, Infrastructure, and Transportation (MLIT) has been conducting experiments to study the fire resistance of wooden parts and structures, for possible revision of the building standards for three-story school buildings.

Tsukuba Nursery of Yokohama Plant Quarantine Office

Municipal Medical Office in Morotsuka-son, Miyazaki pref.

Photo: Public buildings with a wooden structure

3.3. Energy use of woody biomass

The "Forest and Forestry Basic Plan," adopted in July 2011, set a target of wood use for pulp/chip production including fuel use at six million m^3 by 2020.

Among the variety of woody biomasses, most of the "mill residue wood" and "construction refuse wood" is already almost fully utilized. On the other hand, more than 20 million m^3 of "unused thinned wood," a by-product of timber production, is estimated to be left in the forests every year. Use of this "unused thinned wood" is indispensable for the promotion of energy production using woody biomass.

In July 2012, the "Feed-in Tariff (FIT) Scheme for Renewable Energy" was introduced. The procurement price of electricity generated from wood biomass was set at 33.6 yen/kWh for "woody biomass derived from thinned wood," 25.2 yen/kWh for "woody biomass in general," and 13.65 yen/kWh for "construction waste." The Forestry Agency developed the "Certification Guideline of Wood Biomass for Electric Use" for the efficient identification of woody biomass inputs. As of December 2012, six woody biomass power plants which use woody biomass derived from thinned wood have received recognition under the FIT program (see BOX).

Use of wooden pellets and firewood is also becoming popular.

Box: Expected benefits to local communities from woody biomass power plants with 5,000kWh output

- Generate electricity enough for 12 thousands households
- Consume 60 thousand tons of woody biomass fuel annually (equivalent to 100 thousand m^3 of roundwood)
- Generate annual income of 1.2-1.3 billion yen if all the fuels are thinned wood. Annual payment for fuel would be 700-900 million yen, which will be paid to forest owners, chip mills, and transporters.
- Hire as many as 50 employees in collection of thinned wood, chip mills, and power plants.

3.4. Wood exports

The value of wood exports was 9.3 billion yen in 2012, with the majority of wood exports going to China, Korea, the Philippines, and the US.

The GOJ is promoting the export of wood products mostly to China and Korea, through the exhibition of Japanese wooden housing materials in these countries and the provision of technical support in the revision of China's "Wooden Structure Design Standard" to ensure that Japan's domestic wood species are included in the Standard.

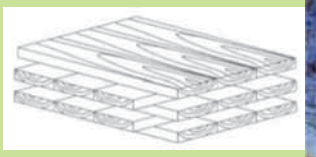
3.5. Research and Development

The wood products industry has been making efforts to develop new technologies for the expansion of wood use.

In the area of construction, the development of thick-layered structural plywood made of domestic softwood has substantially contributed to the increase of domestic wood use in the plywood sector. Currently, a new structural building material, "cross laminated timber (CLT)," used to build mid- to high-rise buildings is under development. In the area of civil engineering, wooden guardrails and plywood made of domestic softwood for concrete forming are under development.

3.6. Promotion of Wood Use

The Forestry Agency is promoting national initiatives to expand wood use and improve education on wood use through the "*Kizuka*i" (attention to wood use) and "*Mokuiku*" (wood use education) initiatives.



"Cross laminated timber (CLT)"
and nine-story building built with CLT in London

Plywood of domestic softwood for concrete forming

Photo: Research and development for expanded wood use

Appendix

1. Forestry-related Fundamental Figures

Item	Unit	1980	1995	2000	2005	2007	2008	2009	2010	2011
i Gross domestic product (GDP)	billion yen	242,838.7	495,165.5	502,989.9	503,903.0	512,975.2	501,209.3	471,138.7	482,384.4	470,623.2
Forestry (A)	billion yen	826.0	695.8	886.5	446.4	497.3	437.9	387.4	・・・	・・・
Forestry / GDP	%	0.34	0.14	0.17	0.09	0.10	0.09	0.08	・・・	・・・
Forestry (B)	billion yen	・・・	・・・	・・・	142.7	170.7	167.4	146.7	151.9	159.2
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	64.12	63.85	62.82	62.57	59.77
Forestry	million	0.19	0.09	0.07	0.06	0.05	0.06	0.06	0.08	0.07
Forestry / Total # of workers	%	0.34	0.14	0.11	0.09	0.08	0.09	0.10	0.13	0.12
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	25.10	25.10
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	11.88	11.91	11.96	12.02	12.05
Conservation Forest / Forest	%	29.0	34.1	35.5	46.4	47.3	47.5	47.7	47.9	48.0
vi Growing stock of forest	billion m^3	2.5	3.5	3.5	4.0	4.4	4.4	4.4	4.4	4.4
vii Industrial wood supply/consumption	million m^3	108.96	111.92	99.26	85.86	82.36	77.97	63.21	70.25	72.73
Domestic production	million m^3	34.56	22.92	18.02	17.18	18.63	18.73	17.59	18.24	19.37
Import	million m^3	74.41	89.01	81.24	68.68	63.74	59.23	45.62	52.02	53.36
Self-sufficiency rate	%	31.7	20.5	18.2	20.0	22.6	24.0	27.8	26.0	26.6
viii New housing starts	million units	1.27	1.47	1.23	1.24	1.06	1.09	0.79	0.81	0.83
Ratio of wooden structure	%	59.2	45.3	45.2	43.9	47.6	47.3	54.6	56.6	55.7

Notes 1: Figures in "Forestry (B)" are equal to the Figures in "Forestry (A)" minus the production value of National Forest Management Special Account.
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	2007	2008	2009	2010	2011
Gross domestic product	495,166	502,990	503,903	512,975	501,209	471,139	482,384	470,623
Industries	463,956	468,062	445,662	453,695	440,946	412,615	424,842	413,721
Agriculture, forestry and fisheries	9,346	8,896	6,108	5,854	5,700	5,440	5,656	5,450
Forestry (A)	696	887	446	497	438	387	・・・	・・・
Forestry (B)	・・・	・・・	143	171	167	147	152	159
Mining	861	627	400	392	353	283	301	298
Manufacturing	114,669	111,439	99,699	103,565	98,666	83,351	94,333	87,087
Pulp, paper and paper products	3,399	3,237	2,728	2,298	2,295	2,314	2,376	2,295
Wood and wooden products	1,469	1,240	946	859	813	686	714	738
Construction	40,850	37,130	29,018	29,385	28,091	26,948	26,198	26,448
Electricity, gas and water supply	13,329	13,576	11,712	10,423	9,661	11,132	11,008	8,610
Wholesale and retail trade	75,788	70,661	74,814	69,871	70,111	64,136	65,981	66,923
Finance and insurance	31,964	30,445	30,789	30,808	25,082	23,742	23,766	22,854
Real estate	53,757	57,864	54,042	55,721	56,013	56,879	56,890	56,728
Transport and communications	35,264	34,821	・・・	・・・	・・・	・・・	・・・	・・・
Transport	・・・	・・・	24,379	26,483	25,383	22,974	23,465	22,779
Communications	・・・	・・・	26,269	27,181	27,306	26,189	25,978	25,551
Service activities	88,129	102,604	88,433	94,012	94,580	91,541	91,266	90,994
Others	31,209	34,928	58,241	59,281	60,263	58,524	57,542	56,902

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	2007	2008	2009	2010	2011
Gross output of forestry	760.55	531.10	416.77	441.42	444.87	412.20	421.69	416.59
Roundwood production	526.61	322.13	210.23	225.56	213.30	186.07	194.55	205.52
Softwood	436.76	265.33	177.41	195.18	180.39	156.09	170.16	185.05
Japanese Cedar (*sugi*)	187.39	123.78	87.53	102.88	94.12	81.60	93.50	101.77
Hardwood	86.02	54.72	31.71	29.38	32.05	29.22	23.76	19.81
Wood fuel production	7.93	6.16	6.09	5.48	5.05	4.91	5.08	5.06
Mashroom production	218.32	196.89	198.50	208.30	223.98	220.01	218.91	204.72
Forestry by-product	7.70	5.92	1.96	2.08	2.55	1.22	3.15	1.29
Value-added of Forestry	532.91	351.87	245.60	246.37	241.61	219.30	225.50	223.78

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			25,097	4,431.74	10,347	2,651.31	13,383	1,779.39	1,208	1.04	159
National forest	Subtotal		7,686	1,078.27	2,364	423.61	4,691	653.81	631	0.86	0
	Under the Forestry Agency's jurisdiction	Subtotal	7,623	1,070.90	2,355	420.82	4,646	649.23	622	0.86	0
		State-owned	7,513	1,051.90	2,267	402.02	4,643	649.03	603	0.85	0
		Government reforestation	101	19.01	88	18.80	2	0.20	10	0.00	0
		Others	9	0.00	0	0.00	0	0.00	9	0.00	0
	Under other agency's jurisdiction		63	7.37	9	2.80	45	4.57	9	0.00	0
Private and public forest	Subtotal		17,411	3,353.47	7,983	2,227.70	8,693	1,125.59	577	0.18	159
	Public forest	Subtotal	2,830	484.33	1,247	294.62	1,449	189.63	128	0.08	6
		Prefecture	1,188	190.35	464	100.66	667	89.68	56	0.01	1
		Municipality	1,642	293.98	783	193.96	782	99.95	72	0.07	5
	Private forest		14,535	2,863.51	6,724	1,930.60	7,217	932.81	445	0.10	150
	Others		46	5.63	12	2.48	27	3.15	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, 2007.
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	
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
2007	(25,836)	(5,546)	(6,205)	(265)	(3,788)	(5,647)	(4,385)
	23,064	5,289	5,460	252	3,642	4,715	3,706
2008	(23,400)	(5,171)	(4,726)	(217)	(4,414)	(5,173)	(3,699)
	20,865	4,904	4,079	175	4,260	4,380	3,067
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

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

Note: 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 and 2006, the class XIX contains forests older than that class.
Source: Forestry Agency

7. Thinned Area and Use of Thinned Wood

	Thinned area (1,000ha)			Used volume of thinned wood (million m³)					
	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

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)

		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 m³)	Total	2.34	1.83	2.74	2.83	2.84	2.84	3.24	3.44
	Sawnwood	1.70	1.25	1.95	1.85	1.84	1.81	1.96	2.14
	Roundwood	0.37	0.34	0.41	0.50	0.45	0.41	0.48	0.47
	Others	0.26	0.24	0.38	0.48	0.55	0.62	0.80	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 Agancies" 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		0ha		-3ha		3-5ha		5-20ha		20-50ha		50-100ha		100ha-	
	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
Total	140,186	5,177,452	1,299	-	1,343	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	783	-	142	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	523	-	79	100	194	714	623	6,380	382	11,601	201	13,396	532	799,071
Cooperative	3,016	483,989	240	-	61	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	220	-	57	70	82	316	451	5,415	476	15,625	402	28,253	573	246,432
Other cooperatives	636	142,558	20	-	3	4	82	316	243	2,601	142	4,531	60	4,281	86	130,825
Other corporations	1,239	197,423	20	-	2	0	232	890	490	4,878	188	5,887	118	8,354	189	177,414
Non-corporation	131,724	2,051,347	515	-	1,200	1,472	40,400	146,904	67,194	616,812	16,430	463,576	3,873	249,485	2,112	573,098
Individual	125,136	1,759,002	345	-	1,162	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	1	-	1	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	2007	2008	2009	2010	2011	Relative change from previous year (%)
Total			21,242	17,034	16,166	17,650	17,709	16,619	17,193	18,290	6.4
By tree species	Softwood	Subtotal	16,575 (78)	13,707 (80)	13,695 (85)	15,162 (86)	14,975 (85)	13,976 (84)	14,789 (86)	15,986 (87)	8.1
		Japanese Cedar (Sugi)	8,852	7,671	7,756	8,848	8,755	8,263	9,049	9,649	6.6
		for sawnwood	8,642 <53>	7,258 <57>	6,737 <58>	7,175 <60>	6,782 <61>	6,352 <62>	6,695 <63>	7,089 <62>	5.9
		Japanese Cypress (Hinoki)	2,882	2,273	2,014	1,986	1,886	1,957	2,029	2,169	6.9
		Red pine (Akamatsu), Black pine (Kuromatsu)	1,551	1,034	783	794	815	704	689	580	▲ 15.8
		Japanese Larch (Karamatsu), Yezo spruce (Ezomatsu), Todomatsu (*Abies sachalinensis*)	2,779	2,410	2,910	3,295	3,286	2,821	2,821	3,373	19.6
		Others	375	319	232	239	233	231	201	215	7.0
	Hardwood		4,667 (22)	3,327 (20)	2,471 (15)	2,488 (14)	2,734 (15)	2,643 (16)	2,404 (14)	2,304 (13)	▲ 4.2
By use	Sawnwood		16,252 (77)	12,798 (75)	11,571 (72)	11,981 (68)	11,110 (63)	10,243 (62)	10,582 (62)	11,492 (63)	8.6
	Plywood		228 (1)	138 (1)	863 (5)	1,632 (9)	2,137 (12)	1,979 (12)	2,490 (14)	2,524 (14)	1.4
	Chips		4,762 (22)	4,098 (24)	3,732 (23)	4,037 (23)	4,462 (25)	4,397 (26)	4,121 (24)	4,274 (23)	3.7

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						
			Industrial use								Industrial use						Fuel				Industrial use					
		Total	Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Fuel	Total	Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Mushroom cultivation	Subtotal	Charcoal	Firewood	Total	Subtotal	Sawnwood	Pulp and chips	Plywood	Others	Fuel
Supply	Total	(6,725) 74,403	(6,725) 72,725	26,634	(6,725) 32,064	10,563	3,464	520	1,157	(6,725) 72,864	(6,725) 71,199	26,540	(6,725) 30,766	10,543	3,351	520	1,144	941	203	1,538	1,526	94	1,298	20	113	12
	Roundwood	(6,725) 24,767	(6,725) 24,767	15,821	(6,725) 4,628	3,858	460			(6,725) 23,241	(6,725) 23,241	15,727	(6,725) 3,329	3,838	347					1,526	1,526	94	1,298	20	113	
	Forest residue	298	298		298					298	298		298													
	Import	47,661	47,661	10,813	27,138	6,705	3,004			47,661	47,661	10,813	27,138	6,705	3,004											
	Mushroom cultivation	520						520		520						520										
	Fuel	1,157							1,157	1,144							1,144	941	203	12						12
Domestic production	Total	20,093	19,367	11,492	4,914	2,524	438	520	205	18,556	17,843	11,398	3,615	2,505	325	520	193	84	109	1,537	1,524	94	1,298	19	113	12
	Roundwood	19,069	19,069	11,492	4,616	2,524	438			17,545	17,545	11,398	3,317	2,505	325					1,524	1,524	94	1,298	19	113	
	Forest residue	298	298		298					298	298		298													
	Mushroom cultivation	520						520		520						520										
	Fuel	205							205	193							193	84	109	12						12
Import	Total	54,310	53,358	15,142	27,150	8,039	3,026		951	54,308	53,357	15,142	27,150	8,038	3,026		951	857	95	2	2	0		1		
	Roundwood	5,698	5,698	4,329	12	1,334	23			5,696	5,696	4,329	12	1,333	23					2	2	0		1		
	Wood products: Subtotal	47,661	47,661	10,813	27,138	6,705	3,004			47,661	47,661	10,813	27,138	6,705	3,004											
	Wood products: Sawnwood	10,813	10,813	10,813						10,813	10,813	10,813														
	Wood products: Pulp	6,202	6,202		6,202					6,202	6,202		6,202													
	Wood products: Chips	20,936	20,936		20,936					20,936	20,936		20,936													
	Wood products: Plywood	6,705	6,705			6,705				6,705	6,705			6,705												
	Wood products: Others	3,004	3,004				3,004			3,004	3,004				3,004											
	Fuel	951							951	951							951	857	95							

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
2007	83,879	82,361	976	542	30,455	37,124	11,260	3,522	18,626	63,735	22.6
2008	79,518	77,965	1,005	548	27,152	37,856	10,269	2,688	18,731	59,234	24.0
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

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	2007	2008	2009	2010	2011	Relative change to previous year (%)
Total wood supply/demand			113,698	101,006	87,423	83,879	79,518	64,799	71,884	74,403	3.5
Wood for industrial use			111,922	99,263	85,857	82,361	77,965	63,210	70,253	72,725	3.5
Wood for fuel			721	940	1,001	976	1,005	1,047	1,099	1,157	5.3
Wood for mushroom production			1,055	803	565	542	548	543	532	520	▲ 2.3
Wood for industrial use	Total	Total	111,922	99,263	85,857	82,361	77,965	63,210	70,253	72,725	3.5
		Domestic Wood	22,916	18,022	17,176	18,626	18,731	17,587	18,236	19,367	6.2
		Imported Wood	89,006	81,241	68,681	63,735	59,234	45,622	52,018	53,358	2.6
		Self-sufficiency rate (%)	20.5	18.2	20.0	22.6	24.0	27.8	26.0	26.6	0.6
	Sawnwood	Subtotal	50,384	40,946	32,901	30,455	27,152	23,513	25,379	26,634	4.9
		Domestic Wood	16,252	12,798	11,571	11,981	11,110	10,243	10,582	11,492	8.6
		Imported Wood	34,132	28,148	21,330	18,474	16,042	13,270	14,797	15,142	2.3
		Self-sufficiency rate (%)	32.3	31.3	35.2	39.3	40.9	43.6	41.7	43.1	1.4
	Pulp and chips		(6,280)	(6,537)	(7,974)	(7,402)	(6,509)	(5,662)	(6,192)	(6,725)	8.6
		Subtotal	44,922	42,186	37,608	37,124	37,856	29,006	32,350	32,064	▲ 0.9
		Domestic Wood	5,989	4,749	4,426	4,673	5,113	5,025	4,785	4,914	2.7
		Imported Wood	38,933	37,437	33,181	32,451	32,743	23,981	27,565	27,150	▲ 1.5
		Self-sufficiency rate (%)	13.3	11.3	11.8	12.6	13.5	17.3	14.8	15.3	0.5
	Plywood	Subtotal	14,314	13,825	12,586	11,260	10,269	8,163	9,556	10,563	10.5
		Domestic Wood	228	138	863	1,632	2,137	1,979	2,490	2,524	1.4
		Imported Wood	14,086	13,687	11,723	9,628	8,132	6,184	7,066	8,039	13.8
		Self-sufficiency rate (%)	1.6	1.0	6.9	14.5	20.8	24.2	26.1	23.9	▲ 2.2
	Others	Subtotal	2,302	2,306	2,763	3,522	2,688	2,528	2,968	3,464	16.7
		Domestic Wood	447	337	316	340	370	340	379	438	15.6
		Imported Wood	1,855	1,969	2,447	3,182	2,317	2,188	2,589	3,026	16.9
		Self-sufficiency rate (%)	19.4	14.6	11.4	9.7	13.8	13.4	12.8	12.6	▲ 0.2

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 categoey ×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	2007	2008	2009	2010	2011
Imported wood	North America	Subtotal	(34.2) 38,261	(28.9) 28,700	(18.8) 16,129	(17.3) 14,221	(17.9) 13,948	(18.2) 11,493	(19.2) 13,506	(19.1) 13,871
		U.S.	23,273	14,460	6,844	6,318	6,291	5,163	5,838	5,877
		Canada	14,987	14,240	9,285	7,904	7,657	6,330	7,668	7,993
	Southeast Asia	Subtotal	(14.7) 16,418	(13.7) 13,569	(12.2) 10,511	(10.3) 8,517	(9.8) 7,632	(9.6) 6,041	(8.9) 6,287	(9.1) 6,586
		Malaysia	7,601	6,690	5,888	5,285	4,959	3,755	3,773	3,701
		Indonesia	6,334	5,858	4,137	2,777	2,419	2,079	2,304	2,622
		Others	2,482	1,021	486	455	253	207	209	263
	Russia		(6.4) 7,131	(7.5) 7,429	(8.6) 7,411	(8.1) 6,712	(4.9) 3,795	(3.9) 2,449	(3.3) 2,343	(3.3) 2,410
	Europe		(2.2) 2,411	(4.7) 4,675	(6.9) 5,937	(6.9) 5,668	(5.5) 4,324	(6.9) 4,391	(7.1) 4,967	(7.6) 5,553
	Others	New Zealand	(3.8) 4,263	(4.4) 4,374	(3.4) 2,878	(3.5) 2,851	(3.8) 2,975	(3.3) 2,086	(3.9) 2,720	(3.8) 2,772
		Chile	(4.7) 5,311	(3.8) 3,795	(4.6) 3,952	(5.5) 4,498	(6.5) 5,049	(6.9) 4,389	(6.7) 4,726	(7.2) 5,210
		Australia	(6.6) 7,428	(8.7) 8,604	(10.2) 8,729	(12.1) 9,933	(12.8) 9,986	(10.6) 6,674	(11.0) 7,722	(7.7) 5,629
		China	(1.8) 2,061	(2.5) 2,445	(3.0) 2,544	(2.6) 2,121	(2.8) 2,156	(2.6) 1,647	(3.0) 2,084	(3.6) 2,633
		Others	(5.1) 5,721	(7.7) 7,651	(12.3) 10,591	(11.2) 9,215	(12.0) 9,370	(10.2) 6,451	(10.9) 7,663	(12.0) 8,695
	Subtotal		(79.5) 89,006	(81.8) 81,241	(80.0) 68,681	(77.4) 63,735	(76.0) 59,234	(72.2) 45,622	(74.0) 52,018	(73.4) 53,358
Domestic wood			(20.5) 22,916	(18.2) 18,022	(20.0) 17,176	(22.6) 18,626	(24.0) 18,731	(27.8) 17,587	(26.0) 18,236	(26.6) 19,367
Total			(100.0) 111,922	(100.0) 99,263	(100.0) 85,857	(100.0) 82,361	(100.0) 77,965	(100.0) 63,210	(100.0) 70,253	(100.0) 72,725

Note 1: Figures refer to the sum of domesic/ 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	2007	2008	2009	2010	2011
Sawnwood	Number of sawmills	plants	14,565	11,692	9,011	7,905	7,378	6,865	6,569	6,242
	Sawnwood shipments	1,000m³	24,766	17,231	12,825	11,632	10,884	9,291	9,415	9,434
Plywood	Number of plywood mills	plants	455	354	271	248	233	208	192	203
	Inputs for plywood production	1,000m³	7,321	5,401	4,636	5,227	3,986	3,107	3,811	3,858
	General plywood production	1,000m³ (1,000m²)	655,799	3,218	3,212	3,073	2,586	2,287	2,645	2,486
	Special plywood production	1,000m³ (1,000m²)	340,687	1,534	1,037	924	825	636	647	703
Laminated wood	Number of laminated wood factories	plants	293	281	259	225	199	187	182	181
	Laminated wood production	1,000m³	582	892	1,512	1,346	1,293	1,249	1,455	1,455
Wood chips	Number of wood chip mills	plants	3,535	2,657	2,040	1,857	1,744	1,663	1,578	1,545
	Wood chip production	1,000tons (1,000m³)	11,226	10,851	6,005	5,894	5,797	5,129	5,406	5,638

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	2007	2008	2009	2010	2011
Number of sawmills	14,565	11,692	9,011	7,905	7,378	6,865	6,569	6,242
-22.5kW	1,394	1,137	899	823	790	799	784	757
22.5-37.5	3,317	2,635	1,919	1,660	1,501	1,413	1,333	1,286
37.5-75.0	5,472	4,406	3,371	2,861	2,628	2,309	2,165	2,015
75.0-150.0	2,596	1,991	1,552	1,372	1,309	1,241	1,196	1,124
150.0-300.0	1,233	980	782	706	681	649	641	619
300.0kW-	553	543	488	483	469	454	450	441
Number of sawmill employees	104,197	73,625	49,159	42,127	38,260	34,970	33,479	32,482

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 FY2012” is available on the website of the Forestry Agency:

http://www.rinya.maff.go.jp/j/kikaku/hakusyo/24hakusyo/index.html

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