Annual Report on Trends in Forest and Forestry

Fiscal Year 2008

(Summary)

Forestry Agency

The Ministry of Agriculture, Forestry and Fisheries of Japan

Table of Contents

Cover photo: Beech (*Fagus crenata*) forest at “Funagata-Yakushi-no-Mori” in Funagata City, Yamagata Prefecture (*see Chapter V, page 27*)

Preface

In 2008, the first commitment period of the Kyoto Protocol began. To meet the removal target of 13 Mt-C/year through forest carbon sinks for the achievement of 6% emission reduction commitment in the Protocol, Japan has been implementing a six-year forest thinning promotion project (from FY 2007 to FY 2012), with the target area of 3.3 million hectares. The annual target of 550 thousand hectares is 200 thousand hectares larger than the previous level of 350 thousand hectares.

Meanwhile, the Government experimentally introduced the "Integrated Domestic Market of Emissions Trading" and launched the "Offsetting Credit (J-VER)" scheme with the aim to realize a low-carbon society. In these schemes, new mechanisms to create value from forests are introduced by generating carbon credits through emission reduction by woody biomass utilization and/or carbon sequestration by forest management activities.

Woody biomass including forest residues has large potential as resource. In order to utilize this resource, research programs have been carried out for the development of innovative methods to produce materials and fuel such as nanocarbon and ethanol. With the business opportunities based on these innovations, the economy of communities in mountainous areas is expected to revitalize.

While there are growing potentials in forest management and wood utilization as mentioned above, many changes have been observed since 4th quarter of 2008: decrease in new housing starts, weak wood demands and increase in job applicants in forestry sector, caused by global economic downturn. Furthermore, global supply and demand of wood will be significantly affected by, among others, Russia's increase in export tax on logs and China's economic growth.

This Annual Report on Trends in Forest and Forestry is developed with a view to raise national awareness and understandings on forest, forestry and related policy measures, while taking account of recent trends.

At the outset of the report, the Report provides five notable topics in 2008: including "Low-carbon society and forest," "Job creation in forestry sector" and "Decline of Russian log import and substitution with domestic supply." The first chapter focuses on the low-carbon society and forest. The following chapters introduce major trends on forest, forestry and mountainous areas, forest products and wood industries and the National Forest.

Topics

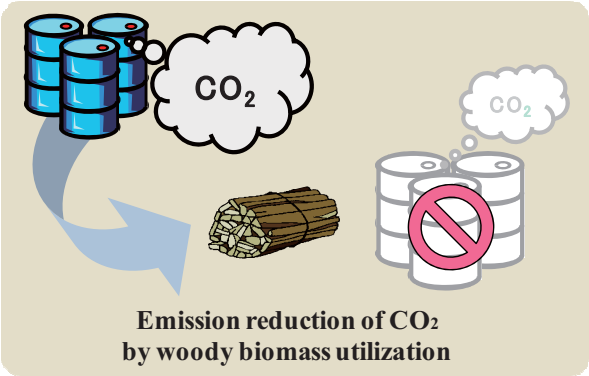
1. Low-carbon society and forest
2. Job creation in forestry sector
3. Decline of log import from Russia and substitution with domestic logs
4. Utilization of thinned wood in paper manufacturing
5. Restoration efforts in earthquake-affected area

1. Low-carbon society and forest

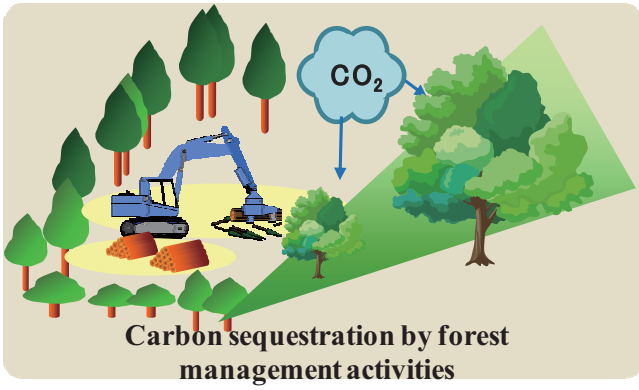
In 2008, the Government experimentally introduced the "Integrated Domestic Market for Emissions Trading" and launched the "Offsetting Credit (J-VER)" scheme with the aim to realize a low-carbon society.

Under these two new schemes, carbon credits can be generated through emission reduction of CO_2 by woody biomass utilization. Moreover, under the Offsetting Credit (J-VER) scheme, carbon credits can also be generated through carbon sequestration by forest management activities.

With the use of these carbon credits generated by woody biomass utilization and/or forest management activities, forest owners are expected to share the part of the revenues arising from these credits. This will contribute to revitalization of forestry industry and communities in mountainous areas and promotion of proper forest management for the mitigation of global warming.



Emission reduction of CO_2 by woody biomass utilization



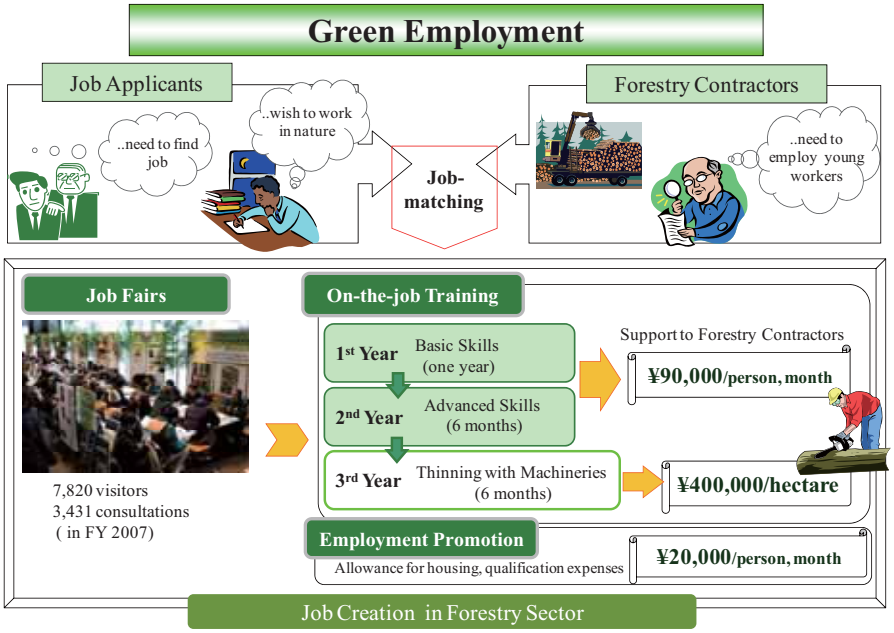
Carbon sequestration by forest management activities

2. Job creation in forestry sector

The number of forestry workers continues to fall and the share of those aged 65 or older have been increasing while the profitability of forestry industry becomes worse.

The Forestry Agency started the vocational training project named as "Green Employment," where new entrants in forestry industry learn basic skills and knowledge of forestry. As a part of this initiative, job fairs were held in major cities in January 2009. Given the poor job climate caused by economic downturn, these fairs attracted much more participants than the previous year.

In Response to the expectation to the "Green Employment" project, the Forestry Agency launched additional supports to improve forestry workers' skills.



3. Decline of log import from Russia and substitution with domestic logs

With Russia's increase in export tax on logs since July 2007 and China's growing demand on Russian logs, Japan's log import from Russia has sharply declined. Japan's plywood and lumber industry have been substituting domestic logs for Russian logs as input material.

Russian Export Tax on Logs

- June 2007	6.5%
July 2007-	20%
April 2008-	25%
January 2010-*	80%

*Originally scheduled for January 2009 but Russian Government postponed the final hike for one year.

Vessel of Russian logs

Imported Russian logs

4. Utilization of thinned wood in paper manufacturing

In January 2008, the "recycled-pulp scandal" occurred. Major paper manufacturing companies were accused of faking the ratio of recycled-pulp in recycled paper to meet the government procurement standard. In response to the scandal, the Government revised its procurement standard under the "Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities." From the FY 2009, copier paper containing pulp manufactured with thinned wood and/or wood obtained from certified forests is also subject to government procurement, in addition to copier paper containing recycled pulp.

The Forestry Agency implemented a study to promote the use of thinned wood in paper manufacturing. Stakeholders in three areas in Japan started voluntary projects to ensure the reliable supply of thinned wood.

Log production

Transportation

Carrying -in

Chips

5. Restoration efforts in earthquake-affected area

"The Iwate-Miyagi Nairiku earthquake" hit the north-eastern part of Japan on 14th June, 2008. The earthquake caused large-scale landslides and other severe damages. The total amount of damages reached as much as 100 billion yen. The Forestry Agency immediately dispatched conservation engineers to the devastated areas and began restoration operation such as field investigation, planning and emergency engineering works. Currently, permanent restoration works are under way to keep the region safe and secure.

Landslide in Ichinonobara Area

Landslide near Aratozawa Dam

Field Investigation

Chapter I　Low-Carbon Society and Forest

1. 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 caused by the observed increase in anthropogenic greenhouse gas concentrations.

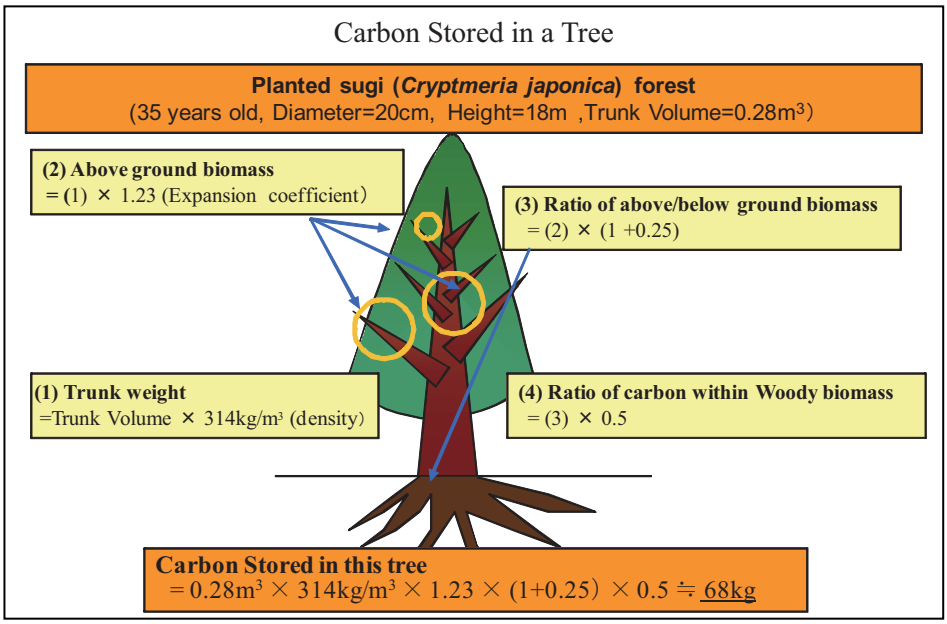
The average temperature in Japan has risen by 1.11°C for the past 100 years. In particular, high temperatures have been frequently recorded since 1990. If global warming worsens, wide range of adverse effects is likely to occur, including changes in rice yield, expansion of pests and diseases, increase of infectious disease risk, shrinking of suitable habitats for beech (*Fagus crenata*) forests.

Observed Changes	Expected Changes
- Global surface temperature has risen by 0.74 [0.56 to 0.92]°C for the past 100 years(1906-2005). Global average sea level has risen at an average rate of 1.8 [1.3 to 2.3] mm/yr since 1961 - Mountain glaciers and snow cover on average have declined. Cold days, cold nights and frosts have become less frequent. Frequency of hot days and hot nights has increased. Frequency of heavy precipitation events has increased - Earlier timing of spring events and poleward and upward shifts in plant and animal ranges	- Expected increase in global average surface temperature in 2090-2099 relative to 1980-1999 ranges from 1.8 to 4.0°C. Sea level rise ranges from 18 to 59cm. - Contraction of snow cover area, decrease in sea ice extent, increase in frequency of hot extremes, heat waves and heavy precipitation - Increase in coral bleaching, species range shifts, wildfire risk, risk of species extinction

(2) Contribution of Forest to the Mitigation of Global Warming

Forest contributes to the mitigation of global warming through the following functions.

- Sequestration and storage of carbon
- Carbon storage in wood products (Carbon in wood products remains stored for a long period of time).
- Substitution of wood products for more energy-intensive materials (production and manufacturing of wood products requires less fossil fuel than those of other materials)
- Reduction of CO_2 emission by the use of wood as energy source (Emitted carbon in CO_2 from wood was once sequestrated from the air)



2. Actions against Global Warming and Challenges toward the "Low-Carbon Society"

(1) Actions against Global Warming

Since the late 80's, various actions against global warming have been taken internationally, notably under the United Nations Framework Convention on Climate Change (UNFCC) and the Kyoto Protocol.

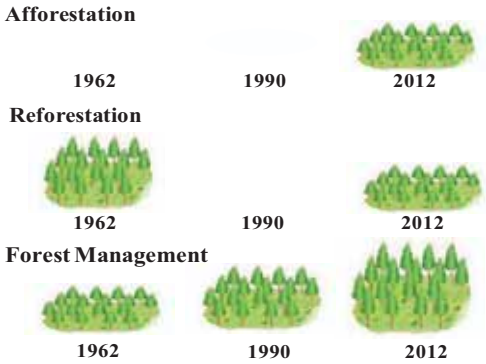
The Kyoto Protocol sets legally binding targets of greenhouse gas emission reduction by at least 5% for 37 industrialized countries and the European Community during the first commitment period 2008-2012. Japan's emission reduction commitment is 6%.

Greenhouse gas removals by sink resulting from afforestation, reforestation and "forest management" may be accounted for to meet the emission reduction commitment. Japan is allowed to account for up to 13 Mt-C (47.67 Mt-CO_2) of removal per year from forest carbon sink.

Kyoto Protocol Overview

Commitment	Establishing legally binding commitment for the reduction of greenhouse gas emission by industrialized countries
Greenhouse Gases	CO_2, CH_4, N_2O, HFC, PFC, SF_6
Base year	1990
Commitment period	2008-2012
Target	6% reduction for Japan, 7% for the USA, 8% for the EU. At least 5% reduction for aggregate industrialized countries
Carbon sink	Forest carbon sink etc. may be accounted for to meet reduction commitment

Forest Carbon Sink



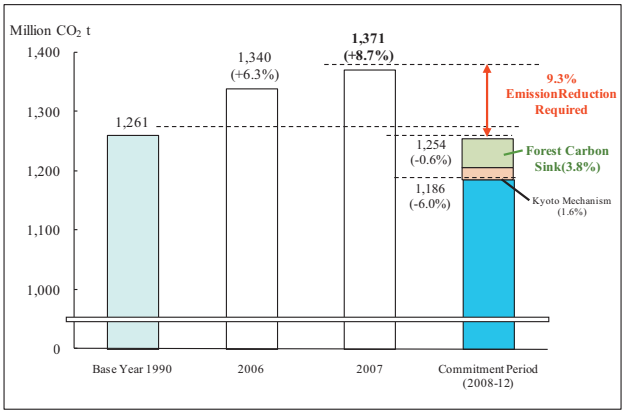
Afforestation and Reforestation: forestation to land that was not forest in 1990
Forest Management: a system of practices aimed at fulfilling multiple functions of forest in a sustainable manner

(2) Challenges toward the "Low-Carbon Society"

Global greenhouse gas emissions increased by 70% during the period between 1970 and 2004. The current level of emission exceeds the twice of carbon absorption in the nature. Japan's greenhouse gas emissions increased by 8.7% in 2007, compared with the base year of 1990.

In June 2008, Prime Minister Fukuda expressed Japan's long-term goal to reduce CO_2 emission by 60 to 80 percent by 2050, so as to halve the global CO_2 emission ("Fukuda Vision"). The government materialized the Vision and developed the "Action Plan for Achieving a Low-Carbon Society." This plan intends to lower the greenhouse gas emissions to the level of natural absorption while maintaining the standard of living.

Japan's Greenhouse Gas Emissions for FY 2007



Source: Ministry of the Environment

Action Plan for Achieving a Low-Carbon Society

I. Japan's targets
II. Disseminating innovative and advanced technologies
III. Moving Japan toward a low-carbon society
- Emissions trading
- "Visualization" of greenhouse gas emissions

IV. Support for regional and citizens' initiatives
- Reducing carbon by using the functions of agriculture, forestry and fisheries

・ Mountainous areas play crucial roles in bringing about a low-carbon society as a source of biomass supply and forest carbon sinks.
・ Forest management, increased use of locally-harvested wood in housing construction, expansion of product and energy use of untapped biomass resources

3. Actions toward the “Low-Carbon Society”

(1) Forest Sink

Japan set the domestic target of removal by forest at 13 Mt-C/year (3.8% of the total emissions in the base year 1990). There is little land eligible for afforestation and reforestation since almost 70% of total land area is covered with forests. Therefore, in order to ensure the domestic removal target of 13 Mt-C/year, most of the removal has to be achieved through “forest management” by conducting adequate thinning and other forestry practices on existing forests.

Japan’s Definition of “Forest Management” Applicable to the Carbon Sequestration Accounting under the Kyoto Protocol

Ikusei-rin Forest (humanly regenerated forest)

Of the ikusei-rin forests, forests where appropriate forest practices have been carried out since 1990

Regeneration (land preparation, soil scarification, planting etc)

Tending (weeding, pre-commercial cutting etc)

Thinning and harvesting

Tennensei-rin Forest (naturally regenerated forest)

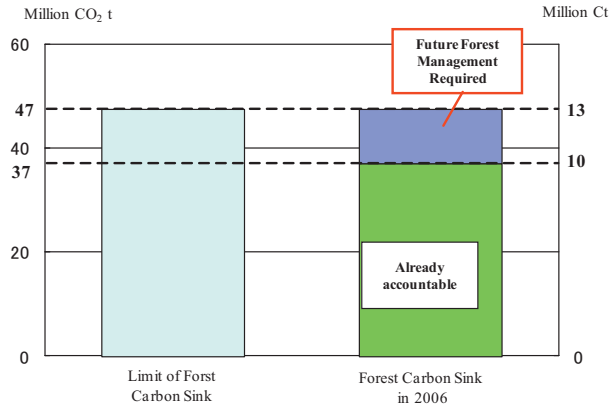
Of the tennensei-rin forests, forests where protection or conservation are legally enforced

Removal by forest carbon sink under the Kyoto Protocol was 10.15 Mt-C in FY 2006, equivalent to 3.0% of the total emissions in the base year of 1990.

To meet the domestic removal target of 13Mt-C/year from forest carbon sink, 3.3 million hectares of thinning, or 550 thousand hectares per year, has to be conducted from FY 2007 to FY 2012. The annual thinning area of 550 thousand hectares is 200 thousand hectares larger than the previous level of 350 thousand hectares. In FY 2007, 520 thousand hectares of thinning was successfully accomplished.

In FY 2008 and thereafter, the Government continues to promote thinning and other forestry practices steadily and comprehensively through organizing the “National Campaign on Fostering Beautiful Forests” and by taking measures based on the “Act on Special Measures for Promotion of Thinning.”

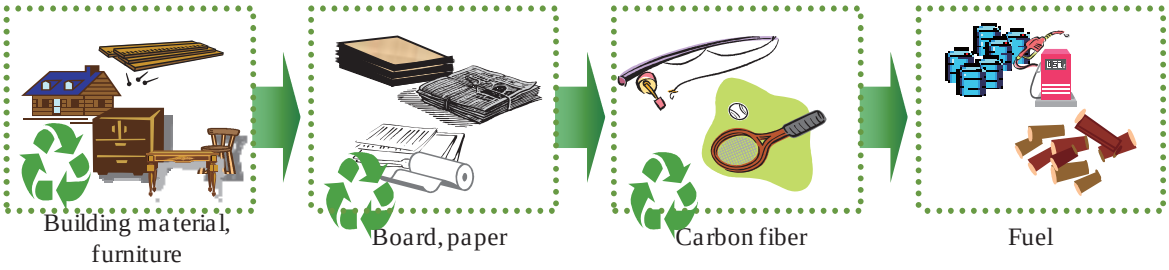
Forest Carbon Sink in FY 2006



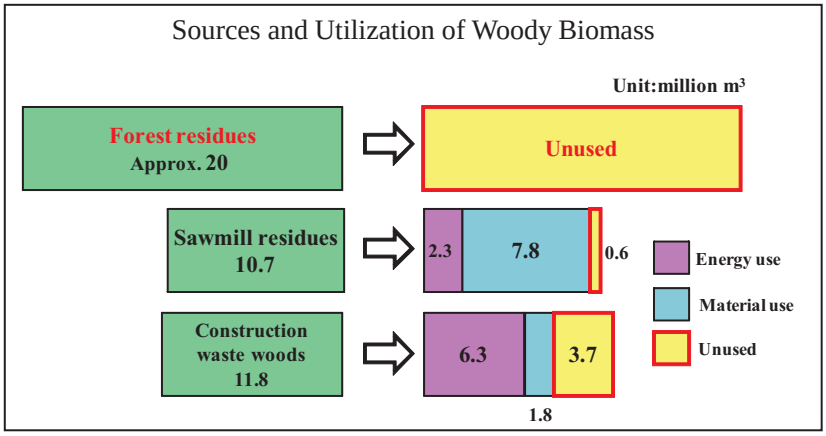
(2) Wood Use

Wood contributes to the realization of the low-carbon society as sequestrated carbon remains in wood and CO_2 emission is reduced through wood use for energy and product substitution for more energy-intensive materials. Wood can be used in multi-stages from building materials and furniture, board and paper, chemical products, and finally as fuel.

In order to expand wood use as building materials, the Forestry Agency undertakes measures to ensure reliable supply of wood products that meet consumers' needs. Promotion of long-term use of wood is also important.



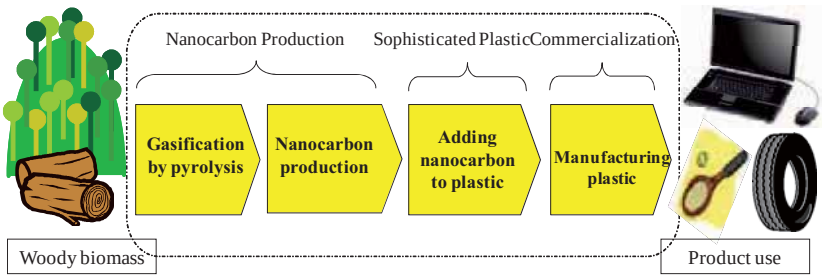
Woody biomass can be categorized into forest residues, sawmill residues and construction waste woods. Although the introduction of wood-fired boilers and generators and the production of wood pellet have been steadily increasing in recent years, large amount of woody biomass, in particular forest residues, still remains unused. For the utilization of unused woody biomass, the Forestry Agency initiated research projects to develop innovative technologies to produce materials and fuel such as nanocarbon and ethanol.



Source: Forestry Agency

<Production of nanocarbon from woody biomass>

Nanocarbon, typically known as carbon nanotubes and buckytubes, has various characteristics. Small portion of nanocarbon to plastic materials increases the strength and electric conductivity of plastic materials and blocks electromagnetic waves. This research project intends to produce nanocarbon by gasification of heated wood chips and precipitation of the hydrocarbon gas.

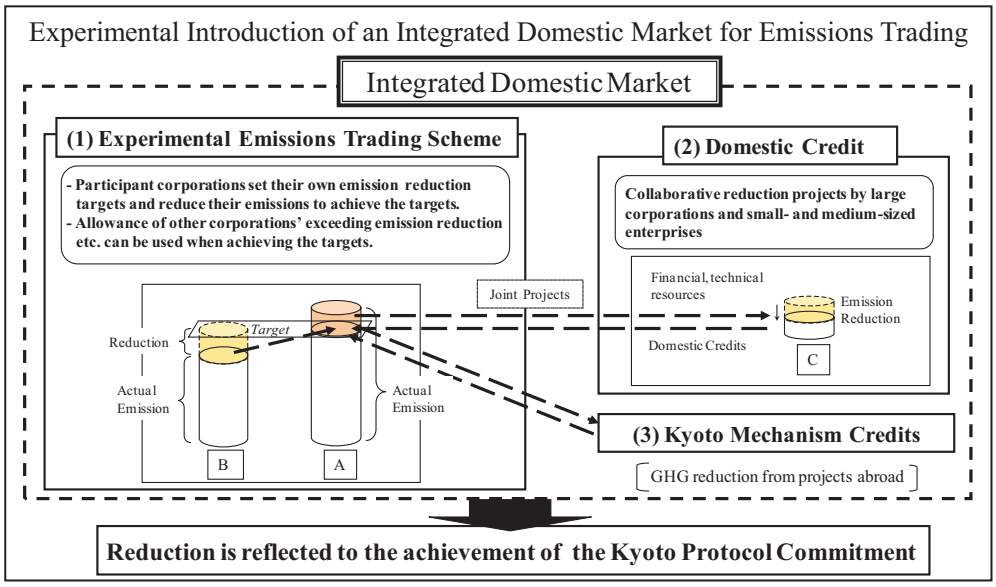


(3) New Initiatives

a) Emissions Trading

In October 2008, in accordance with the "Action Plan for Achieving a Low-Carbon Society," the Government experimentally introduced the "Integrated Domestic Market for Emissions Trading."

Under the experimental introduction, participating corporations voluntarily set their emission reduction target by themselves and reduce emissions to achieve their target. Participating corporations are allowed to use i) allowances of other corporations' emission reduction, ii) Domestic Credits or iii) Kyoto Mechanism credits, to meet their own target. The result of the emission reduction through this scheme is reflected to the achievement of the emission reduction under the Kyoto Protocol commitment.



Domestic Credits are issued on the basis of emission reduction achieved by joint projects between participating corporations and other non-participating enterprises including small- and medium-sized enterprises, agriculture, forestry and other services. The "Domestic Credits Verification Committee" prepares a list of emission reduction methodologies for project design.

"Boiler Fuel Conversion," one of the emission reduction methodologies, includes fuel conversion from fossil fuel to woody biomass. Domestic Credits are issued if CO_2 emission reduction is achieved by the fuel conversion and certified by the Committee. As of March 2009, two hot spring resorts in Fukuoka Prefecture and one town office in Yamagata Prefecture had applied for registration of "Boiler Fuel Conversion" project where fuel is converted from heavy oil into woody biomass.

<Domestic Credit through the introduction of wood-fired boiler>

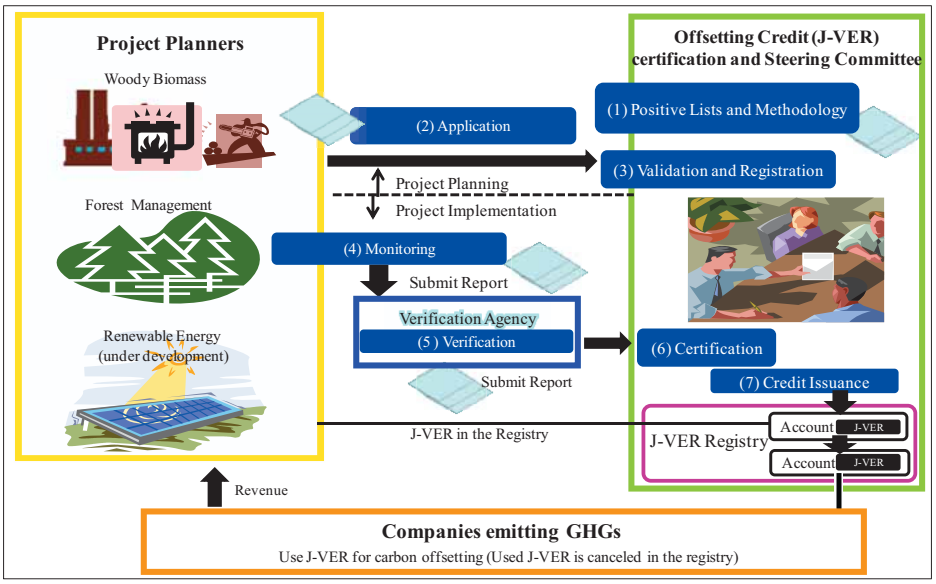
A hot spring resort in Fukuoka Prefecture introduced a wood-fired boiler with financial assistance of a general trading company and a power company. CO_2 emission will be reduced by 610t-CO_2 a year from FY 2008 to FY 2012 and Domestic Credits will be issued accordingly.

b) Carbon Offset

"Carbon Offset" is a series of actions composed of the recognition of the volume of greenhouse gas emissions, the efforts to reduce the emissions, and the purchase of carbon credits (or investment in emission reduction projects) to offset the rest of the emissions. Typical example includes the "carbon offsetting New Year greeting card." For each card sold for 55 yen, five yen is donated to CDM projects, thereby offsetting part of purchasers' greenhouse gas emissions from everyday lives.

The Government launched the "Japanese Verified Emissions Reduction Certification Scheme (Offsetting Credit ((J-VER) Scheme)" which certifies emission reductions or removals from domestic projects to ensure the credibility of emission reductions/removals and to avoid double counting.

Offsetting Credit (J-VER) Scheme

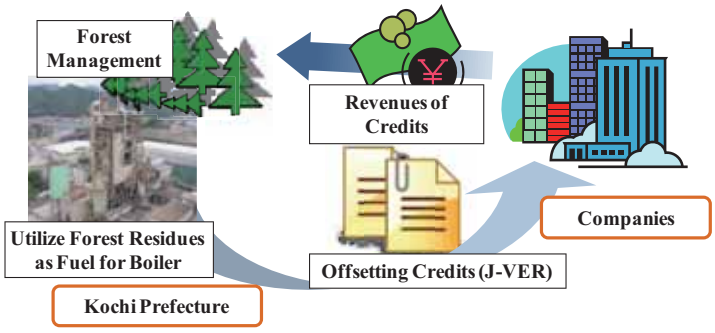


The "Offsetting Credit (J-VER) Certification and Steering Committee" develops "positive lists" which identify eligible project types and their criteria to satisfy. As of March 2009, there are three positive lists including "Boiler Fuel Conversion from Fossil Fuel to Unused Forest Residues," "Forest Management to Increase CO_2 Removal" and "Afforestation to Increase CO_2 Removal."

Offsetting Credits (J-VER) are issued if CO_2 emission reductions or removals is achieved through the projects which satisfy the positive lists and is certified by the Committee.

<Offsetting Credits (J-VER) by utilizing forest residues>

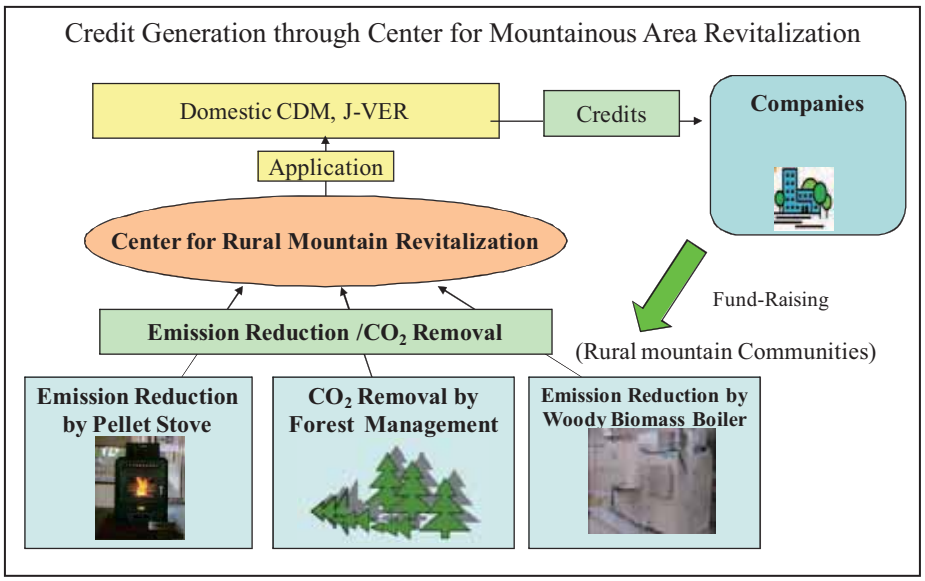
In FY 2007, Kochi Prefecture started a project to utilize unused forest residue as fuel for boiler in thermal power plants and generate carbon credits. The prefecture applied for the registration of this project in December 2008. Offsetting Credits (J-VER) were issued in March 2009. This was the first application and issuance under the J-VER Scheme. The prefecture plans to sell the Offsetting Credits (J-VER) to eco-conscious companies and build a system to put the revenue into forest and its management.



c) Support for Credit Generation

Since the carbon credits generated by each project of woody biomass utilization or forest management activities are relatively small, and project owners may not have sufficient knowledge on necessary procedures, there may be difficulties for individual project owners to apply to these schemes.

The "Center for Mountainous Area Revitalization," established in May 2009, will support the generation of the Domestic Credits and the Offsetting Credits (J-VER) through project finding, offering advice and instruction for project owners, and arranging sales contracts of these credits.

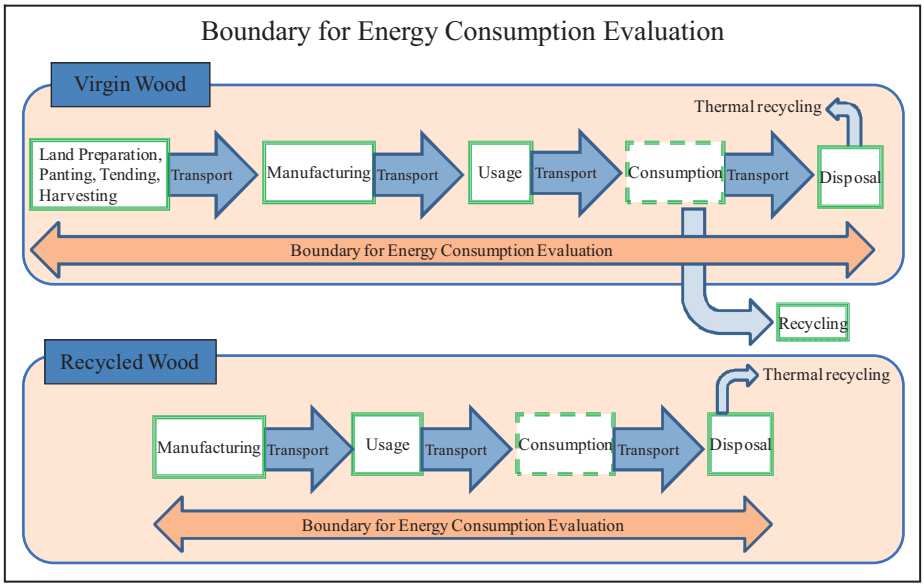


d) "Visualization" and Carbon Footprint

"Visualization" of greenhouse gas emissions is a range of activities to show the quantity of greenhouse gas emissions associated with goods and services. The "visualization" may induce producers to reduce their greenhouse gas emissions and consumers to select goods and services with less greenhouse gas emissions.

Wood products have special characteristics such as carbon storage and emission reduction through their use. Therefore, the "visualization" of wood use may require specific evaluation methodologies.

A consultation committee within the Forestry Agency concluded that environment benefit of wood use should be evaluated from the view of energy efficiency, carbon storage, and contribution to forest management. The committee is going to develop manuals and guidelines for "visualization" of wood use.



(4) Toward the Low-Carbon Society

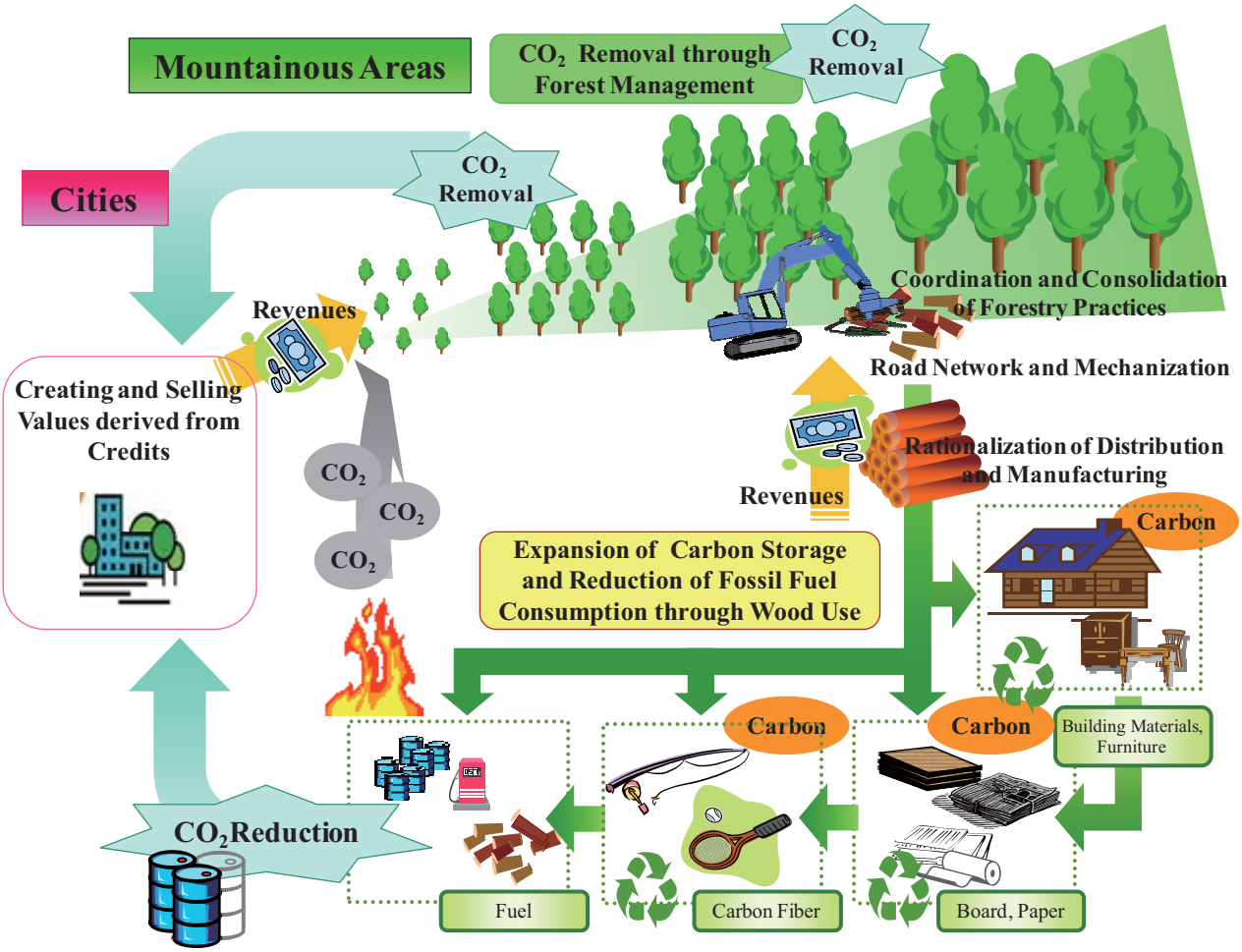
Forest has important roles in realizing the low-carbon society in that forest sequesters carbon from the atmosphere and produces wood: one of typical renewable resource which stores sequestered carbon.

Therefore, forest needs to be continuously and properly managed and the use of wood, particularly domestic one, should be promoted.

Forestry in Japan, which is necessary for forest management as well as wood production, faces many difficulties; shrinking domestic wood demand, declining wood prices and deteriorating profitability. If the situation remains unchanged, the population in mountainous areas is expected to decrease and become older, resulting in lack of proper forest management.

Revenues increase from the sales of value-added wood products or the Domestic Credits and the Offsetting Credits (J-VER), as well as cost reduction at each stage from wood production to processing, might improve the profitability of forestry, revitalizing forestry industry and communities in mountainous areas.

Proper care of forests in mountainous areas and effective wood use while revitalizing forestry industry and communities in mountainous areas are the keys to the realization of the low-carbon society.



Chapter II Forest Management

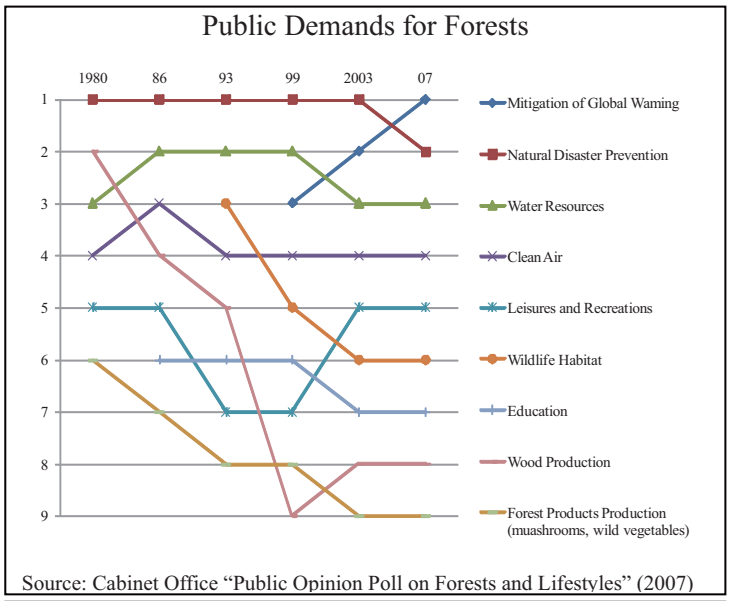
1. Promoting the Health and Diversity of Forests

(1) Forest Resources

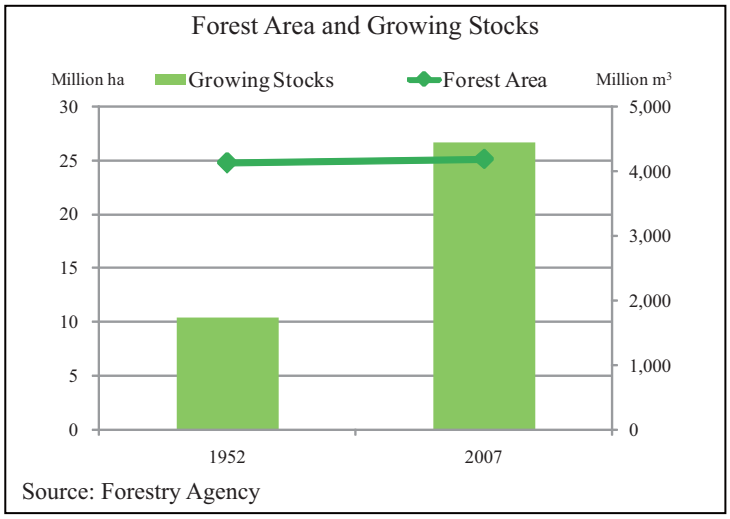
Public demands for forests, which range from conventional wood production to emerging carbon sequestration and biodiversity, are becoming diversified and sophisticated.

Planted forests, most of which were planted in 1950's-1960's, have been reaching their maturing ages for the use as resources. At the same time, forests may also be diversified through converting planted forests to mixed broadleaf forests in response to the public demands.

Considering these changing conditions surrounding forests in Japan, the 15-year "Nationwide Forest Plan," updated in October 2008, set the quantitative targets including thinning volume to be increased by 36% and areas of uneven-aged forests to be expanded by 67%.



Source: Cabinet Office "Public Opinion Poll on Forests and Lifestyles" (2007)



Source: Forestry Agency

(2) Forest Carbon Sink

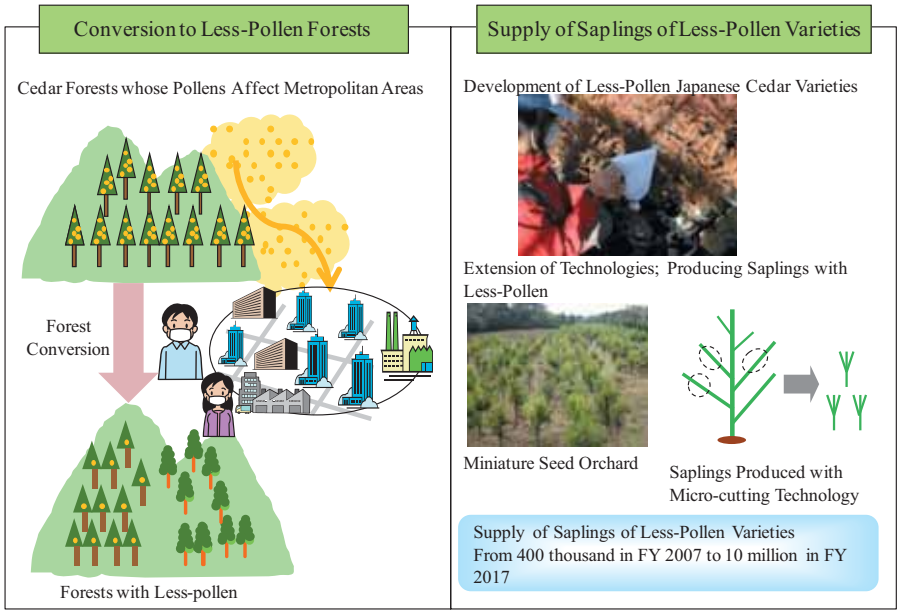
To meet the removal target of 13Mt-C/year from forest carbon sinks, thinning must be conducted in 3.3 million hectares of forests during 2007-2012. For the achievement of this target, assistance for forest landowners and local governments must be required through raising productivity of thinning practices and applying special treatments under the "Act on Special Measures for the Promotion of Forest Thinning." The Government continues to stimulate the "National Campaign for Beautiful Forest" for the promotion of forest thinning and development of diverse forests.

(3) Forest Biodiversity

The Ministry of Agriculture, Forestry and Fisheries developed its own "Biodiversity Strategy" in July 2007, and the "Basic Act on Biological Diversity" came into effect in June 2008. The Forestry Agency, with due consideration for the integration of biodiversity conservation in forest management, launched a study group to further enhance the sound management of forest ecosystem.

(4) Japanese Cedar Pollinosis

In Japan, the “Japanese cedar pollinosis” has been increasingly acknowledged as a nationwide problem. Japanese Ministries and Agencies concerned have been cooperating to promote comprehensive measures against the problem. The Forestry Agency has started programs to promote the conversion of Japanese cedar forests to those with less pollen and to substantially increase the sapling supply of Japanese cedar varieties with less pollen.

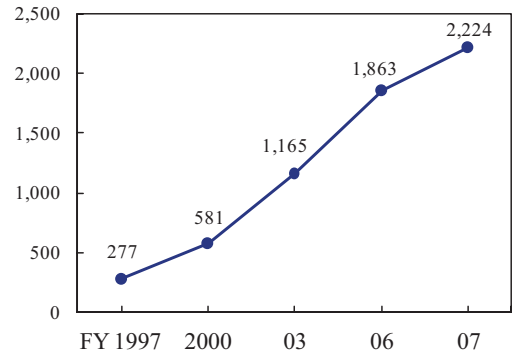


(5) Forest Volunteers and CSR Activities

A survey conducted by the Forestry Agency revealed that the number of “forest volunteer” (people willing to participate in forestry activities voluntarily) groups reached as many as 2,224 in FY 2007. There are also many potential “volunteers” who have the willingness to participate in the care of forests. Many private companies are also interested in forest management and conservation as part of their corporate social responsibility (CSR) activities. The Forestry Agency supports these activities through the promotional campaigns and arrangement between volunteers/companies and forest owners.

Prefectural governments have introduced local taxation schemes exclusively used for the finance of forest management and conservation activities. As of FY 2008, 29 prefectures out of 47 have already introduced such tax imposition system while another one is considering the introduction.

Number of Forest Volunteer Groups



Source: Forestry Agency

Prefectural Local Taxation for Forest Management

2003.4	Kochi			
2004.4	Okayama			
2005.4	Tottori	Shimane	Yamaguchi	Ehime
	Kumamoto	Kagoshima		
2006.4	Iwate	Fukushima	Shizuoka	Shiga
	Hyogo	Nara	Oita	Miyazaki
2007.4	Yamagata	Kanagawa	Toyama	Ishikawa
	Wakayama	Hiroshima	Nagasaki	
2008.4	Akita	Ibaraki	Tochigi	Nagano
	Fukuoka	Saga		
2009.4*	Aichi			

*scheduled

2. Forest Conservation and Disaster Control

(1) Protection Forest

Under the "Forest Act," the "protection forest" is designated for the forests that are particularly important for providing public benefits, such as securing water resource and preventing disasters. The total area of the protection forests increased from 2.5 million hectares in FY 1955 to 11.9 million hectares in FY 2007: more than 50% of total forest area or one third of total land area in Japan.

(2) Disaster Control

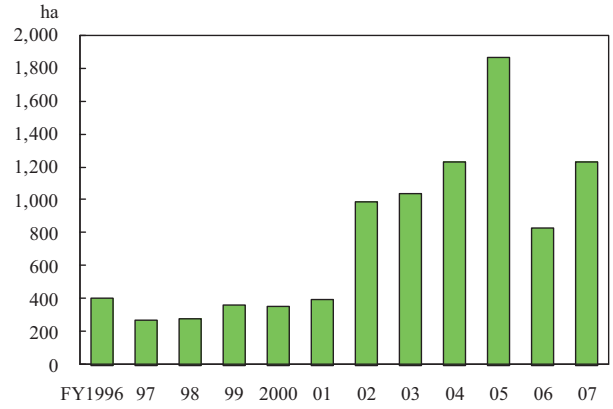
Recently, large-scale natural disasters in mountainous areas are becoming common due to frequent heavy rain or earthquakes like the "Iwate-Miyagi Nairiku Earthquake." For the implementation of land-slide protection works or damage mitigation programs including the development of evacuation programs, cooperation between national and local governments is important. In case of large-scale natural disasters, national government has to support local ones through field investigation or restoration works in devastated areas.

(3) Pest and Disease Control

Damages of pine forests caused by pine wood nematode (*Bursaphelenchus xylophilus*) are still spreading to the areas where the disease was not observed before. Preventive control is particularly important in these areas for the minimization of further expansion of the disease.

Massive death of deciduous oak trees (*Quercus crispula*) by oak platypodid beetle (*Platypus quercivorus*) is spreading in the mainland along the Sea of Japan. The damaged area was about 1,200ha in FY 2007. Effective control measures for this disease are under development.

Forest Area damaged by Oak Platypodid Beetle

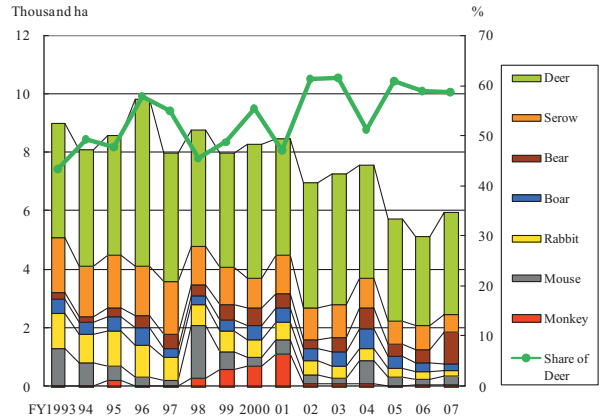


Source: Forestry Agency

(4) Wildlife and Forests

Forest damages by wildlife are deteriorating as causative wildlife population increases and the conflicts between human and animal becomes intense. Almost 60% of forest damages by wildlife are caused by deer. The Forestry Agency is cooperating with other governmental and local agencies for the implementation of comprehensive measures, including installation of wildlife fences and tree tubes, controlling of wildlife population, and training of technical experts. Thinning of forests and conversion of coniferous planted forests to broadleaf natural forests may be effective for the conservation and enhancement of wildlife habitat in the long term.

Forest Area damaged by Wildlife



Source: Forestry Agency

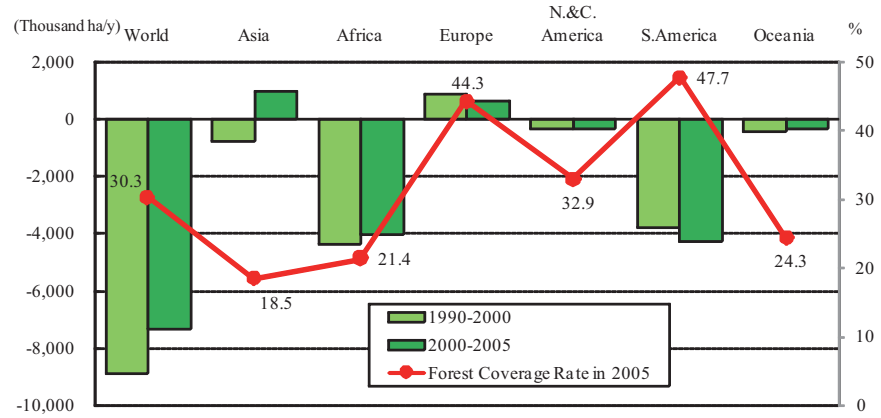
3. International Engagement

(1) World's Forest and Japan's Initiatives

In the world, forests continue to decline and degrade, particularly in Africa and South America. Large-scale deforestation and forest degradation would adversely affect the environment and economic activities of each country, as well as worsen the global environmental problems such as climate change, loss of biodiversity and desertification.

The Japanese government is committed to assist the conservation and proper management of forests in developing countries through bilateral and multilateral schemes such as technical cooperation and financial assistance. Japan is also leading the initiative to combat illegal logging in the international communities.

World Forest Change and Forest Coverage Rate



Source: FAO "State of the World's Forests 2005"

(2) Criteria and Indicators

There are several initiatives to develop and apply "criteria and indicators" for forest conservation and sustainable forest management. The Forestry Agency is a member of the "Montreal Process" which deals with temperate and boreal forests other than in Europe. Japan has been the secretariat of the Process since 2007. In 2008, the Montreal Process revised its set of criteria and indicators. The former seven criteria and 67 associated indicators were simplified into seven criteria and 54 indicators with a view to making them measureable and more concrete.

The Montreal Process "Criteria and Indicators"

Criterion 1: Conservation of biological diversity
Area of forest by forest ecosystem type, number of native forest associated species, etc.

Criterion 2: Maintenance of productive capacity of forest ecosystems
Area of forest land available for wood production, total growing stock, etc.

Criterion 3: Maintenance of forest ecosystem health and vitality
Area of forest affected by biotic processes and agents beyond reference conditions, etc.

Criterion 4: Conservation and maintenance of soil and water resources
Area of forest whose designation or land management focus is the protection of soil or water resources, etc.

Criterion 5: Maintenance of forest contribution to global carbon cycles
Total forest ecosystem carbon pools and fluxes, etc.

Criterion 6: Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies
Recovery or recycling of forest products, investment in the forest sector, etc.

Criterion 7: Legal, institutional and policy framework for forest conservation and sustainable management
Legal framework (laws, regulations, guidelines), capacity to measure and monitor changes in the conservation and sustainable management of forests, etc.

Chapter III Forestry and Mountainous Areas

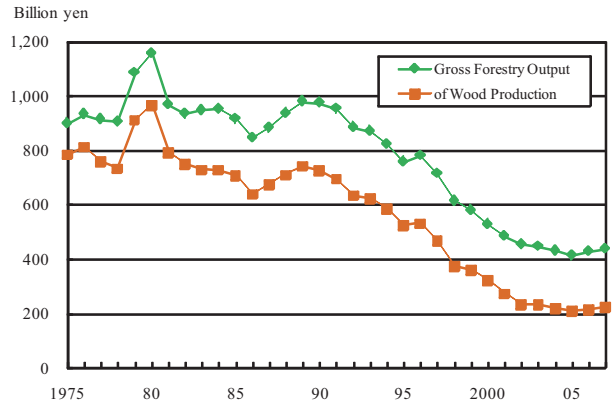
1. Forestry

(1) Forestry Economy

In 2007, gross forestry output was 441.4 billion yen. Among the gross output, output derived from wood production was 225.6 billion yen, 3.9% increase from the previous year. Average forestry income of forest owners decreased from 478 thousand yen in 2006 to 291 thousand yen in 2007.

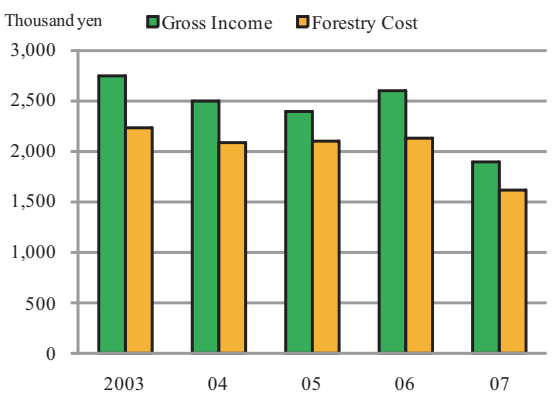
Forest owners' willingness toward forestry practices is declining. Forestry production activity remains inactive due to the low profitability of forestry caused by stagnant wood prices. The efficiency of forestry practices needs to be improved to increase the profitability.

Gross Forestry Output



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

Forestry Income



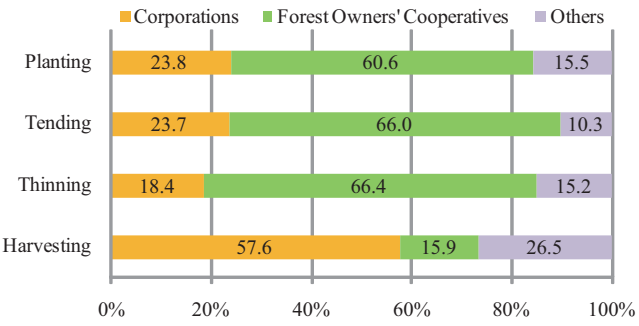
Source: MAFF

(2) Forestry Contractors

The Forest Owners' Cooperatives are Japan's major forestry contractors, conducting more than 60% of forestry practices in Japan. As many forest owners move to urban areas and become older, they are no longer able to manage their forests by themselves. Under such conditions, there are growing demands on Forest Owners' Cooperatives to play an active role in forest management activities in each region.

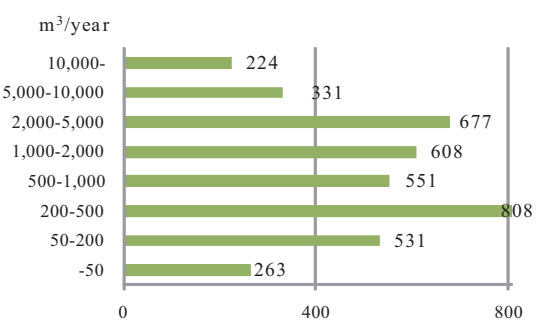
Almost 60% of harvesting and log production activities are conducted by private forestry contractors. Most of them are relatively small corporations with annual log production volume of less than 5,000m^3.

Share of Types of Contractors by Forestry Practices



Source: MAFF "2005 Census of Agriculture and Forestry"

Number of Contractors by Log Production Scale



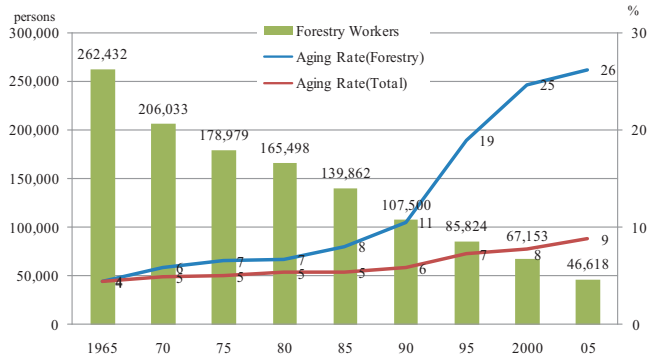
Source: MAFF "2005 Census of Agriculture and Forestry"

(3) Forestry Worker

Due to the declining profitability of forestry industry, the number of forestry workers fell to 47,000 in 2005. The age of forestry workers is also becoming older: the aging rats (the share of those aged 65 or older) is 26%.

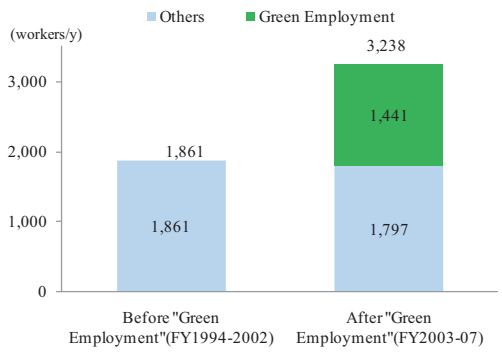
The number of new entrants in the forestry industry increased to 3,200 in recent years, thanks to the vocational training project named as “Green Employment,” where new entrants learn basic skills and knowledge of forestry.

Forestry Workers and Aging Rate



Source: Ministry of Internal Affairs and Communications “Population Census”

New Entrants and “Green Employment”



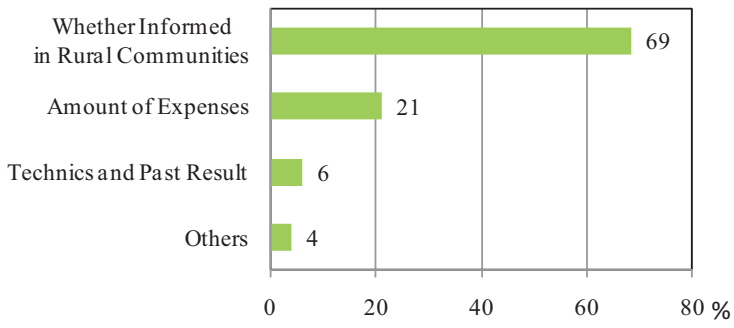
Source: Forestry Agency

(4) Coordination and consolidation of forestry practices

For the revitalization of forestry production activity, profitability of forestry needs to be improved. However, forest ownership in Japan is small, fragmented and scattered (e.g. 57% of owners own less than 3 ha of forests). In order to overcome these structural disadvantages, the Forestry Agency promotes the coordination and consolidation of forest owner’s practices to achieve economies of scale and to reduce forestry production costs.

When forest owners entrust their forestry practices to forestry contractors, it may be important that these entrusted contractors have enough information on forests in the local communities. In this regard, the Forest Owners’ Cooperatives’ could efficiently coordinate and consolidate forestry practices, with their deep relationship with communities in mountainous areas.

Consideration Points when Entrusting Forestry Practices



Source: MAFF “Survey of Forestry Contractors on Forestry Practices” (January 2008)

(5) Proposal-based Coordination and consolidation

In order to motivate forest owners who lost their incentive toward forestry practices, the “proposal-based coordination and consolidation of forestry practice” system may be effective under which forestry contractors encourage forest owners in forestry practices.

In FY 2007, the Forest Owners’ Cooperatives started training programs for their staff members. With these programs, the Cooperatives’ staff members are expected to acquire various skills to become a “Forestry Practice Planner” who can compile a “forestry practice proposal” containing information on forest condition, management policy, road network plan, ways of thinning, revenue of wood sales and its associated cost and other relevant data. With this proposal, planners will urge forest owners to entrust their forestry practices to forestry contractors. By FY 2008, 440 staffs from 300 Forest Owners’ Cooperatives participated in the training programs and started the proposal-based coordination and consolidation of forestry practices in each region.

Training Courses for “Forestry Practice Planners”

	Training Courses		Major Contents
1st year	Startup Course	Basic course	Learn basic ideas on “forestry practice proposal” at Hiyoshi Forest Owners' Cooperatives which has been successful in proposal-based coordination and consolidation of forestry practices.
		Special course	Learn recent examples of proposed-based coordination and consolidation of forestry practices and low-cost forestry practice.
	Regional Field Course		Learn actual method of compiling “forestry practice proposals” and presentation skills with the guidance and help of leading Cooperatives in proposed-based coordination and consolidation.
2nd year	Advanced Course		Refining the skills necessary for "Forestry Practice Planners" and learn the importance in working with other staffs, e.g. planners, managers, accountant staffs and field workers.

Excursion to Log Production Site

Man-to-Man Consultation

Lecture on Process Control

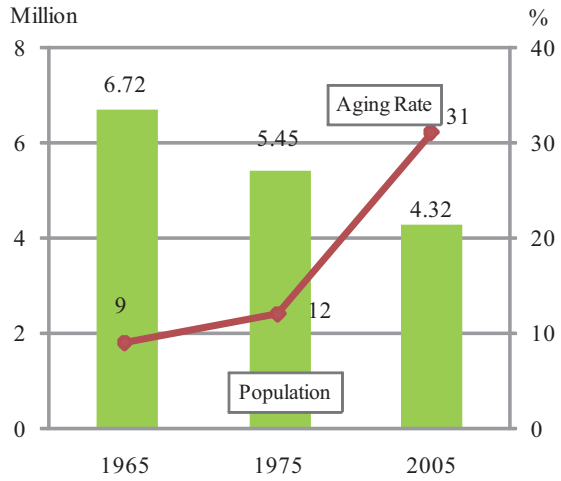
2. Mountainous Areas

(1) Current Situation

In mountainous areas, many people are engaged in forestry. Therefore, those areas play an important role for the provision of public benefits through proper forestry activities.

These mountainous areas, which cover 60% of total forest in Japan, are depopulating and aging due to the decline of agriculture and forestry. If such trend continues, public benefits of forests might be adversely affected due to the lack of proper forest management. Therefore, mountainous areas need to be maintained so that forestry activities could sustain for a long period of time.

Population and Aging Rate in Mountainous Areas



Source: Ministry of Internal Affairs and Communications
"Population Census," MAFF

(2) Revitalizing Mountainous Areas

The Forestry Agency is committed to the promotion of settlement in mountainous areas through the improvement of living conditions, invitation of tourists and visitors from urban cities, increase of employment in forestry sector, and creation of business opportunities utilizing indigenous resources including nature, culture and tradition.

In June 2008, an ad hoc study group in the Forestry Agency developed an interim report, suggesting the following points;

- Mountainous areas have potential to maintain the economy and society in the 21st century through the supply of forest-based energy and materials and the provision of opportunities for outdoor education and health tourism
- In order to fulfill this potential, communities in mountainous areas need to be revitalized

In response to the report, the "Center for Mountainous Area Revitalization" was established in May 2009, with the aims to realize the "low-carbon society" through the revitalization of communities in mountainous areas and the proper use of forest resources.

Chapter IV Wood Supply/Demand and Wood Industry

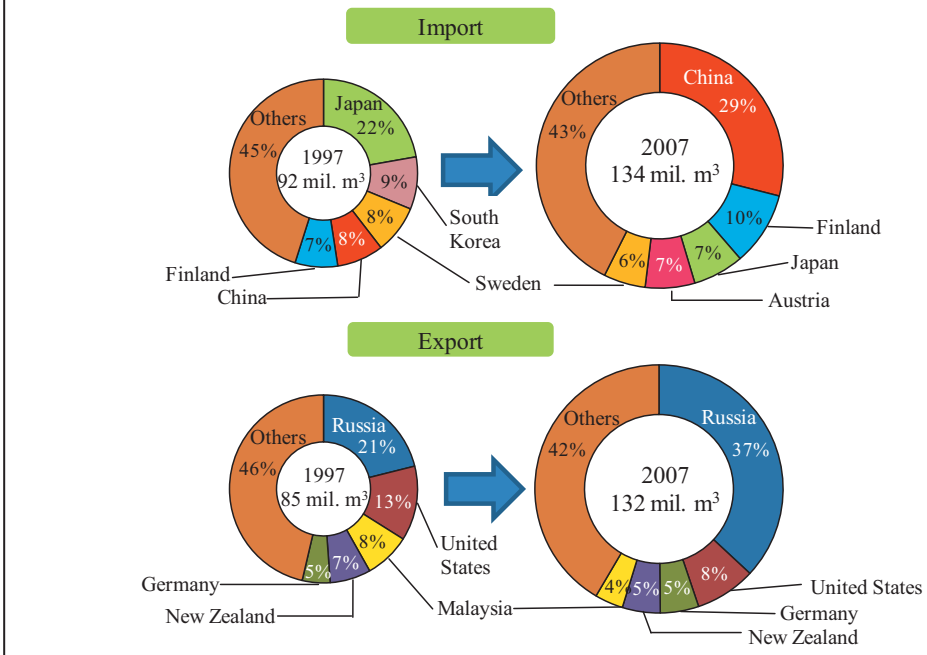
1. World Wood Trade

According to FAO statistics, world wood demand has been growing over the long term. In 2007, the volume of world industrial roundwood consumption has reached 1,772 million m^3, 11% increase over the past decade. The volumes of roundwood import and export also increased by 46% and 55% respectively over the same period. Russia with 37% of the world industrial roundwood export and China with 29% of import are gaining their presence in world wood trade.

The Russian government began to gradually raise its export tax on logs since July 2007. The increased tax may adversely affect the global supply and demand of wood.

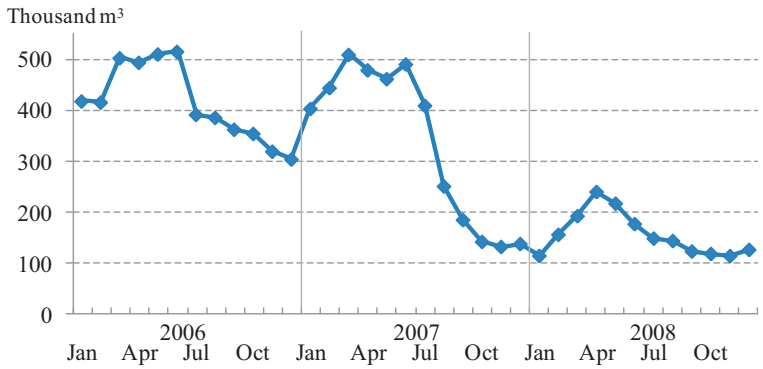
The utilization of legality-verified wood and acquisition of forest certification has become popular for the promotion of the fairly produced wood, which contributes to sustainable use of forest resources.

Import/Export of Industrial Roundwood



Source: FAOSTAT (as of 31 March 2009)

Japan's Log Import from Russia



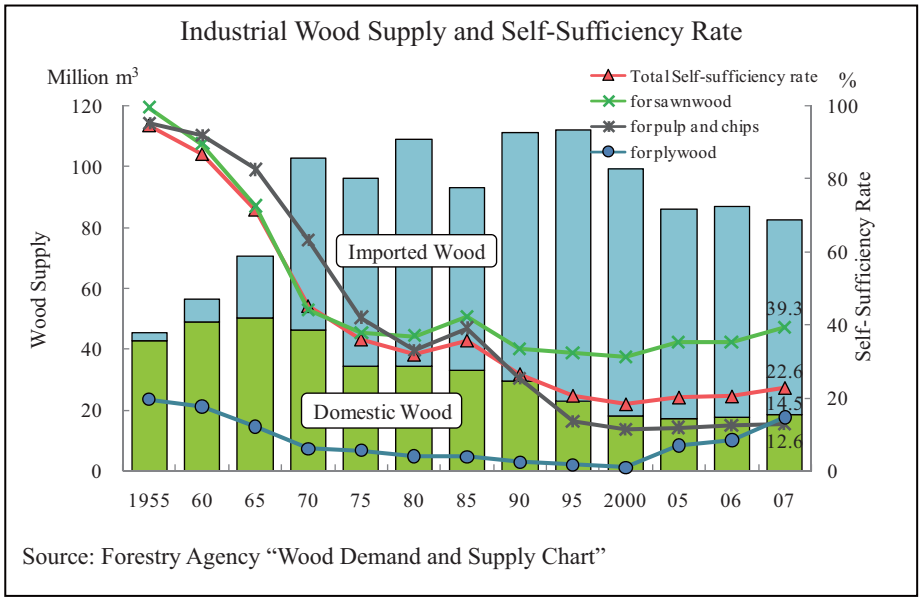
Source: Ministry of Finance "Trade Statistics of Japan"

2. Supply/Demand of Forest Products in Japan

(1) Supply/Demand of Wood

Industrial wood demand fell to 82million m^3 in 2007, 5.5% decrease compared to the previous year, due to the decline of sawnwood and plywood demand caused by sluggish new housing starts. In 2008, wood demand is expected to be further exacerbated by the continuing economic recession.

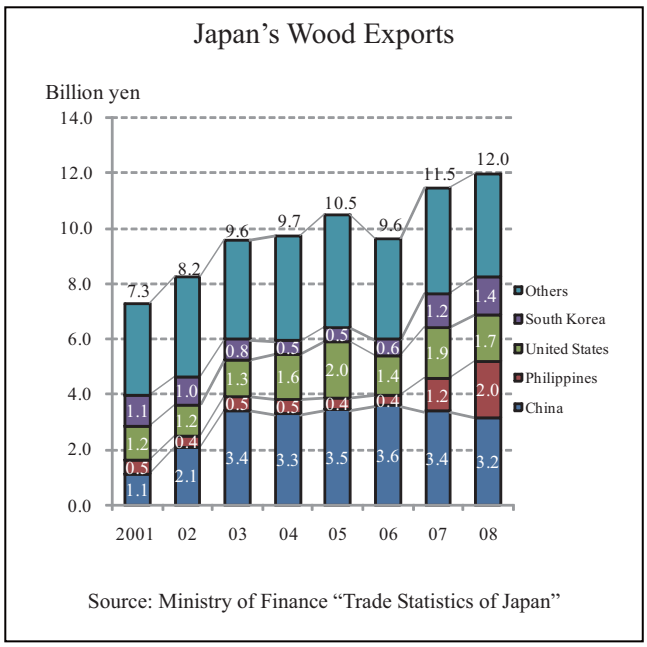
Domestic wood supply, particularly for lumber and plywood use, increased while imported wood decreased considerably. As a result, the self-sufficiency rate of wood reached as high as 22.6% in 2007, an increase for the third consecutive year.



Source: Forestry Agency "Wood Demand and Supply Chart"

(2) Wood Exports

Wood and wood products exports have increased over the past few years, and were valued at 12 billion yen in 2008. China is the largest export partner followed by Philippines, United States and South Korea.



Source: Ministry of Finance "Trade Statistics of Japan"

(3) Non-wood Forest Products

The production of non-wood forest products including mushrooms, wild vegetables, edible nuts and charcoals were valued at 290 billion yen in 2007, eighty percent of which accounts for mushrooms. Non-wood forest products are important for the revitalization of communities in mountainous areas and the proper management of *Satoyama* forest – the forest used for producing fuels, foods, fertilizer, and other living needs for local residents.

3. Wood Industry and Domestic Wood Use

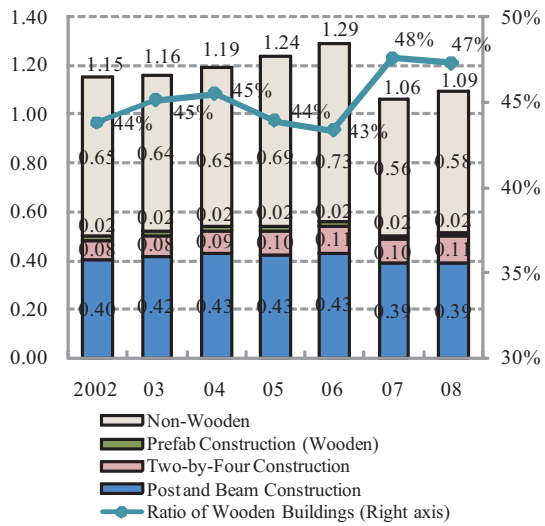
(1) Wood Industry

The numbers of new housing starts fell to 1.06 million units in 2007, 18% decrease from the previous year, due to the adverse effects of the revised "Building Standards Act." In 2008, the number of new housing starts remained at 1.09 million units due to the economic recession beginning in autumn.

Demand for laminated wood, structural plywood and kiln-dried wood is growing, due to the popularization of pre-cut lumber in house building sites and the consumer's needs for wood products with high quality and performance. In plywood mills, the share of domestic wood in material input reached as high as 31 % in 2007.

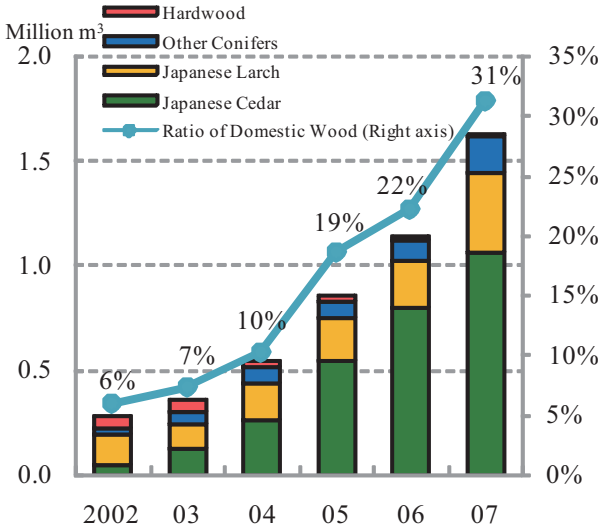
While the number of small-scale sawmills has been largely decreasing, large-scale sawmills, which account for only 6 % of total number of mills, use more than half of the total material input. The number of plywood mills and laminated wood factories has been decreasing recently. These mills and factories were forced to adjust their production volume in response to the recession since autumn 2008.

New Housing Starts and Ratio of Wooden Buildings



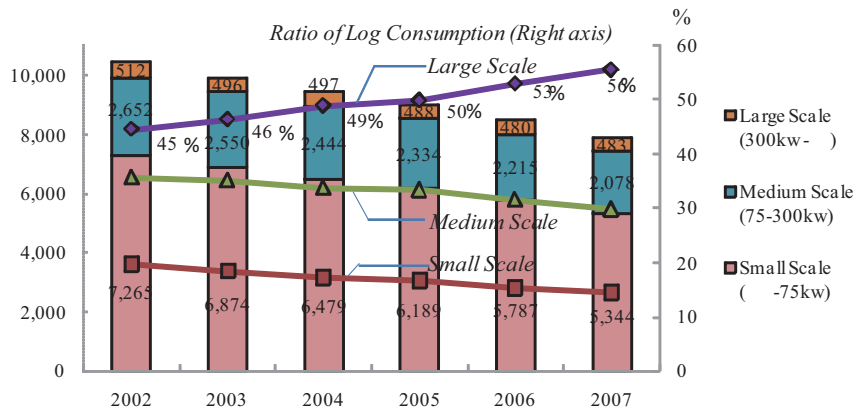
Source: MAFF "Wood Demand and Supply Report," "Timber Statistics"

Supply of Domestic Wood for Plywood



Source: MLIT "Statistics of Housing Starts"

Number of Sawmills by Scale and their Log Consumption



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

(2) Domestic Wood Use

Sawmills and plywood mills are converting their input materials from imported wood to domestic one in response to the unclear situation of future wood imports and the improvement of log processing technologies; situation surrounding domestic wood is largely changing.

Given such situation, wood industry has to make efforts to ensure the reliable supply of domestic wood products that meet consumer needs for quality and performances, in cooperation with forestry industry.

<House building with local wood>

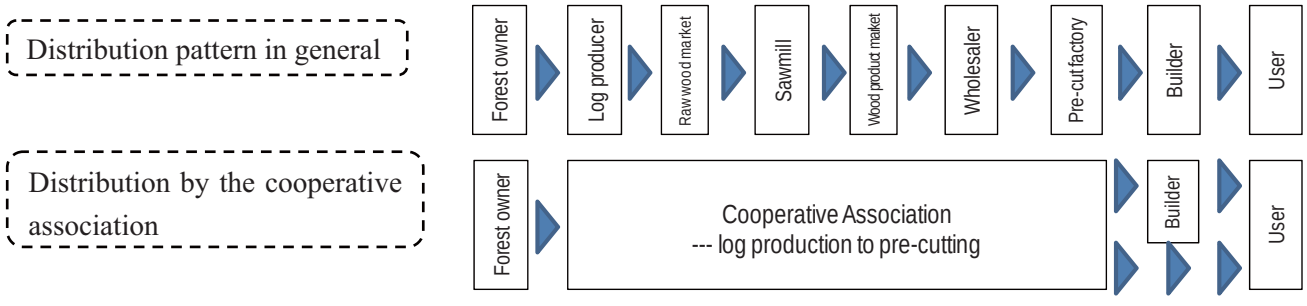
A group of a log producer and sawmills in Kochi prefecture is promoting wooden house by commercializing "Reihoku Skelton," a house structure kit including posts and beams made of local woods. The group organizes excursions to logging sites and sawmills for potential consumers in order to develop strong relationship between producers and consumers.

<New sawmill for domestic wood>

In Kumamoto prefecture, 24 entities including a lumber company and Kumamoto Prefectural Federation of Forestry Cooperatives have established a new sawmill with annual log consumption of 100 thousand m^3. The mill, equipped with the latest production line and large-sized drying machines, produces high quality lumbers used for intermediate post (*Mabashira*).

<Distribution rationalization>

A cooperative association in Hyogo prefecture, which consists of local log producers, lumber companies and a home builder, reduced costs for intermediaries by undertaking wood distribution by itself. The association returns the profits from the reduced costs to the forest owners.

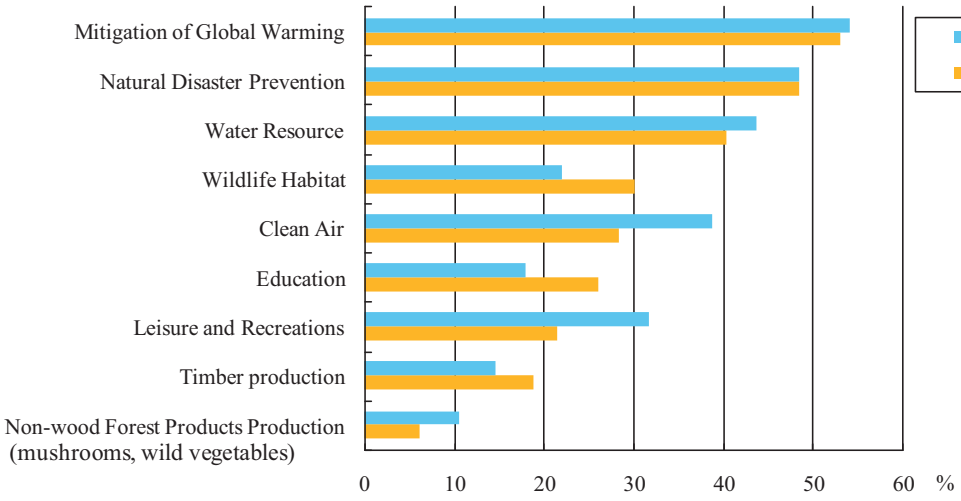


Chapter V　National Forest Management for “Forest for the People”

1. People’s Expectations for National Forests

National Forests, which cover 30% of total forest area, are the national asset with the vital roles in serving public demands such as prevention of erosion, alleviation of flood and mitigation of global warming. According to the Public Opinion Poll, people’s expectation for National Forests is high in their contribution to mitigation of global warming and natural disaster prevention.

Public Demands for Forest and the National Forest



Source: Cabinet Office “Public Opinion Poll on Forests and Lifestyles” (2007)

2. Management as the “Forest for the People”

In December 2008, the National Forest Management formulated the new “The Basic Management Plan for National Forest,” which consists of five basic policies; “maintenance and improvement of public benefits,” “management under the watershed management system,” “management as the Forest for the People,” “mitigation of global warming,” and “conservation of biodiversity.”

National Forests are located in important areas for land conservation, and 90% of which are designated as protection forest. Forest conservation projects are systematically implemented to restore the devastated forests and keep the local communities safe and secure.

After “The Iwate-Miyagi Nairiku Earthquake,” which occurred on 14th June 2008, the National Forest Management immediately provided forest roads in National Forest as the detour rout of damaged major road, and installed landslide sensors for the prevention of second disaster. In addition, the Forestry Agency immediately dispatched experienced conservation engineers to the devastated areas to help the restoration operations.

To meet the removal target under the Kyoto Protocol, the National Forest Management conducted 126 thousand hectares of thinning in FY 2007, which was twice as large as the thinned area in the previous year. The National Forest Management also actively uses thinned wood in forest civil engineering projects and promotes environmental education including interpretation of the role of forests in mitigating global warming.

For the conservation of biodiversity, the National Forest Management designates forests with primeval forest ecosystems remain as "Protected Forest" or "Green Corridor" which connects among several protected forest areas. Monitoring surveys are also implemented in those forests since 2007 in order to observe the changes of ecosystems.

<Utilization of thinned wood in forest civil engineering project>

The Kinki-Chugoku Regional National Forest Office promotes the use of thinned wood for concrete formwork of soil conservation dams as a substitute of plywood. Such construction method is expected to reduce the cost for the removal of formwork as well as contribute to the storage of carbon in the thinned wood.

Protected Forests (Units: Number / 1,000 hectares)

Name		Purpose	No. of Sites	Area
Types of Protected Forest	Forest ecosystem conservation area	Protection of ecosystems of forests, wildlife and genetic resources	29	495
	Forests for the conservation of genetic resources	Protection of genetic resources of all flora and fauna comprising the forest ecosystem	12	35
	Forests for the preservation of the genetic resources of tree species	Protection of gene pool of timber species and endangered species	324	9
	Forests for the protection of plant colonies	Protection of rare plants and trees in high mountains that are valuable for scientific research	369	182
	Forests for the protection of specified wildlife habitats	Protection of habitats and breeding areas of rare and endangered fauna	37	21
	Forests for the protection of specified geographical features, etc.	Protection against erosion of unique landforms and geological features such as types of rock, spring areas and glaciated places	35	35
	Forests for the local culture	Protection of local forests that have cultural, spiritual and symbolic significance	35	4
	Total		841	780

Source: Forestry agency

Notes: Figures are as of April 1, 2008.

<Monitoring survey in the "Shikoku Mountains Green Corridor">

The Shikoku Regional National Forest Office implements a monitoring survey in the "Shikoku Mountains Green Corridor" for the improvement of forest management in the corridor. During the survey, Asiatic black bear (*Ursus thibetanus*), an endangered species in Shikoku region, was identified by an automatic camera installed in the forest.

The National Forest Management accounts for approximately 20% of total domestic wood supply and plays a vital role in reliable supply of domestic wood. It also makes efforts to expand the demand of thinned wood by enhancing systematic sales with major customers. In order to hand down the "wood culture," including historical wooden buildings or cultural ceremonies which use wood, to the next generation, the National Forest Management promotes "Forest management for the wood culture" through the development of wooden resources or local species used for those cultural inputs in the long term.

For the promotion of "forest for the people," the National Forest Management provides education institutions, NPOs, or private enterprises with fields for their activities as "Forests for students," "Forests for voluntary groups," or "Forests for corporations." The National Forest Management also collects opinions from the "National Forest monitors" in order to reflect those opinions in the management.

<Cooperation with local governments >

The Kinki-Chugoku Regional National Forest Office and Shimane prefecture concluded an agreement for the promotion of forest management. Under the agreement, the office and the prefecture develop a forest management plan for specific forest area consisting of forests with different owners and, then, develop forest road networks and conduct efficient thinning with high-spec forestry machinery.

<Forest management for the wood culture>

The Okinawa District National Forest Office concluded an agreement with a local tree-fostering council for the supply of indigenous wood used for restoration and renovation of the World Heritage "Shuri Castle." The office and the council organized an afforestation event for the elementary school students to succeed the wood culture to the next generations.

<Environmental education in "Forest for students">

The Mogami Branch Office of Yamagata District National Forest Office concluded an agreement with the Funagata City Board of Education for "Forest for students" in June 2008 and designated beech forest as the "Funagata-Yakushi-no-mori." The office, the council and a local educational organization work together to promote environmental education activities for kindergarten children and elementary school students, referring to traditional forest culture of the rural area.

3. Reform of the National Forest Management

The National Forest Management has been making efforts to restore fiscal stability by ensuring income from sales of wood and other properties, streamlining organization and personnel and implementing effective forest management through private consignment. As a result, the National Forest Management succeeds in keeping financial balance without new borrowing since 2004.

The “Act for promotion of administrative reform to achieve simple and efficient government” in 2006 stipulates the National Forest Management to examine transforming from special account to the general account and partially turning into an independent administrative corporation by the end of FY 2010. The Forestry Agency has been carefully examining the future reform of the National Forest Management with due consideration of its public benefits.

Appendix

1. Forestry-related Fundamental Figures

Item	Unit	1980	1990	1995	2000	2003	2004	2005	2006	2007
i Gross domestic product (GDP)	billion yen	240,969.2	440,124.8	496,922.2	502,989.9	490,294.0	498,328.4	501,734.4	507,364.8	515,804.8
Forestry	billion yen	826.0	661.2	695.8	886.5	576.7	526.5	446.4	477.5	477.4
Forestry / GDP	%	0.34	0.15	0.14	0.18	0.12	0.11	0.09	0.09	0.09
ii Total number of workers	million	55.36	62.49	64.57	64.46	63.16	63.29	63.56	63.82	64.12
Forestry	million	0.19	0.11	0.09	0.07	0.06	0.06	0.06	0.06	0.05
Forestry / Total No. of workers	%	0.34	0.18	0.14	0.11	0.09	0.09	0.09	0.09	0.08
iii Area of national land of Japan	million ha	37.77	37.77	37.78	37.79	37.79	37.79	37.79	37.79	37.79
iv Forest area	million ha	25.28	25.21	25.15	25.15	25.12	25.12	25.12	25.12	25.10
Forest / National land	%	67.8	67.6	67.5	67.5	67.4	67.4	67.4	67.4	67.3
v Protection forest area	million ha	7.32	8.30	8.57	8.93	10.19	11.33	11.65	11.76	11.88
Protection forest / Forest	%	29.0	32.9	34.1	35.5	40.6	45.1	46.4	46.8	47.3
vi Growing stock of forest	billion m^3	2.5	3.1	3.5	3.5	4.0	4.0	4.0	4.0	4.4
vii Industrial wood supply/consumption	million m^3	108.96	111.16	111.92	99.26	87.19	89.80	85.86	86.79	82.36
Domestic production	million m^3	34.56	29.37	22.92	18.02	16.16	16.56	17.18	17.62	18.63
Import	million m^3	74.41	81.79	89.01	81.24	71.04	73.25	68.68	69.17	63.74
Self-sufficiency rate	%	31.7	26.4	20.5	18.2	18.5	18.4	20.0	20.3	22.6
viii New housing starts	million units	1.27	1.71	1.47	1.23	1.16	1.19	1.24	1.29	1.06
Wooden structure rate	%	59.2	42.6	45.3	45.2	45.1	45.5	43.9	43.3	47.6

Sources: i: Cabinet Office "SNA (System of National Accounts)," ii: Ministry of Internal Affairs and Communications "Labor Force Survey"
iii: Ministry of Land, Infrastructure, Transport and Tourism "Statistics reports of Administratives"
iv, v, vi: Forestry Agency, vii: Forestry Agency "Wood Demand and Supply Chart," viii: MLIT "Statistics on Building Construction Starts"

Notes 1: "Protection forest area" in "v" refers to the actual area measurement.
2: "Industrial wood upply/consumption," "Domestic production" and "Import" in "vii" refer to the volume in log-equivalent.

2. Gross Forestry Output

unit: billion yen

Item	1990	1995	2000	2003	2004	2005	2006	2007
Gross forestry output	977.14	760.55	531.10	448.42	434.61	416.77	432.16	441.44
Log production	728.14	526.61	322.13	231.42	220.48	210.23	217.08	225.58
Softwood	552.50	436.76	265.33	195.43	187.76	177.41	183.89	195.20
Japanese Cedar	215.02	187.39	123.78	92.64	92.50	87.53	92.59	102.77
Hardwood	168.70	86.02	54.72	34.52	31.58	31.71	32.19	29.38
Wood fuel production	8.26	7.93	6.16	7.55	6.49	6.09	5.60	5.48
Mashroom production	229.43	218.32	196.89	206.65	203.64	198.50	207.05	208.30
Forestry by-product	11.32	7.70	5.92	2.79	4.00	1.96	2.43	2.08
Forestry income produced	702.48	532.91	351.87	283.01	263.94	245.60	248.78	246.39

Sources: MAFF "Report of Statistics on Forestry Income Produced"
Note: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

3. Current State of Forest Resources

Units: thousand ha, million m^3

Classification			Total		Standing timber area (canopy cover more than 30%)				Treeless land (canopy cover less than 30 %)		Bamboo groves
					Planted forest		Natural forest				
			Area	Growin stock	Area	Growin stock	Area	Growin stock	Area	Growin 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	Total		7,686	1,078.27	2,364	423.61	4,691	653.81	631	0.86	0
	Under the Forestry Agency's jurisdiction	Total	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	Total		17,411	3,353.47	7,983	2,227.70	8,693	1,125.59	577	0.18	159
	Public forests	Total	2,830	484.33	1,247	294.62	1,449	189.63	128	0.08	6
		Prefacture	1,188	190.35	464	100.66	667	89.68	56	0.01	1
		Minicipality	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

Source: Forestry Agency

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: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

4: Figures are as of March 31, 2007.

4. Wood Supply/Demand (in log equivalent)

units: thousand m^3, %

	Total supply/demand of wood	Wood for industrial use	Wood for fuel	Wood for mushroom cultivation	Wood (industrial use) demand				Wood supply		Self-sufficiency rate
					for sawnwood	for pulp and chips	for 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
2003	88,875	87,191	1,050	634	34,766	36,979	12,810	2,636	16,155	71,036	18.5
2004	91,437	89,799	1,028	610	35,041	37,981	13,976	2,802	16,555	73,245	18.4
2005	87,423	85,857	1,001	565	32,901	37,608	12,586	2,763	17,176	68,681	20.0
2006	88,306	86,791	979	535	33,032	36,907	13,720	3,131	17,617	69,174	20.3
2007	83,879	82,361	976	542	30,455	37,124	11,260	3,522	18,626	63,735	22.6

Source: Forestry Agency "Wood demand and supply chart"

Note 1: "Wood supply/demand" refers to sum of roundwood and products (sawnwood, plywood, and pulps and chips) in log equivalent.

2: "Self Sufficiency rate" = "Domestc Wood Supply" / "Imported Wood Supply" ×100

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

4: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

5. Domestic/Imported Wood Supply/Demand (in log equivalent)

unit: thousand m^3, %

			1990	1995	2000	2003	2004	2005	2006	2007	year-on-year rate(%)
Total wood supply/demand			113,242	113,698	101,006	88,875	91,437	87,423	88,306	83,879	▲ 5.0
Wood for industrial use			111,162	111,922	99,263	87,191	89,799	85,857	86,791	82,361	▲ 5.1
Wood for fuel			517	721	940	1,050	1,028	1,001	979	976	▲ 0.4
Wood for mushroom cultivation			1,563	1,055	803	634	610	565	535	542	1.2
Category	Total	Total	111,162	111,922	99,263	87,191	89,799	85,857	86,791	82,361	▲ 5.1
		Domestic Wood	29,369	22,916	18,022	16,155	16,555	17,176	17,617	18,626	5.7
		Imported Wood	81,793	89,006	81,241	71,036	73,245	68,681	69,174	63,735	▲ 7.9
		Self-sufficiency rate(%)	26.4	20.5	18.2	18.5	18.4	20.0	20.3	22.6	2.3
	for sawnwood	Total	53,887	50,384	40,946	34,766	35,041	32,901	33,032	30,455	▲ 7.8
		Domestic Wood	18,023	16,252	12,798	11,214	11,469	11,571	11,645	11,981	2.9
		Imported Wood	35,864	34,132	28,148	23,552	23,572	21,330	21,387	18,474	▲ 13.6
		Self-sufficiency rate(%)	33.4	32.3	31.3	32.3	32.7	35.2	35.3	39.3	4.0
	for pulp and chips		(7,336)	(6,280)	(6,537)	(7,951)	(7,682)	(7,974)	(7,664)	(7,402)	▲ 3.4
		Total	41,344	44,922	42,186	36,979	37,981	37,608	36,907	37,124	0.6
		Domestic Wood	10,373	5,989	4,749	4,293	4,249	4,426	4,496	4,673	3.9
		Imported Wood	30,971	38,933	37,437	32,686	33,732	33,181	32,412	32,451	0.1
		Self-sufficiency rate(%)	25.1	13.3	11.3	11.6	11.2	11.8	12.2	12.6	0.4
	for plywood	Total	14,546	14,314	13,825	12,810	13,976	12,586	13,720	11,260	▲ 17.9
		Domestic Wood	354	228	138	360	546	863	1,144	1,632	42.7
		Imported Wood	14,192	14,086	13,687	12,450	13,430	11,723	12,576	9,628	▲ 23.4
		Self-sufficiency rate(%)	2.4	1.6	1.0	2.8	3.9	6.9	8.3	14.5	6.2
	Others	Total	1,385	2,302	2,306	2,636	2,802	2,763	3,131	3,522	12.5
		Domestic Wood	619	447	337	288	291	316	332	340	2.4
		Imported Wood	766	1,855	1,969	2,348	2,511	2,447	2,799	3,182	13.7
		Self-sufficiency rate(%)	44.7	19.4	14.6	10.9	10.4	11.4	10.6	9.7	▲ 0.9

Source: Forestry Agency "Wood Demand and Supply Chart"
Note 1: "Wood supply/demand" refers to sum of roundwood and products (sawnwood, plywood, and pulps and chips) in log equivalent.
2: "Self Sufficiency rate(%)" = "Domestc Wood Supply" / "Total Wood Supply" ×100
3: "Others" refers to items such as glulam, worked wood, sleeper, utility pole, pile wood and scaffolding wood.
4: Figures in parenthes refer to wood chips made from wood residue in sawmills.
5: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

6. Number of Mills/Factories and Production Volumes

		Unit	1990	1995	2000	2003	2004	2005	2006	2007
Sawnwood	Number of sawmills	plant	16,811	14,565	11,692	9,920	9,420	9,011	8,482	7,905
	sawnwood shipments	thousand m^3	30,012	24,766	17,231	13,929	13,603	12,825	12,554	11,632
Plywood	Number of plywood mills	plant	522	455	354	292	287	271	263	248
	Inputs for veneer production	thousand m^3	9,839	7,321	5,401	4,913	5,389	4,636	5,183	5,227
	Common plywood production	thousand m^3			3,218	3,024	3,149	3,212	3,314	3,073
		(thousand m^2)	997,693	655,799						
	Special plywood production	thousand m^3			1,534	1,141	1,100	1,037	1,102	924
		(thousand m^2)	372,326	340,687						
Wood chip	Number of wood chip mills	plant	4,494	3,535	2,657	2,201	2,106	2,040	1,971	1,857
	Wood chip production	thousand ton					5,782	6,005	5,899	5,894
		(thousand m^3)	16,640	11,226	10,851	11,880				
Laminated wood	Number of laminated wood factories	plant	274	293	281	268	263	259	234	225
	Laminated wood production	thousand m^3	450	582	892	1,407	1,488	1,512	1,675	1,347

Sources: MAFF "Wood demand and supply report," "Timber Statistic," Japan Laminated Wood Products Association
Note 1: Number of mills and factories are as of December 31,2007.
2: "number of sawmills" excludes sawmills with power output less than 7.5kw.